# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

PART 1 OF 6

N.B. The Government Printing Works will not be held responsible for the quality of "Hard Copies" or "Electronic Files" submitted for publication purposes

ISSN 1682-5843

9 771682 584003 42775

***IMPORTANT NOTICE OF OFFICE RELOCATION***

# GOVERNMENT PRINTING WORKS
# PUBLICATIONS SECTION

Dear valued customer,

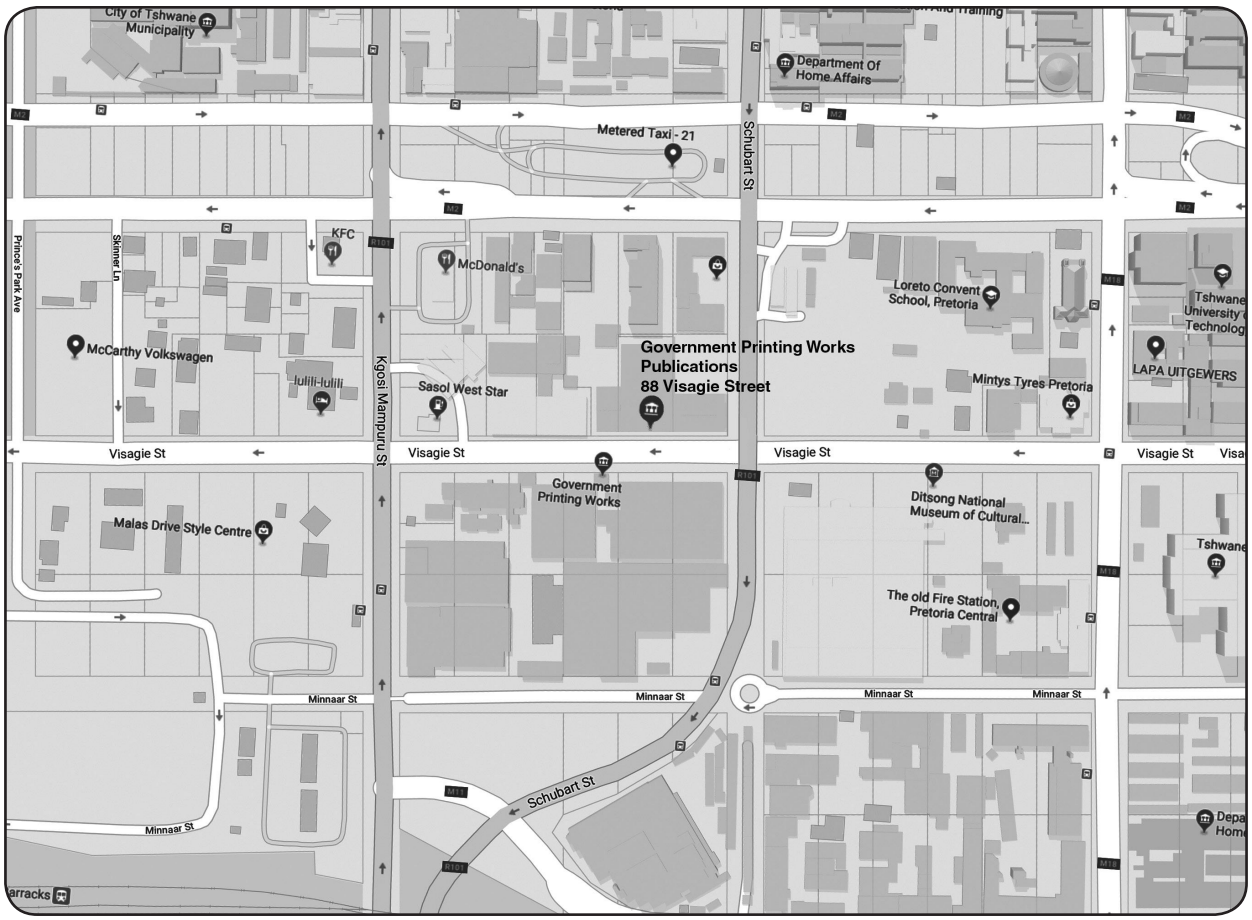
We would like to inform you that with effect from the 1st of November 2019, the Publications Section will be relocating to a new facility at the corner of **Sophie de Bruyn** and **Visagie Street**, **Pretoria**. The main telephone and facsimile numbers as well as the e-mail address for the Publications Section will remain unchanged.

Our New Address:
**88 Visagie Street**
**Pretoria**
**0001**

Should you encounter any difficulties in contacting us via our landlines during the relocation period, please contact:

Ms Maureen Toka
Assistant Director: Publications
Cell: 082 859 4910
Tel: 012 748-6066

We look forward to continue serving you at our new address, see map below for our new location.



**For purposes of reference, all Proclamations, Government Notices, General Notices and Board Notices published are included in the following table of contents which thus forms a weekly index. Let yourself be guided by the gazette numbers in the righthand column:**

## Weekly Index


| No. | | Page No. | Gazette No. |
|---|---|---|---|
| | **GOVERNMENT NOTICE** | | |
| | **Agriculture, Forestry and Fisheries, Department of** | | |
| 1268 | Agricultural Product Standards Act (119/1990) :Standards and requirements regarding control of the export of canned fruit: Amendment ..... | 17 | 42739 |
| 1269 | Agricultural Product Standards Act (119/1990) :Prohibition regarding the removal of imported regulated agricultural products intended for sale in the Republic of South Africa from the specified ports of entry or any other place as determined by the Executive Officer..... | 18 | 42739 |
| 1270 | Marketing of Agricultural Products Act (47/1996) :Continuation of Statutory Measures: Records and Returns by Abattoirs and Exporters of Live Pigs..... | 23 | 42739 |
| 1271 | Marketing of Agricultural Products Act, 1996 (Act No. 47 of 1996) :Continuation of Statutory Measures: Records and Returns by Abattoirs and Exporters of Live Pigs .... | 27 | 42739 |
| 1272 | Marketing of Agricultural Products Act (47/1996) :Continuation of statutory measure and determination of guideline price: Levies relating to pigs..... | 31 | 42739 |
| R.1283 | Agricultural Product Standards Act (119/1990) :Regulations regarding the classification, packing and marking of processed meat products intended for sale in the Republic of South Africa ..... | 12 | 42740 |
| 1301 | Broad-Based Black Economic Empowerment Act (53/2003) (as amended by BBBEE Amendment Act (46/2013) :Application for market access permits for agricultural products in terms of W.T.O agreement for 2020 ..... | 4 | 42754 |
| 1314 | Broad-Based Black Economic Empowerment Act 53 of 2003 (as amended by BBBEE Amendment Act No. 46 of 2013) :Application for market access permits for agricultural products in terms of the W.T.O agreement for 2020 ..... | 4 | 42758 |
| | **Arts and Culture, Department of** | | |
| 1273 | Pan South African Language Board Act (59/1995) :Call for Comment: South African Sign Language Charter ..... | 36 | 42739 |
| | **Economic Development Department** | | |
| 1316 | Competition Act (89/1998) :Price Discrimination Regulations and Buyer Power Regulations ..... | 4 | 42760 |


**Alle Proklamasies, Goewermentskennisgewings, Algemene Kennisgewings en Raadskennisgewings gepubliseer, word vir verwysingsdoeleindes in die volgende Inhoudopgawe ingesluit wat dus weeklikse indeks voorstel. Laat uself deur die Koerantnommers in die regterhandse kolom lei:**

## Weeklikse Indeks


| No. | | Bladsy No. | Koerant No. |
|---|---|---|---|
| | **GOEWERMENTSKENNISGEWINGS** | | |
| | **Landbou, Bosbou en Visserye, Departement van** | | |
| 1268 | Agricultural Product Standards Act (119/1990) :Standards and requirements regarding control of the export of canned fruit: Amendment ..... | 17 | 42739 |
| 1269 | Agricultural Product Standards Act (119/1990) :Prohibition regarding the removal of imported regulated agricultural products intended for sale in the Republic of South Africa from the specified ports of entry or any other place as determined by the Executive Officer..... | 18 | 42739 |
| 1270 | Marketing of Agricultural Products Act (47/1996) :Continuation of Statutory Measures: Records and Returns by Abattoirs and Exporters of Live Pigs..... | 23 | 42739 |
| 1271 | Marketing of Agricultural Products Act, 1996 (Act No. 47 of 1996) :Continuation of Statutory Measures: Records and Returns by Abattoirs and Exporters of Live Pigs .... | 27 | 42739 |
| 1272 | Marketing of Agricultural Products Act (47/1996) :Continuation of statutory measure and determination of guideline price: Levies relating to pigs..... | 31 | 42739 |
| R.1283 | Agricultural Product Standards Act (119/1990) :Regulations regarding the classification, packing and marking of processed meat products intended for sale in the Republic of South Africa ..... | 12 | 42740 |
| 1301 | Broad-Based Black Economic Empowerment Act (53/2003) (as amended by BBBEE Amendment Act (46/2013) :Application for market access permits for agricultural products in terms of W.T.O agreement for 2020 ..... | 4 | 42754 |
| 1314 | Broad-Based Black Economic Empowerment Act 53 of 2003 (as amended by BBBEE Amendment Act No. 46 of 2013) :Application for market access permits for agricultural products in terms of the W.T.O agreement for 2020 ..... | 4 | 42758 |
| | **Kuns en Kultuur, Departement van** | | |
| 1273 | Pan South African Language Board Act (59/1995) :Call for Comment: South African Sign Language Charter ..... | 36 | 42739 |
| | **Ekonomiese Ontwikkeling Departement** | | |
| 1316 | Competition Act (89/1998) :Price Discrimination Regulations and Buyer Power Regulations ..... | 4 | 42760 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| **Environmental Affairs, Department of** | | | |
| 1317 | National Environmental Management Act (107/1998) :Advisory Committee to Review Policies, Legislation and Practices on Matters Related to the Management, Breeding, Hunting, Trade and Handling of Elephant, Lion, Leopard and Rhinoceros . | 4 | 42761 |
| **Justice and Constitutional Development, Department of** | | | |
| R.1284 | Promotion of Access to Information Act (2/2000) and Promotion of Administrative Justice Act (3/2000) :Rules of Procedure for Application to Court in terms of the Act and Administrative Review Rules..... | 34 | 42740 |
| R.1285 | Promotion of National Unity and Reconciliation Act (34/1995) :Amendment of Regulations Relating to Assistance to Victims in respect of Higher Education and Training. | 48 | 42740 |
| R.1286 | Promotion of National Unity and Reconciliation Act (34/1995) :Amendmnt of Regulations Relating to Assistance to Victims in Respect of Basic Education..... | 55 | 42740 |
| **Labour, Department of** | | | |
| R.1287 | Labour Relations Act, 1995 :Registration of a Trade Union ..... | 58 | 42740 |
| R.1288 | Labour Relations Act, 1995 :Correction Notice: Bargaining Council for the Civil Engineering Industry: Extension of Wage and Task Grade Collective Agreement to non-parties ..... | 59 | 42740 |
| R.1298 | Unemployment Insurance Act (63/2001) :Call for Comments on the Amendments to the Regulations to the Act..... | 4 | 42749 |
| 1300 | Labour Relations Act, 1995 :Invitation to make representations: The Council Levies Collective Agreement of the National Bargaining Council for the Private Security Sector ..... | 4 | 42753 |
| **Police, Department of** | | | |
| 1299 | Firearms Control Act (60/2000) :Notice in terms of section 136(1) of the Firearms Control Act ..... | 4 | 42751 |
| **Public Works, Department of** | | | |
| 1274 | Built Environment Act (43/2000) :The Scope of Work for Categories of Registration for the Profession Regulated by the South African Council for the Architectural Profession ..... | 50 | 42739 |
| **Rural Development and Land Reform, Department of** | | | |
| 1275 | Restitution of Land Rights Act (22/1994) as amended :Goedehoop 46 IS..... | 61 | 42739 |
| 1315 | Restitution of Land Rights Act (22/1994) :Remaining Extent, Portion 1, 2 3, 4, 5, 6, 7, 8 and 9 of the Farm Rosmincol 442 JP . | 4 | 42759 |
| **South African Revenue Service** | | | |
| R.1289 | Customs and Excise Act, 1964 :Amendment of Schedule No. 2 (No. 2/1/387)..... | 61 | 42740 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| **Omgewingsake, Departement van** | | | |
| 1317 | National Environmental Management Act (107/1998) :Advisory Committee to Review Policies, Legislation and Practices on Matters Related to the Management, Breeding, Hunting, Trade and Handling of Elephant, Lion, Leopard and Rhinoceros . | 4 | 42761 |
| **Justisie en Staatkundige Ontwikkeling, Departement van** | | | |
| R.1284 | Promotion of Access to Information Act (2/2000) and Promotion of Administrative Justice Act (3/2000) :Rules of Procedure for Application to Court in terms of the Act and Administrative Review Rules..... | 34 | 42740 |
| R.1285 | Promotion of National Unity and Reconciliation Act (34/1995) :Amendment of Regulations Relating to Assistance to Victims in respect of Higher Education and Training. | 48 | 42740 |
| R.1286 | Promotion of National Unity and Reconciliation Act (34/1995) :Amendmnt of Regulations Relating to Assistance to Victims in Respect of Basic Education..... | 55 | 42740 |
| **Arbeid, Departement van** | | | |
| R.1287 | Labour Relations Act, 1995 :Registration of a Trade Union ..... | 58 | 42740 |
| R.1288 | Labour Relations Act, 1995 :Correction Notice: Bargaining Council for the Civil Engineering Industry: Extension of Wage and Task Grade Collective Agreement to non-parties ..... | 59 | 42740 |
| R.1298 | Unemployment Insurance Act (63/2001) :Call for Comments on the Amendments to the Regulations to the Act..... | 4 | 42749 |
| 1300 | Labour Relations Act, 1995 :Invitation to make representations: The Council Levies Collective Agreement of the National Bargaining Council for the Private Security Sector ..... | 4 | 42753 |
| **Polisie, Departement van** | | | |
| 1299 | Firearms Control Act (60/2000) :Notice in terms of section 136(1) of the Firearms Control Act ..... | 4 | 42751 |
| **Openbare Werke, Departement van** | | | |
| 1274 | Built Environment Act (43/2000) :The Scope of Work for Categories of Registration for the Profession Regulated by the South African Council for the Architectural Profession ..... | 50 | 42739 |
| **Landelike Ontwikkeling en Grondhervorming, Departement van** | | | |
| 1275 | Restitution of Land Rights Act (22/1994) as amended :Goedehoop 46 IS..... | 61 | 42739 |
| 1315 | Restitution of Land Rights Act (22/1994) :Remaining Extent, Portion 1, 2 3, 4, 5, 6, 7, 8 and 9 of the Farm Rosmincol 442 JP . | 4 | 42759 |
| **Suid-Afrikaanse Inkomstediens** | | | |
| R.1289 | Customs and Excise Act, 1964 :Amendment of Schedule No. 2 (No. 2/1/387)..... | 63 | 42740 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| R.1290 | Customs and Excise Act, 1964 :Amendment of Rules (DAR 188) | 65 | 42740 |
| **Trade and Industry, Department of** | | | |
| 1276 | Co-operatives Act, 2005 :Co-operatives to be struck off the register | 64 | 42739 |
| 1277 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 65 | 42739 |
| 1278 | Co-operatives Act, 2005 :Co-Operatives that have been removed from the Register | 66 | 42739 |
| 1279 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 67 | 42739 |
| 1280 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 68 | 42739 |
| 1281 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 69 | 42739 |
| 1282 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 70 | 42739 |
| **Water and Sanitation, Department of** | | | |
| 1297 | Water Research Act (34/1971) :Water Research Levy 2019/20–Rates and Charges: Increase of 10% | 4 | 42747 |
| **GENERAL NOTICE** | | | |
| **Electoral Commission** | | | |
| 538 | Local Government: Municipal Electoral Act (27/2000) :Municipal By-elections – 23 October 2019: Official list of voting stations | 4 | 42748 |
| **Labour, Department of** | | | |
| 524 | Labour Relations Act, 1995 :Bargaining Council for the Furniture Manufacturing Industry of the South Western Districts: Extension to Non-parties of the Main Collective Amending Agreement | 71 | 42739 |
| **Law Society of the Cape of Good Hope** | | | |
| 525 | Legal Practice Act (28/2014) :Rules by Legal Practice Council in terms of section 6 of the Contingency Fee Act and Proposed Amendments to Rule 4 | 77 | 42739 |
| **Non-Governmental Organization** | | | |
| 526 | Veterinary and Para-Veterinary Professions Act (19/1982, as amended) :Appointment/designation of persons to serve as members of the South African Veterinary Council | 91 | 42739 |
| **Parliament of the Republic of South Africa** | | | |
| 539 | Kieswet (Wet 73 van 1998) :Publikasie van aanvullende lyste van candidate | 4 | 42752 |
| **Rural Development and Land Reform, Department of** | | | |
| 527 | Restitution of Land Rights Act (22/1994) :Erf 3616, Kleinmond | 92 | 42739 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| R.1290 | Customs and Excise Act, 1964 :Amendment of Rules (DAR 188) | 65 | 42740 |
| **Handel en Nywerheid, Departement van** | | | |
| 1276 | Co-operatives Act, 2005 :Co-operatives to be struck off the register | 64 | 42739 |
| 1277 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 65 | 42739 |
| 1278 | Co-operatives Act, 2005 :Co-Operatives that have been removed from the Register | 66 | 42739 |
| 1279 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 67 | 42739 |
| 1280 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 68 | 42739 |
| 1281 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 69 | 42739 |
| 1282 | Co-operatives Act, 2005 :Co-operatives that have been removed from the register | 70 | 42739 |
| **Water en Sanitasie, Departement van** | | | |
| 1297 | Water Research Act (34/1971) :Water Research Levy 2019/20–Rates and Charges: Increase of 10% | 4 | 42747 |
| **ALGEMENE KENNISGEWINGS** | | | |
| **Verkiesingskommissie** | | | |
| 538 | Local Government: Municipal Electoral Act (27/2000) :Municipal By-elections – 23 October 2019: Official list of voting stations | 4 | 42748 |
| **Arbeid, Departement van** | | | |
| 524 | Labour Relations Act, 1995 :Bargaining Council for the Furniture Manufacturing Industry of the South Western Districts: Extension to Non-parties of the Main Collective Amending Agreement | 71 | 42739 |
| **Wetsgenootskap van Kaap die Goeie Hoop** | | | |
| 525 | Legal Practice Act (28/2014) :Rules by Legal Practice Council in terms of section 6 of the Contingency Fee Act and Proposed Amendments to Rule 4 | 77 | 42739 |
| **Nie-Regeringsorganisasie** | | | |
| 526 | Veterinary and Para-Veterinary Professions Act (19/1982, as amended) :Appointment/designation of persons to serve as members of the South African Veterinary Council | 91 | 42739 |
| **Parlement van die Republiek van Suid-Afrika** | | | |
| 539 | Kieswet (Wet 73 van 1998) :Publikasie van aanvullende lyste van candidate | 5 | 42752 |
| **Landelike Ontwikkeling en Grondhervorming, Departement van** | | | |
| 527 | Restitution of Land Rights Act (22/1994) :Erf 3616, Kleinmond | 92 | 42739 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| 528 | Restitution of Land Rights Act (22/1994) as amended :Erf 3099, a portion of Erf 2289, Kraaifontein, City of Cape Town..... | 93 | 42739 |
| 529 | Restitution of Land Rights Act (22/1994) as amended :Erven 88, 89 and 90, Grabouw, OVerberg District, Western Cape..... | 94 | 42739 |
| 530 | Restitution of Land Rights Act (22/1994) as amended :Erf 26114 & Rem 27036, Observatory..... | 95 | 42739 |
| 531 | Restitution of Land Rights Act (22/1994) as amended :Erf 4995, Simon's Town ..... | 96 | 42739 |
| 532 | Restitution of Land Rights Act (22/1994) as amended :Erf 650, Zeekoevlei, City of Cape Town..... | 97 | 42739 |
| 533 | Restitution of Land Rights Act (22/1994) :(Erf 31314) 30314 ..... | 98 | 42739 |
| 534 | Restitution of Land Rights Act (22/1994) as amended :Farm Buffels River No. 980, Malmesbury, City of Cape Town, Western Cape..... | 99 | 42739 |
| 535 | Restitution of Land Rights Act (22/1994) :Erf 13544, Constantia ..... | 100 | 42739 |
| **Trade and Industry, Department of** | | | |
| 522 | Liquor Act, (27 /1989) :Notice of application for liquor licenses: North West ..... | 11 | 42738 |
| 523 | Liquor Act, (27 /1989) :Notice of applications for the removal of licenses: Limpopo | 52 | 42738 |
| **Transport, Department of** | | | |
| 536 | International Air Service Act (60/1993) :Grant/Amendment of International Air Service License ..... | 101 | 42739 |
| 537 | Air Service Licensing Act (115/1990) :Application for the Grant or Amendment of Domestic Air Service Licence..... | 102 | 42739 |

| No. | | Page No. | Gazette No. |
|---|---|---|---|
| 528 | Restitution of Land Rights Act (22/1994) as amended :Erf 3099, a portion of Erf 2289, Kraaifontein, City of Cape Town..... | 93 | 42739 |
| 529 | Restitution of Land Rights Act (22/1994) as amended :Erven 88, 89 and 90, Grabouw, OVerberg District, Western Cape..... | 94 | 42739 |
| 530 | Restitution of Land Rights Act (22/1994) as amended :Erf 26114 & Rem 27036, Observatory..... | 95 | 42739 |
| 531 | Restitution of Land Rights Act (22/1994) as amended :Erf 4995, Simon's Town ..... | 96 | 42739 |
| 532 | Restitution of Land Rights Act (22/1994) as amended :Erf 650, Zeekoevlei, City of Cape Town..... | 97 | 42739 |
| 533 | Restitution of Land Rights Act (22/1994) :(Erf 31314) 30314 ..... | 98 | 42739 |
| 534 | Restitution of Land Rights Act (22/1994) as amended :Farm Buffels River No. 980, Malmesbury, City of Cape Town, Western Cape..... | 99 | 42739 |
| 535 | Restitution of Land Rights Act (22/1994) :Erf 13544, Constantia ..... | 100 | 42739 |
| **Handel en Nywerheid, Departement van** | | | |
| 522 | Drankwet, (27 /1989) :Kennisgewing van aansoeke om dranklisensies: Noordwes .. | 11 | 42738 |
| 523 | Drankwet, (27 /1989) :Kennisgewing van aansoek om die verplasing van Lisensies: Limpopo..... | 52 | 42738 |
| **Vervoer, Departement van** | | | |
| 536 | International Air Service Act (60/1993) :Grant/Amendment of International Air Service License ..... | 101 | 42739 |
| 537 | Air Service Licensing Act (115/1990) :Application for the Grant or Amendment of Domestic Air Service Licence..... | 102 | 42739 |

**IMPORTANT NOTICE:**

**THE GOVERNMENT PRINTING WORKS WILL NOT BE HELD RESPONSIBLE FOR ANY ERRORS THAT MIGHT OCCUR DUE TO THE SUBMISSION OF INCOMPLETE / INCORRECT / ILLEGIBLE COPY.**

**NO FUTURE QUERIES WILL BE HANDLED IN CONNECTION WITH THE ABOVE.**

## Contents


| No. | | Gazette No. | Page No. |
|---|---|---|---|
| | **GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS** | | |
| **Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van** | | | |
| 1323 | Agricultural Product Standards Act (119/1990): Regulations relating to the classification, packing and marking of fruit juice and drink intended for sale in the Republic of South Africa: Revision of the Regulations | 42775 | 17 |
| 1324 | Agricultural Product Standards Act (119/1990): Standards and requirements regarding control of the export of potatoes: Amendment | 42775 | 18 |
| 1325 | Agricultural Product Standards Act (119/1990): Standards and requirements regarding control of the export of fresh vegetables: Amendment | 42775 | 19 |
| 1326 | Agricultural Products Standards Act (119/1990): Correction notice: Prohibition regarding the removal of imported regulated agricultural products intended for sale in the Republic of South Africa from the specified Ports of Entry or any other place as determined by the Executive Officer | 42775 | 20 |
| **Economic Development, Department of/ Ekonomiese Ontwikkeling, Departement van** | | | |
| 1327 | Competition Act No. 89 of 1998: Competition Commission of South Africa: October 2019 | 42775 | 21 |
| **Environmental Affairs, Department of/ Omgewingsake, Departement van** | | | |
| 1328 | National Environmental Management: Biodiversity Act (10/2004): Draft Biodiversity Management Plan for the African Penguin | 42775 | 22 |
| 1329 | National Environmental Management: Biodiversity Act (10/2004): Draft Norms and Standards relating to the management of Seabirds in Captivity | 42775 | 23 |
| 1330 | National Environmental Management: Protected Areas Act (57/2003): Declaration of an area specified in the notice as part of Addo Elephant National Park | 42775 | 24 |
| **Home Affairs, Department of/ Binnelandse Sake, Departement van** | | | |
| 1331 | Births and Deaths Registration Act (51/1992): Alteration of Surnames | 42775 | 28 |
| 1332 | The Births and Deaths Registration Act (51/1992): Alteration of Forenames | 42775 | 44 |
| **Labour, Department of/ Arbeid, Departement van** | | | |
| 1333 | Labour Relations Act, 1995: Notice that the National Union of Food Beverage Wine Spirits and Allied Workers on behalf of members (the applicants) employed by Vector Logistics (Pty) Limited has applied to the CCMA for determination in terms of the Act | 42775 | 58 |
| **Rural Development and Land Reform, Department of/ Landelike Ontwikkeling en Grondhervorming, Departement van** | | | |
| 1334 | Restitution of Land Rights Act (22/1994) as amended: Portion 1 of Farm No. 350, Mpofu/Stockenstrom under Rayumond Mhlaba Local Municipality, Amathole District Municipality | 42775 | 60 |
| 1335 | Restitution of Land Rights Act (22/1994) as amended: Unregistered and unsurveyed property known as Holela Location No. 7, Qora 'A' Centane District | 42775 | 61 |
| 1336 | Restitution of Land Rights Act (22/1994) as amended: Farm No. 647, situated in Stockenstrom/Mpofu, Raymond Mhlaba Local Municipality, Amathole District Municipality in the Eastern Cape Province | 42775 | 62 |
| **Trade and Industry, Department of/ Handel en Nywerheid, Departement van** | | | |
| 1337 | Co-Operatives Act, 2005 (as amended): Co-Operatives that have been removed from the Register | 42775 | 63 |
| 1338 | Co-operatives Act, 2005 (as amended): Co-operatives that have been removed from the Register | 42775 | 64 |
| 1339 | Companies Act (71/2008): Notice of introduction of New electronic filing channel by way of the World Wide Web for Company and Close Corporation forms | 42775 | 65 |
| 1340 | Co-Operatives Act, 2005 (as amended): Co-operatives to be struck off the register | 42775 | 66 |
| 1341 | Co-Operatives Act. 2005 (as amended): Co-Operatives to be struck off the Register | 42775 | 67 |
| | **GENERAL NOTICES • ALGEMENE KENNISGEWINGS** | | |
| **Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van** | | | |
| 553 | National Forests Act (84/1998) as amended: Notice of declaration of particular groups of trees "Champion Trees" under the Act | 42775 | 68 |
| **Economic Development Department/ Ekonomiese Ontwikkeling Departement** | | | |
| 554 | Competition Act (89/1998): Notification of decision to approve merger: 13 large mergers and 01 small merger | 42775 | 70 |

**Economic Development, Department of/ Ekonomiese Ontwikkeling, Departement van**

555 Northern Cape Liquor Act (2/2008): Regulations regarding the Chief Executive Officer ..... 42775 71

556 Northern Cape Liquor Act, 2008 (2/2008): Regulations regarding the Chief Executive Officer ..... 42775 79

**Rural Development and Land Reform, Department of/ Landelike Ontwikkeling en Grondhervorming, Departement van**

557 The Restitution of Land Rights Act (22/1994): Portion 0 (remaining extent) of the Farm St Lucia Lands No. 13702; and Portion of the Farm Umfolozi Swamps No. 17457 ..... 42775 86

558 Restitution of Land Rights Act (22/1994): Portion 0 of Erf 83, previously known as Lot 16 and Portion 0 of Erf 84, previously known as Lot 17, Block 5 Umzimklhulu ..... 42775 87

559 Restitution of Land Rights Act (22/1994): Claimant: Chief Dingiswayo Sithole on behalf of the Thembu/Mkhuzane Community: Various properties ..... 42775 89

**Trade and Industry, Department of/ Handel en Nywerheid, Departement van**

560 International Trade Administration Commission of South Africa: Guidelines and conditions: Agricultural Safeguard Measure ..... 42775 94

561 International Trade Administration Commission: Customs Tariff Applications: List 07/2019 ..... 42775 101

**Water and Sanitation, Department of/ Water en Sanitasie, Departement van**

562 National Water Act (36/1998): Determination of Water Resource Classes and Resource Quality Objectives for Mokolo, Matlabas, Crocodile (West) and Marico Catchments ..... 42775 103

# *Closing times for* **ORDINARY WEEKLY** *GOVERNMENT GAZETTE* 2019

*The closing time is **15:00** sharp on the following days:*

- **27 December 2018,** Thursday for the issue of Friday **04 January 2019**
- **04 January,** Friday for the issue of Friday **11 January 2019**
- **11 January,** Friday for the issue of Friday **18 January 2019**
- **18 January,** Friday for the issue of Friday **25 January 2019**
- **25 January,** Friday for the issue of Friday **01 February 2019**
- **01 February,** Friday for the issue of Friday **08 February 2019**
- **08 February,** Friday for the issue of Friday **15 February 2019**
- **15 February,** Friday for the issue of Friday **22 February 2019**
- **22 February,** Friday for the issue of Friday **01 March 2019**
- **01 March,** Friday for the issue of Friday **08 March 2019**
- **08 March,** Friday for the issue of Friday **15 March 2019**
- **14 March,** Thursday for the issue of Friday **22 March 2019**
- **22 March,** Friday for the issue of Friday **29 March 2019**
- **29 March,** Friday for the issue of Friday **05 April 2019**
- **05 April,** Friday for the issue of Friday **12 April 2019**
- **11 April,** Thursday for the issue of Thursday **18 April 2019**
- **17 April,** Wednesday for the issue of Friday **26 April 2019**
- **25 April,** Thursday for the issue of Friday **03 May 2019**
- **03 May,** Friday for the issue of Friday **10 May 2019**
- **10 May,** Friday for the issue of Friday **17 May 2019**
- **17 May,** Friday for the issue of Friday **24 May 2019**
- **24 May,** Friday for the issue of Friday **31 May 2019**
- **31 May,** Friday for the issue of Friday **07 June 2019**
- **07 June,** Friday for the issue of Friday **14 June 2019**
- **13 June,** Thursday for the issue of Friday **21 June 2019**
- **21 June,** Friday for the issue of Friday **28 June 2019**
- **28 June,** Friday for the issue of Friday **05 July 2019**
- **05 July,** Friday for the issue of Friday **12 July 2019**
- **12 July,** Friday for the issue of Friday **19 July 2019**
- **19 July,** Friday for the issue of Friday **26 July 2019**
- **26 July,** Friday for the issue of Friday **02 August 2019**
- **01 August,** Thursday for the issue of Thursday **08 August 2019**
- **08 August,** Thursday for the issue of Friday **16 August 2019**
- **16 August,** Friday for the issue of Friday **23 August 2019**
- **23 August,** Friday for the issue of Friday **30 August 2019**
- **30 August,** Friday for the issue of Friday **06 September 2019**
- **06 September,** Friday for the issue of Friday **13 September 2019**
- **13 September,** Friday for the issue of Friday **20 September 2019**
- **19 September,** Thursday for the issue of Friday **27 September 2019**
- **27 September,** Friday for the issue of Friday **04 October 2019**
- **04 October,** Friday for the issue of Friday **11 October 2019**
- **11 October,** Friday for the issue of Friday **18 October 2019**
- **18 October,** Friday for the issue of Friday **25 October 2019**
- **25 October,** Friday for the issue of Friday **01 November 2019**
- **01 November,** Friday for the issue of Friday **08 November 2019**
- **08 November,** Friday for the issue of Friday **15 November 2019**
- **15 November,** Friday for the issue of Friday **22 November 2019**
- **22 November,** Friday for the issue of Friday **29 November 2019**
- **29 November,** Friday for the issue of Friday **06 December 2019**
- **06 December,** Friday for the issue of Friday **13 December 2019**
- **12 December,** Thursday for the issue of Friday **20 December 2019**
- **18 December,** Wednesday for the issue of Friday **27 December 2019**

# LIST OF TARIFF RATES

## FOR PUBLICATION OF NOTICES

**COMMENCEMENT: 1 APRIL 2018**

### NATIONAL AND PROVINCIAL

Notice sizes for National, Provincial & Tender gazettes 1/4, 2/4, 3/4, 4/4 per page. Notices submitted will be charged at R1008.80 per full page, pro-rated based on the above categories.

| Pricing for National, Provincial - Variable Priced Notices | | |
|---|---|---|
| **Notice Type** | **Page Space** | **New Price (R)** |
| Ordinary National, Provincial | 1/4 - Quarter Page | 252.20 |
| Ordinary National, Provincial | 2/4 - Half Page | 504.40 |
| Ordinary National, Provincial | 3/4 - Three Quarter Page | 756.60 |
| Ordinary National, Provincial | 4/4 - Full Page | 1008.80 |

### EXTRA-ORDINARY

All Extra-ordinary National and Provincial gazette notices are non-standard notices and attract a variable price based on the number of pages submitted.

The pricing structure for National and Provincial notices which are submitted as **Extra ordinary submissions** will be charged at R**3026.32** per page.

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

The **Government Printing Works** (**GPW**) has established rules for submitting notices in line with its electronic notice processing system, which requires the use of electronic *Adobe* Forms. Please ensure that you adhere to these guidelines when completing and submitting your notice submission.

### Closing Times for Acceptance of Notices

1. The *Government Gazette* and *Government Tender Bulletin* are weekly publications that are published on Fridays and the closing time for the acceptance of notices is strictly applied according to the scheduled time for each gazette.

2. Please refer to the Submission Notice Deadline schedule in the table below. This schedule is also published online on the Government Printing works website www.gpwonline.co.za

   All re-submissions will be subject to the standard cut-off times.
   **All notices received after the closing time will be rejected**.

| Government Gazette Type | Publication Frequency | Publication Date | Submission Deadline | Cancellations Deadline |
|---|---|---|---|---|
| National Gazette | Weekly | Friday | Friday 15h00 for next Friday | Tuesday, 15h00 - 3 working days prior to publication |
| Regulation Gazette | Weekly | Friday | Friday 15h00 for next Friday | Tuesday, 15h00 - 3 working days prior to publication |
| Petrol Price Gazette | Monthly | Tuesday before 1st Wednesday of the month | One day before publication | 1 working day prior to publication |
| Road Carrier Permits | Weekly | Friday | Thursday 15h00 for next Friday | 3 working days prior to publication |
| Unclaimed Monies (Justice, Labour or Lawyers) | January / September 2 per year | Last Friday | One week before publication | 3 working days prior to publication |
| Parliament (Acts, White Paper, Green Paper) | As required | Any day of the week | None | 3 working days prior to publication |
| Manuals | Bi- Monthly | 2nd and last Thursday of the month | One week before publication | 3 working days prior to publication |
| State of Budget (National Treasury) | Monthly | 30th or last Friday of the month | One week before publication | 3 working days prior to publication |
| *Extraordinary Gazettes* | As required | Any day of the week | *Before 10h00 on publication date* | *Before 10h00 on publication date* |
| Legal Gazettes A, B and C | Weekly | Friday | One week before publication | Tuesday, 15h00 - 3 working days prior to publication |
| Tender Bulletin | Weekly | Friday | Friday 15h00 for next Friday | Tuesday, 15h00 - 3 working days prior to publication |
| Gauteng | Weekly | Wednesday | Two weeks before publication | 3 days **after** submission deadline |
| Eastern Cape | Weekly | Monday | One week before publication | 3 working days prior to publication |
| Northern Cape | Weekly | Monday | One week before publication | 3 working days prior to publication |
| North West | Weekly | Tuesday | One week before publication | 3 working days prior to publication |
| KwaZulu-Natal | Weekly | Thursday | One week before publication | 3 working days prior to publication |
| Limpopo | Weekly | Friday | One week before publication | 3 working days prior to publication |
| Mpumalanga | Weekly | Friday | One week before publication | 3 working days prior to publication |

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

| Government Gazette Type | Publication Frequency | Publication Date | Submission Deadline | Cancellations Deadline |
|---|---|---|---|---|
| Gauteng Liquor License Gazette | Monthly | Wednesday before the First Friday of the month | Two weeks before publication | 3 working days **after** submission deadline |
| Northern Cape Liquor License Gazette | Monthly | First Friday of the month | Two weeks before publication | 3 working days **after** submission deadline |
| National Liquor License Gazette | Monthly | First Friday of the month | Two weeks before publication | 3 working days **after** submission deadline |
| Mpumalanga Liquor License Gazette | Bi-Monthly | Second & Fourth Friday | One week before publication | 3 working days prior to publication |

### Extraordinary Gazettes

3. *Extraordinary Gazettes* can have only one publication date. If multiple publications of an *Extraordinary Gazette* are required, a separate Z95/Z95Prov *Adobe* Forms for each publication date must be submitted.

### Notice Submission Process

4. Download the latest *Adobe* form, for the relevant notice to be placed, from the **Government Printing Works** website www.gpwonline.co.za.

5. The *Adobe* form needs to be completed electronically using *Adobe Acrobat* / *Acrobat Reader*. Only electronically completed *Adobe* forms will be accepted. No printed, handwritten and/or scanned *Adobe* forms will be accepted.

6. The completed electronic *Adobe* form has to be submitted via email to submit.egazette@gpw.gov.za. The form needs to be submitted in its original electronic *Adobe* format to enable the system to extract the completed information from the form for placement in the publication.

7. Every notice submitted **must** be accompanied by an official **GPW** quotation. This must be obtained from the *eGazette* Contact Centre.

8. Each notice submission should be sent as a single email. The email **must** contain **all documentation relating to a particular notice submission**.

   8.1. Each of the following documents must be attached to the email as a separate attachment:

   8.1.1. An electronically completed *Adobe* form, specific to the type of notice that is to be placed.

   8.1.1.1. For National *Government Gazette* or *Provincial Gazette* notices, the notices must be accompanied by an electronic Z95 or Z95Prov *Adobe* form

   8.1.1.2. The notice content (body copy) **MUST** be a separate attachment.

   8.1.2. A copy of the official **Government Printing Works** quotation you received for your notice. *(Please see Quotation section below for further details)*

   8.1.3. A valid and legible Proof of Payment / Purchase Order: **Government Printing Works** account customer must include a copy of their Purchase Order**. Non-Government Printing Works** account customer needs to submit the proof of payment for the notice

   8.1.4. Where separate notice content is applicable (Z95, Z95 Prov and TForm 3, it should **also** be attached as a separate attachment. *(Please see the Copy Section below, for the specifications)*.

   8.1.5. Any additional notice information if applicable.

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

9. The electronic *Adobe* form will be taken as the primary source for the notice information to be published. Instructions that are on the email body or covering letter that contradicts the notice form content will not be considered. The information submitted on the electronic *Adobe* form will be published as-is.

10. To avoid duplicated publication of the same notice and double billing, Please submit your notice **ONLY ONCE.**

11. Notices brought to **GPW** by "walk-in" customers on electronic media can only be submitted in *Adobe* electronic form format. All "walk-in" customers with notices that are not on electronic *Adobe* forms will be routed to the Contact Centre where they will be assisted to complete the forms in the required format.

12. Should a customer submit a bulk submission of hard copy notices delivered by a messenger on behalf of any organisation e.g. newspaper publisher, the messenger will be referred back to the sender as the submission does not adhere to the submission rules.

## QUOTATIONS

13. Quotations are valid until the next tariff change.

    13.1. ***Take note:*** **GPW**'s annual tariff increase takes place on ***1 April*** therefore any quotations issued, accepted and submitted for publication up to ***31 March*** will keep the old tariff. For notices to be published from 1 April, a quotation must be obtained from **GPW** with the new tariffs. Where a tariff increase is implemented during the year, **GPW** endeavours to provide customers with 30 days' notice of such changes.

14. Each quotation has a unique number.

15. Form Content notices must be emailed to the *eGazette* Contact Centre for a quotation.

    15.1. The *Adobe* form supplied is uploaded by the Contact Centre Agent and the system automatically calculates the cost of your notice based on the layout/format of the content supplied.

    15.2. It is critical that these *Adobe* Forms are completed correctly and adhere to the guidelines as stipulated by **GPW**.

16. **APPLICABLE ONLY TO GPW ACCOUNT HOLDERS**:

    16.1. **GPW** Account Customers must provide a valid **GPW** account number to obtain a quotation.

    16.2. Accounts for **GPW** account customers **must** be active with sufficient credit to transact with **GPW** to submit notices.

        16.2.1. If you are unsure about or need to resolve the status of your account, please contact the **GPW** Finance Department prior to submitting your notices. (If the account status is not resolved prior to submission of your notice, the notice will be failed during the process).

17. **APPLICABLE ONLY TO CASH CUSTOMERS:**

    17.1. Cash customers doing **bulk payments** must use a **single email address** in order to use the **same proof of payment** for submitting multiple notices.

18. The responsibility lies with you, the customer, to ensure that the payment made for your notice(s) to be published is sufficient to cover the cost of the notice(s).

19. Each quotation will be associated with one proof of payment / purchase order / cash receipt.

    19.1. This means that **the quotation number can only be used once to make a payment.**

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

### Copy (Separate Notice Content Document)

20. Where the copy is part of a separate attachment document for Z95, Z95Prov and TForm03

    20.1. Copy of notices must be supplied in a separate document and may not constitute part of any covering letter, purchase order, proof of payment or other attached documents.

    The content document should contain only one notice. (You may include the different translations of the same notice in the same document).

    20.2. The notice should be set on an A4 page, with margins and fonts set as follows:

    Page size = A4 Portrait with page margins: Top = 40mm, LH/RH = 16mm, Bottom = 40mm; Use font size: Arial or Helvetica 10pt with 11pt line spacing;

    Page size = A4 Landscape with page margins: Top = 16mm, LH/RH = 40mm, Bottom = 16mm; Use font size: Arial or Helvetica 10pt with 11pt line spacing;

### Cancellations

21. Cancellation of notice submissions are accepted by **GPW** according to the deadlines stated in the table above in point 2. Non-compliance to these deadlines will result in your request being failed. Please pay special attention to the different deadlines for each gazette. Please note that any notices cancelled after the cancellation deadline will be published and charged at full cost.

22. Requests for cancellation must be sent by the original sender of the notice and must accompanied by the relevant notice reference number (N-) in the email body.

### Amendments to notices

23. With effect from 01 October 2015, **GPW** will not longer accept amendments to notices. The cancellation process will need to be followed according to the deadline and a new notice submitted thereafter for the next available publication date.

### Rejections

24. All notices not meeting the submission rules will be rejected to the customer to be corrected and resubmitted. Assistance will be available through the Contact Centre should help be required when completing the forms. (012-748 6200 or email info.egazette@gpw.gov.za). Reasons for rejections include the following:

    24.1. Incorrectly completed forms and notices submitted in the wrong format, will be rejected.

    24.2. Any notice submissions not on the correct *Adobe* electronic form, will be rejected.

    24.3. Any notice submissions not accompanied by the proof of payment / purchase order will be rejected and the notice will not be processed.

    24.4. Any submissions or re-submissions that miss the submission cut-off times will be rejected to the customer. The Notice needs to be re-submitted with a new publication date.

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

### Approval of notices

25. Any notices other than legal notices are subject to the approval of the Government Printer, who may refuse acceptance or further publication of any notice.

26. No amendments will be accepted in respect to separate notice content that was sent with a Z95 or Z95Prov notice submissions. The copy of notice in layout format (previously known as proof-out) is only provided where requested, for Advertiser to see the notice in final Gazette layout. Should they find that the information submitted was incorrect, they should request for a notice cancellation and resubmit the corrected notice, subject to standard submission deadlines. The cancellation is also subject to the stages in the publishing process, i.e. If cancellation is received when production (printing process) has commenced, then the notice cannot be cancelled.

### Government Printer Indemnified Against Liability

27. The Government Printer will assume no liability in respect of—

    27.1. any delay in the publication of a notice or publication of such notice on any date other than that stipulated by the advertiser;

    27.2. erroneous classification of a notice, or the placement of such notice in any section or under any heading other than the section or heading stipulated by the advertiser;

    27.3. any editing, revision, omission, typographical errors or errors resulting from faint or indistinct copy.

### Liability of advertiser

28. Advertisers will be held liable for any compensation and costs arising from any action which may be instituted against the Government Printer in consequence of the publication of any notice.

### Customer inquiries

Many of our customers request immediate feedback/confirmation of notice placement in the gazette from our Contact Centre once they have submitted their notice – While **GPW** deems it one of their highest priorities and responsibilities to provide customers with this requested feedback and the best service at all times, we are only able to do so once we have started processing your notice submission.
**GPW** has a 2-working day turnaround time for processing notices received according to the business rules and deadline submissions.
Please keep this in mind when making inquiries about your notice submission at the Contact Centre.

29. Requests for information, quotations and inquiries must be sent to the Contact Centre ONLY.

30. Requests for Quotations (RFQs) should be received by the Contact Centre at least **2 working days** before the submission deadline for that specific publication.

## GOVERNMENT PRINTING WORKS - BUSINESS RULES

### Payment of cost

31. The Request for Quotation for placement of the notice should be sent to the Gazette Contact Centre as indicated above, prior to submission of notice for advertising.

32. Payment should then be made, or Purchase Order prepared based on the received quotation, prior to the submission of the notice for advertising as these documents i.e. proof of payment or Purchase order will be required as part of the notice submission, as indicated earlier.

33. Every proof of payment must have a valid **GPW** quotation number as a reference on the proof of payment document.

34. Where there is any doubt about the cost of publication of a notice, and in the case of copy, an enquiry, accompanied by the relevant copy, should be addressed to the Gazette Contact Centre, **Government Printing Works**, Private Bag X85, Pretoria, 0001 email: info.egazette@gpw.gov.za before publication.

35. Overpayment resulting from miscalculation on the part of the advertiser of the cost of publication of a notice will not be refunded, unless the advertiser furnishes adequate reasons why such miscalculation occurred. In the event of underpayments, the difference will be recovered from the advertiser, and future notice(s) will not be published until such time as the full cost of such publication has been duly paid in cash or electronic funds transfer into the **Government Printing Works** banking account.

36. In the event of a notice being cancelled, a refund will be made only if no cost regarding the placing of the notice has been incurred by the **Government Printing Works**.

37. The **Government Printing Works** reserves the right to levy an additional charge in cases where notices, the cost of which has been calculated in accordance with the List of Fixed Tariff Rates, are subsequently found to be excessively lengthy or to contain overmuch or complicated tabulation.

### Proof of publication

38. Copies of any of the *Government Gazette* or *Provincial Gazette* can be downloaded from the **Government Printing Works** website www.gpwonline.co.za free of charge, should a proof of publication be required.

39. Printed copies may be ordered from the Publications department at the ruling price. The **Government Printing Works** will assume no liability for any failure to post or for any delay in despatching of such *Government Gazette*(s)

## GOVERNMENT PRINTING WORKS CONTACT INFORMATION

| **Physical Address:** | **Postal Address:** | **GPW Banking Details:** |
|---|---|---|
| **Government Printing Works** | Private Bag X85 | **Bank:** ABSA Bosman Street |
| 149 Bosman Street | Pretoria | **Account No.:** 405 7114 016 |
| Pretoria | 0001 | **Branch Code:** 632-005 |

**For Gazette and Notice submissions:** Gazette Submissions: **E-mail:** submit.egazette@gpw.gov.za

**For queries and quotations, contact:** Gazette Contact Centre: **E-mail:** info.egazette@gpw.gov.za

**Tel:** 012-748 6200

**Contact person for subscribers:** Mrs M. Toka: **E-mail:** subscriptions@gpw.gov.za

**Tel:** 012-748-6066 / 6060 / 6058

**Fax:** 012-323-9574

# GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

**DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**

**NO. 1323** **18 OCTOBER 2019**

AGRICULTURAL PRODUCT STANDARDS ACT, 1990 (ACT No. 119 OF 1990)

## REGULATIONS RELATING TO THE CLASSIFICATION, PACKING AND MARKING OF FRUIT JUICE AND DRINK INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA: REVISION OF THE REGULATIONS

### INVITATION FOR PUBLIC COMMENTS

I, Angela Thokozile Didiza, Minister of Agriculture, Land Reform and Rural Development, acting under section 15 of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990), hereby make known that I intend to publish revised regulations relating to the classification, packing and marking of fruit juice and drink products.

All interested parties are invited to submit comments and any representations concerning the revised regulations in writing within **30 days** from the date of publication of this Notice to the following address:

Executive Officer: Agricultural Product Standards
Department of Agriculture, Forestry and Fisheries
Private Bag X343, Pretoria, 0001
30 Hamilton Street, Harvest House Building, Arcadia, Room 159
Tel. no. 012 319 6027; Fax no. 012 319 6265
Email: **NielE@daff.gov.za**

The proposed new draft regulations are available on the Department's website, www.daff.gov.za, go to "Branches" → "Agricultural Production, Health & Food Safety" → "Food Safety & Quality Assurance" → "Draft legislation for comments", or can be forwarded via electronic mail or posted to any person upon request.

**Ms. Angela Thokozile Didiza**

**Minister of Agriculture, Land Reform and Rural Development**

**DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**

**NO. 1324** **18 OCTOBER 2019**

AGRICULTURAL PRODUCT STANDARDS ACT NO. 119 OF 1990

## STANDARDS AND REQUIREMENTS REGARDING CONTROL OF THE EXPORT OF POTATOES: AMENDMENT

I, Billy Malose Makhafola, appointed as Executive Officer in terms of section 2(1) of the Agricultural Product Standards Act No. 119 of 1990, hereby give notice under section 4(3) (c) of the said Act, that –

(a) the Standards and Requirements Regarding Control of the Export of Potatoes as stipulated in Government Notice No. R. 1983 of 23 August 1991 and promulgated by Government Notice No.481 of 20 May 1994 and amended by Government Notices No. 1080 of 18 August 2006 and No. 850 of 14 October 2011 are hereby further amended; and

(b) the standards and requirements mentioned in paragraph (a) –

(i) shall be available for inspection at the Office of the Executive Officer: Agricultural Product Standards, Harvest House, 30 Hamilton Street, Arcadia, Pretoria;

(ii) may be obtained from the Executive Officer: Agricultural Product Standards, Department of Agriculture, Forestry and Fisheries, Private Bag X 343, Pretoria, 0001, Tel. (012) 319 6171 or Fax (012) 319 6265 or Email: VictorMa@daff.gov.za on payment of the prescribed fees or from the website http://www.daff.gov.za; and

(iii) shall come into operation seven days (7) after the publication of this notice.

**B.M MAKHAFOLA**

**Executive Officer: Agricultural Product Standards**

**DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**

**NO. 1325** **18 OCTOBER 2019**

AGRICULTURAL PRODUCT STANDARDS ACT NO.119 OF 1990

**STANDARDS AND REQUIREMENTS REGARDING CONTROL OF THE EXPORT OF FRESH VEGETABLES: AMENDMENT**

I, Billy Malose Makhafola, appointed as Executive Officer in terms of section 2(1) of the Agricultural Product Standards Act No. 119 of 1990, hereby give notice under section 4(3) (c) of the said Act, that –

(a) the Standards and Requirements Regarding Control of the Export of Fresh Vegetables as stipulated in Government Notice No. R. 1983 of 23 August 1991 and promulgated by Government Notice No.3351 of 18 December 1992 and amended by Government Notices No. 977 of 1 July 2005, No. 1067 of 5 September 2008 and No.1024 of 12 November 2010 are hereby further amended; and

(b) the standards and requirements mentioned in paragraph (a) –

(i) shall be available for inspection at the Office of the Executive Officer: Agricultural Product Standards, Harvest House, 30 Hamilton Street, Arcadia, Pretoria;

(ii) may be obtained from the Executive Officer: Agricultural Product Standards, Department of Agriculture, Forestry and Fisheries, Private Bag X 343, Pretoria, 0001, Tel. (012) 319 6365 or Fax (012) 319 6055 or Email: WinnieM@daff.gov.za on payment of the prescribed fees or from the website http://www.daff.gov.za; and

(iii) shall come into operation seven days (7) after the publication of this notice.

**B.M MAKHAFOLA**
**Executive Officer: Agricultural Product Standards**

## DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

**NO. 1326** **18 OCTOBER 2019**

AGRICULTURAL PRODUCT STANDARDS ACT, 1990 (ACT No. 119 OF 1990)

### CORRECTION NOTICE: PROHIBITION REGARDING THE REMOVAL OF IMPORTED REGULATED AGRICULTURAL PRODUCTS INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA FROM THE SPECIFIED PORTS OF ENTRY OR ANY OTHER PLACE AS DETERMINED BY THE EXECUTIVE OFFICER

Notice No. 1269 of 04 October 2019, published in Government Gazette No. 42739, is hereby rectified on the first page by the addition of the following item:

6. Notice No. 570 of 27 May 2016 is hereby repealed.

**DEPARTMENT OF ECONOMIC DEVELOPMENT**

**NO. 1327** **18 OCTOBER 2019**

**Competition Commission of South Africa**

**October 2019**

The Competition Amendment Bill was passed by the National Assembly in 2018 and signed by the President on 13 February 2019. Most amendments to the Competition Act No. 89 of 1998 (as amended) ("the Act") came into operation on 12 July 2019 in terms of Government Notice No. 987 12 July 2019 (Government Gazette No. 42578). Sections 8(4) and 9(1)(a)(ii) were not operationalised as both are new abuse of dominance provisions which require regulations to be published by the Minister outlining the factors and benchmarks that should be considered in determining a contravention.

These amendments incorporate a buyer power provision under the abuse of dominance provisions of section 8 and a new price discrimination provision under section 9. In terms of section 8(4)(a), it is prohibited for a dominant firm as buyer in designated sectors to require from or impose unfair prices or trading conditions on small and medium businesses or firms controlled or owned by historically disadvantaged persons. In terms of section 9(1)(a)(ii), an action by a dominant firm, as the seller of goods or services, is prohibited price discrimination, if it is likely to have the effect of impeding the ability of small and medium businesses or firms controlled or owned by historically disadvantaged persons, to participate effectively.

Draft regulations in respect of these two provisions have now been gazetted by the Minister. In terms of those regulations and section 79(1), the Competition Commission ("Commission") may prepare guidelines to indicate its policy approach on any matter falling within its jurisdiction in terms of the Act. Draft Enforcement Guidelines for these two provisions have been prepared by the Commission and are available on its website in terms of section 79(3).

The draft guidelines present the general principles that the Commission will follow in assessing whether alleged conduct contravenes section 8(4) and section 9(1)(a)(ii) of the Act. These provide guidance through outlining how the Commission intends to interpret the new buyer power and price discrimination provisions for enforcement purposes, and further how it will seek to screen and assess complaints laid in terms of the new provision.

The Commission invites interested parties to submit written representations on the draft guidelines within 28 days of publication of this notice. Written submissions can be sent to ccsa@compcom.co.za. After reviewing all submissions received, the Commission will publish final enforcement guidelines.

**DEPARTMENT OF ENVIRONMENTAL AFFAIRS**

**NO. 1328** **18 OCTOBER 2019**

## NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004)

## DRAFT BIODIVERSITY MANAGEMENT PLAN FOR THE AFRICAN PENGUIN

I, Barbara Dallas Creecy, Minister of Environment, Forestry and Fisheries, hereby invite members of the public to comment on the draft Biodiversity Management Plan (BMP) for the African Penguin in terms of section 99, read with section 100, of the National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004). Copies of the draft BMP can be downloaded from the website of the national Department of Environment, Forestry and Fisheries: www.environment.gov.za or can be obtained electronically upon request by email to marinespecies@environment.gov.za.

The BMP's vision is to halt the decline of the African Penguin in South Africa within its 5-year timeframe and therefore sets out a draft plan for doing so.

Members of the public are invited to submit written representations on, or objections to, the draft BMP within 30 (thirty) days after the publication of this notice in the *Gazette.* Written representations or objections received after this time may not be considered. All representations and comments must be submitted in writing to the Deputy Director–General of the national Department of Environment, Forestry and Fisheries: Branch Oceans and Coasts:

**By hand:** The Deputy Director-General
**Attention:** Ms M M Makoala
Department of Environment,
Forestry and Fisheries
Branch: Oceans & Coasts
1 East Pier Building, East Pier Road
V&A Waterfront, Cape Town
**By e-mail:** marinespecies@environment.gov.za

**By post to:** The Deputy Director-General
**Attention:** Ms M M Makoala
Department of Environment, Forestry and Fisheries
Branch: Oceans & Coasts
P.O. Box / Private Bag X4390
Cape Town, 8002

**BARBARA DALLAS CREECY**
**MINISTER OF ENVIRONMENT, FORESTRY AND FISHERIES**

**DEPARTMENT OF ENVIRONMENTAL AFFAIRS**

**NO. 1329** **18 OCTOBER 2019**

## NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004)

## DRAFT NORMS AND STANDARDS RELATING TO THE MANAGEMENT OF SEABIRDS IN CAPTIVITY

I, Barbara Dallas Creecy, Minister of Environment, Forestry and Fisheries, hereby invite members of the public to comment on the draft Norms and Standards relating to the management of Seabirds in Captivity in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). Copies of the draft Norms and Standards can be downloaded from the Department's website at www.environment.gov.za or can be obtained electronically upon request by email to marinespecies@environment.gov.za.

The aim of the draft Norms and Standards is to ensure that seabirds receive the best quality of care through all the stages of rehabilitation and in permanent captivity. They also aim to set indicators that all facilities need to adhere to in order to safeguard the care of ill, injured or orphaned seabirds to meet acceptable standards that will aid in their conservation.

Members of the public are invited to submit written representations on, or objections to, the draft Norms and Standards within 30 (thirty) days after the publication of this notice in the *Gazette.* Written representations or objections received after this time may not be considered. All representations and comments must be submitted in writing to the Deputy Director–General of the Department of Environment, Forestry and Fisheries, Branch: Oceans and Coasts:

**By hand:** The Deputy Director-General
**Attention:** Ms M M Makoala
Department of Environment,
Forestry and Fisheries
Branch: Oceans & Coasts
1 East Pier Building, East Pier Road
V&A Waterfront, Cape Town
**By e-mail:** marinespecies@environment.gov.za

**By post to:** The Deputy Director-General
**Attention:** Ms M M Makoala
Department of Environment, Forestry and Fisheries
Branch: Oceans & Coasts
P.O. Box / Private Bag X4390
Cape Town, 8002

**BARBARA DALLAS CREECY**
**MINISTER OF ENVIRONMENT, FORESTRY AND FISHERIES**

**DEPARTMENT OF ENVIRONMENTAL AFFAIRS**

**NO. 1330** **18 OCTOBER 2019**

## NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003)

## DECLARATION OF AN AREA SPECIFIED IN THE NOTICE AS PART OF ADDO ELEPHANT NATIONAL PARK

I, Barbara Dallas Creecy, Minister of Environment, Forestry and Fisheries, hereby, under section 20(1) (a) (i) of the National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003), declare the areas as set out in the Schedule hereto as part of the Addo Elephant National Park.

**BARBARA DALLAS CREECY**
**MINISTER OF ENVIRONMENT, FORESTRY AND FISHERIES**

## SCHEDULE

### ALEXANDRIA REGISTRATION DIVISION, EASTERN CAPE

1. Portion 1 of the Farm Nieuw Jaars Kop No. 300, Division of Alexandria, Eastern Cape Province, in extent measuring 306.4679 hectares, held by Deed of Transfer No. T17922/2013;

### SOMERSET-EAST REGISTRATION DIVISION, EASTERN CAPE

2. Portion 1 (Lake Mentz) of the Farm Voistruis Kraal No. 283, Division of Somerset-East, Eastern Cape Province, in extent measuring 28.2656 hectares, held by Deed of Transfer No. T78895/2002;

3. Portion 1 (Lake Mentz) of the Farm Vaal Krantz No 243, Division of Somerset-East, Eastern Cape Province, in extent measuring 62.9551 hectares, held by Deed of Transfer No. T78895/2002;

### JANSENVILLE REGISTRATION DIVISION, EASTERN CAPE

4. Portion 16 of the Farm Dwaas No. 232, Division of Jansenville, Eastern Cape Province, in extent measuring 1551.0892 hectares, held by Deed of Transfer No. T78895/2002;

5. The Remainder of portion 1 of the Farm Rietriver No. 230, Division of Jansenville, Eastern Cape Province, in extent measuring 757.1270 hectares, held by Deed of Transfer No. T78895/2002;

6. The Remainder of portion 15 of the Farm Dwaas No. 232, Division of Jansenville, Eastern Cape Province, in extent measuring 973.7025 hectares, held by Deed of Transfer No. T78895/2002;

7. The Farm Darling Outspan No. 231, Division of Jansenville, Eastern Cape Province, in extent measuring 169.1451 hectares, held by Deed of Transfer No. T78895/2002;

8. Portion 4 (Lake Mentz) (portion of portion 2) of the Farm Rietriver No. 230, Division of Jansenville, Eastern Cape Province, in extent measuring 235.2394 hectares, held by Deed of Transfer No. T78895/2002;

9. Erf 1, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1993 square meters ($m^2$)(0.1993 ha), held by Deed of Transfer No. T78895/2002;

10. Erf 25, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1097 square meters ($m^2$)(0.1097 ha), held by Deed of Transfer No. T78895/2002;

11. Erf 29, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3250 square meters ($m^2$)(0.3250 ha), held by Deed of Transfer No. T78895/2002;

12. Erf 33, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4600 square meters ($m^2$)(0.4600 ha), held by Deed of Transfer No. T78895/2002;

13. Erf 38, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 2974 square meters (m²)(0.2974 ha), held by Deed of Transfer No. T78895/2002;

14. Erf 62, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

15. Erf 64, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

16. Erf 66, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

17. Erf 69, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1983 square meters (m²)(0.1983 ha), held by Deed of Transfer No. T78895/2002;

18. Erf 113, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

19. Erf 115, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

20. Erf 131, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

21. Erf 164, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1487 square meters (m²)(0.1487 ha), held by Deed of Transfer No. T78895/2002;

22. Erf 168, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1983 square meters (m²)(0.1983 ha), held by Deed of Transfer No. T78895/2002;

23. Erf 182, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 7931 square meters (m²)(0.7931 ha), held by Deed of Transfer No. T78895/2002;

24. Erf 186, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

25. Erf 187, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 7931 square meters (m²)(0.7931 ha), held by Deed of Transfer No. T78895/2002;

26. Erf 190, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

27. Erf 192, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

28. Erf 194, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1.1896 hectares, held by Deed of Transfer No. T78895/2002;

29. Erf 215, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 7931 square meters (m²)(0.7931 ha), held by Deed of Transfer No. T78895/2002;

30. Erf 219, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 3965 square meters (m²)(0.3965 ha), held by Deed of Transfer No.T78895/2002;

31. Erf 221, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 7931 square meters (m²)(0.7931 ha), held by Deed of Transfer No. T78895/2002;

32. Erf 355, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 2402 square meters (m²)(0.2402 ha), held by Deed of Transfer No. T78895/2002;

33. Erf 364, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4491 square meters (m²)(0.4491 ha), held by Deed of Transfer No. T78895/2002;

34. Erf 370, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 6583 square meters (m²)(0.6583 ha), held by Deed of Transfer No. T78895/2002;

35. Erf 374, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 5233 square meters (m²)(0.5233 ha), held by Deed of Transfer No.T78895/2002;

36. Erf 385, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 1487 square meters (m²)(0.1487 ha), held by Deed of Transfer No. T78895/2002;

37. Erf 459, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 9913 square meters (m²)(0.9913 ha), held by Deed of Transfer No. T78895/2002;

38. Erf 462, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4957 square meters (m²)(0.4957 ha), held by Deed of Transfer No. T78895/2002;

39. Erf 463, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 9913 (0.9913 ha) square meters (m²), held by Deed of Transfer No. T78895/2002;

40. Erf 465, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4959 square meters (m²)(0.4959 ha), held by Deed of Transfer No. T78895/2002;

41. Erf 466, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4959 square meters (m²)(0.3965 ha), held by Deed of Transfer No. T78895/2002;

42. Erf 477, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 9913 square meters (m²)(0.9913 ha), held by Deed of Transfer No. T78895/2002;

43. Erf 479, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4957 square meters (m²)(0.4957 ha), held by Deed of Transfer No. T78895/2002;

44. Erf 480, Darlington, Division of Jansenville, Eastern Cape Province, in extent measuring 4959 square meters (m²)(0.4959 ha), held by Deed of Transfer No. T78895/2002.

## DEPARTMENT OF HOME AFFAIRS

**NO. 1331** **18 OCTOBER 2019**

**ALTERATION OF SURNAMES IN TERMS OF SECTION 26 OF THE BIRTHS AND DEATHS REGISTRATION ACT, 1992 (ACT NO. 51 OF 1992)**

The Director-General has authorized the following persons to assume the surnames printed in *italics*:

1. Suntuswayo Benjamin Kana - 430710 5229 087 - P O Box 55, THUTHUKANI, 2434 - *Nkala*
2. Lovius Lefa Moretsele - 870130 5667 086 - 12b De Kom Farm, Leolo Mountain, SEKHUKHUNE, 1129 - *Tau*
3. Sinazo Dokolwana - 010111 0879 083 - Congo Area 3, INANDA, 4309 - *Diko*
4. Siseko Mihle Ndindwa - 840317 5620 085 - 23 Old Kilcullen Road, Bryanston, JOHANNESBURG, 2021 - *Lande*
5. Thabang Zacharia Pailane - 900701 5304 088 - A5051 Maganggobuswa, MPUMALANGA, 0472 - *Kekana*
6. Charity Thandokazi Sidumo - 911019 0745 081 - C239 Umlazi Township , UMLAZI, 4031 - *Chemane*
7. Mzikayise Batile - 860920 6292 088 - Sipolweni Area, MOUNT AYLIFF, 5099 - *Mpakumpaku*
8. Sizwe Junior Manyike - 920409 6036 081 - 163 Inqagqa Section, TEMBISA, 1632 - *Khumalo*
9. Wiseman Maziya - 930509 5919 084 - 226 Isitlama Section, TEMBISA, 1632 - *Chauke*
10. Mthunzi Absalom Dlamini - 940727 6106 083 - Nzimane Area, BLOODRIVER, 3102 - *Vundla*
11. Celumusa S'thabiso Ngcwabe - 990423 5965 088 - Nestdale Area, ESTCOURT, 3310 - *Dlamini*
12. Kelebogile Mpudi Seleoane - 980327 0204 082 - 690 Mokgato Street, VOSLOORUS, 1475 - *Sehole*
13. Siphenathi Sindelo - 920928 6477 086 - Futye Area, ELLIOTDALE, 5070 - *Njambatwa*
14. David Lesedi Marutla - 890329 6182 089 - 62 Mabopane, MASEMOLA, 1060 - *Maefa*
15. Innosencia Leboang Vena - 840614 0302 085 - 7 Smile Avenue, Kwamandlenkosi, BEAUFORT WEST, 6970 - *Mbolekwa*
16. Ventsho Sydney Dire - 560415 5950 086 - 4473 Extension 04, Boitekong, RUSTENBURG, 0300 - *Boiyane*
17. Ntjatji Lowrence Monyebodi - 750404 6274 084 - Ga-Molete Village, BOCHUM, 0790 - *Moletla*
18. Pontsho Jeanette Maleka - 911026 0519 085 - Z9115 Lefokotsane, KANANA, 2019 - *Moholobela*
19. Gladman Wandile Aba - 610308 5574 081 - 195 Mtendwe Street, Nu7, Motherwell, PORT ELIZABETH, 5740 - *Mayekiso*
20. Isaac Daniel Moagi - 771003 6221 080 - 532006 Zone 3, SEBOKENG, 1983 - *Raboroko*
21. Nikiwe Thobekile Mkhabela - 760812 0338 085 - Private Bag X 1008, WHITERIVER, 1203 - *Mazibane*
22. Christiaan Jacobus Terblanche - 640707 5009 085 - 1260 Beach Road, HAROLDS BAY, 6530 - *Rabie*
23. Londeka Janet Zikali - 910630 1228 082 - Stoffelton Location, IMPENDLE, 3227 - *Shezi*
24. Kaylin Tanique Stevens - 000817 0127 081 - 59 Taurus Street, SUNDOWNER, 2188 - *Mackay*
25. Kgotlelelo Moraswi - 940620 1044 088 - Makurung Village, MPHAHLELE, 0736 - *Maribe*
26. Bhekinkosi Mtshali - 961129 5955 087 - Mbulwane Area, GREYTOWN, 3250 - *Gasa*
27. Samkele Ntokozo Mkhize - 930225 5477 086 - Maqadini Area, MAPHUMULO, 4470 - *Gumede*
28. Ntombikayise Rose Temba - 640623 0237 086 - 132 Teanong, TEMBISA, 1632 - *Hlophe*
29. Buhle Gift Ndebele - 000821 5146 088 - Private Bag X 99, ULUNDI, 3838 - *Mazibuko*
30. Ntombizana Mirriam Fatyi - 540826 0638 085 - 6607 Hlalani Location, GRAHAMSTOWN, 6139 - *Matroos*

31. Moris Mabekwa Mabuza - 650227 5709 086 - 2083 Siluma Street, ERMELO, 2350 - *Sibande*
32. Hope Mabuza - 980911 1152 083 - 334 Emmangweni Section, TEMBISA, 1632 - *Ndou*
33. Nokulunga Immaculate Ngcongo - 830322 0584 080 - J1295 Nqayi Road, Kwamashu, DURBAN, 4360 - *Sibiya*
34. Mthetheleli Patric Meneer - 760807 5187 081 - Aa37 Madakeni , WHITTLESEA, 5360 - *Masango*
35. Simon Tshepo Mahuma - 930511 5631 081 - 566 Buffalo Street, Extension 2, DIEPSLOOT, 2001 - *Ramaphiri*
36. Rethabile Nicolette Precious Ramokopu - 010228 0289 087 - 2021 Thejane Street, Bohlokong, BETHLEHEM, 9701 - *Mokoena*
37. Neo Ntanzi Trevor Tshesejane - 790706 5492 083 - 26 St Francis Street, JEFFREYS BAY, 6330 - *Vimbi*
38. Nosipho Mvumandaba - 010210 1383 085 - Xurana Area, LUSIKISIKI, 4870 - *Nonkosana*
39. Lungelo Nxumalo - 010303 1126 081 - Nondweni Area, NQUTU, 3135 - *Nene*
40. Patricia Tshepiso Taffa - 870615 0535 080 - 358 Block Hh, SOSHANGUVE, 0152 - *Ditlhale*
41. Kabelo Tala - 011228 0815 088 - E 326 Block U, E, RATSIEPAN, 0407 - *Madikane*
42. Kegomoditswe Botsheane - 011118 0367 083 - 40313 Dithwaneng Section, BODIBE, 2741 - *Moilwa*
43. Thabo Martin Thulare - 790925 6264 081 - House No 143, Matikiring, Regorogile, THABAZIMBI, 0387 - *Zimbili*
44. Thembelihle Khumalo - 831116 5865 083 - Cortage C, Actonville Hostel, Room 02, BENONI, 1501 - *Ndwandwe*
45. Thembuluwo Tshamano - 951021 0802 087 - Tshikunda-Tshifhahoni, PHIPHIDI, 0994 - *Takalani*
46. Arthur Geraldo Swartz - 011119 5582 080 - Sonopstraat 2507, KEIMOES, 8860 - *Coetzee*
47. Manqoba Sangweni - 010808 6166 080 - 115 Intshe Street, Thubelihle Location, KRIEL, 2310 - *Mahlangu*
48. Sive Gongxoza - 960405 5904 080 - Ju 1272 Jeffsville, SAULSVILLE, 0125 - *Ntsundwana*
49. Vuyo Obtainable Mkhize - 941205 1451 084 - Ntingwe Area, NKANDLA, 3825 - *Ngqulunga*
50. Zama Mzimela - 970907 1178 088 - 917 Mwelase Road, CHESTERVILLE, 4091 - *Dladla*
51. George Tshegofatso Matube - 921007 6014 089 - 4618 Mogodi Section, MATHIBESTAD, 0418 - *Nkgoatau*
52. Kurisani Perseverence Mkhantshwa - 011119 0992 086 - Stand No 1851, Dwarsloop, Phase II, MAFEMANUS, 1285 - *Dibakoane*
53. Bongani Sanele Shezi - 900104 6396 080 - B126 Umzomusha M25, INANDA, 4310 - *Dlamini*
54. Nompumelelo Perseverance Mthanti - 950518 0608 084 - Block C, Unit 2 Extension 2, Thokoza Mews, THOKOZA, 1426 - *Shange*
55. Stephen Gaseitsiwe Motlaleng - 990202 6026 086 - 2711 Extension 5, COLIGNY, 2725 - *Motlaletsi*
56. Lodrick Azwindini Ramphamudi - 971002 6124 086 - Zone 10, Winnie Mandela, TEMBISA, 1234 - *Rasebopela*
57. Wandile Khayelihle Cele - 990622 6069 085 - 797 Mount Royal, PHOENIX, 4068 - *Khuzwayo*
58. Sifiso Joseph Nkosi - 790307 5280 089 - House No 3818, OSIZWENI, 2952 - *Mlalazi*
59. Lesley Kennedy Pholose - 731111 5775 086 - E292 Motsong Section, THOKWANE, 0311 - *Nape*
60. Rati Lekubu - 740402 1321 085 - Ga-Motshana Village, PRAKTISEER, 1129 - *Sebe*
61. Ntombikayise Ngambu - 731106 1036 087 - 12375 Extension 10, EMBALENHLE, 2285 - *Sogoni*
62. Moraka Sydney Sebotse - 770101 8716 080 - Maphalle Village, BOLOBEDU, 0837 - *Makudubela*
63. Tj Lincoln Windvoël - 010414 5558 086 - 443 Leeuwbekkie Street, HOPETOWN, 8300 - *Casper*
64. Zakhele Likent Masimula - 800602 6338 086 - 12030 Ivory Park, TEMBISA, 1632 - *Majola*

65. Fredericks Madubela - 840714 5695 085 - No 9 Block F, Block F, LANGA, 7455 - *Mahlanza*
66. Mlamuli Zitha - 940501 5910 088 - Odushwini Area, NONGOMA, 3930 - *Zungu*
67. Kedibone Malemone - 930109 1161 086 - Stand No 12, Vezinyao, DENNILTON, 1030 - *Kotelo*
68. Nkanyiso Thibiso Shabane - 960925 6585 083 - Wyangwini Location, UMTHALUME, 4186 - *Luthuli*
69. Masango John Modipane - 841110 5872 080 - 71 Baron Street, ORKNEY, 2619 - *Maseko*
70. Oko Ntoba - 990310 1082 085 - 18 Flamink Court, Sydenham, PORT ELIZABETH, 6001 - *Mapisa*
71. Krizel Loréal Moore - 880629 0106 089 - 41 Ulysses Street, ENNERDALE, 1830 - *Still*
72. Noko Rodney Ramoroka - 850820 5641 081 - 12782 Inkhili, VOSLOORUS, 1947 - *Moja*
73. Moshibudi Maggie Mamabolo - 000309 0374 087 - 12 Temp Mateo Street, Legae La Batho, POLOKWANE, 0699 - *Makola*
74. Ephraim Matlhaba Mashapa - 880118 5461 087 - 11326 M Extension, MABOPANE, 0200 - *Kekana*
75. Dudu Zinhle Nomsa Dlamini - 800909 1332 083 - 230 Afrikaaner, VRYHEID, 3100 - *Ngwenya*
76. Piet Jabu Nkambule - 700412 6206 080 - 437 Ramkgeletsane, MDUTJANA, 0472 - *Dlamini*
77. Elhenore Beatrice Jooste - 991007 1029 087 - J 17 Nkanini, KAYAMANDI, 7600 - *Bango*
78. Mawethu Gift Landingwe - 850608 5967 089 - House No 834, Phase No 1, FREEDOM PARK, 0301 - *Mayiya*
79. Leletu Bikitshi - 000522 0928 088 - 30 Norrolkpine Crescent, Panorama Gardens, PIETERMARITZBURG, 3200 - *Mankanku*
80. Okzile Gogodla - 011107 0647 081 - Found Area, TSOMO, 5400 - *Sisusa*
81. Dimpho Nyengule - 951204 0226 081 - 397 Hostel 4, Block B, SEBOKENG, 1983 - *Moshe*
82. Selello Edwin Molai - 850104 5405 080 - 7 – 9 New Main Road, KIMBERLEY, 8300 - *Moremi*
83. Matsoma Benny Makhobela - 650205 5821 085 - Myakayaka Village, RITAVI, 0870 - *Baloyi*
84. Simbongile Alfred Nyewu - 800729 5745 084 - A 69 Kwamakhutha, AMANZIMTOTI, 4110 - *Dlamini*
85. Raymond Kadi - 910605 5607 085 - 2816 Extension 2, MOTHOTLUNG, 0250 - *Gatyeni*
86. Sipho Tshepo Mmatekola - 870629 6235 082 - L 1169 Old Coronation, WITBANK, 1039 - *Malatji*
87. Matome Koketso Mangadi - 871220 6316 087 - Malokela, PRAKTISEER, 1150 - *Ramaila*
88. Njabulo Zwane - 000104 6024 087 - House No 4, Kruger Street, UTRECHT, 2980 - *Ndlovu*
89. Zwelethu Ntuthuko Mbatha - 991217 5471 082 - P O Box 212, MTUBATUBA, 3935 - *Ngobe*
90. Mahamba Dlamini - 521004 5675 089 - 2858 Dabula Street, WATTVILLE, 1516 - *Zikalala*
91. James Baboshe Khumalo - 590716 5584 088 - P O Box 6, KWANGWANASE, 3973 - *Masinga*
92. Mafuna Zola Mahlakwana - 790808 6542 088 - P O Box 538, ROZANO, 0727 - *Mahuma*
93. Nzemene Isaac Makhwahle - 781205 6091 086 - 2395 Monyakeng, WESSELSBRON, 9680 - *Manyaniso*
94. Mabego Idah Phawa - 791113 0797 088 - 101 Vlei Street, Wrenchville, KURUMAN, 8460 - *Bosman*
95. Tswarelo Ngwenyama - 971202 6220 088 - Stand No 41, Nambi Trust, KABOKWENI, 1248 - *Twala*
96. Gadihele Patricia Tsheneu - 791030 0871 087 - House No A55, BENDEL, 8460 - *Dipitswe*
97. Jan Tsogo Kale - 800307 6198 080 - Stand No 2604, Leseding, BELA-BELA, 0480 - *Raborolo*
98. Nkosinathi Ayanda Sangweni - 990209 5950 083 - Private Bag X145, NQUTU, 3135 - *Ndebele*

99. Xolani Sibiya - 991107 5911 080 - Ngulule Area, MSINGA, 3010 - *Bhengu*

100. Matome Masia - 971121 6001 084 - P O Box 192, MOOEKETSI, 0825 - *Monyepao*

101. Nondumiso Voladliwe - 990614 1279 082 - Makholweni Area, IXOPO, 3276 - *Mbelu*

102. Nelisiwe Mbatha - 990810 1220 080 - Ward 3, Ebunganeni Location, MBAZWANA, 3974 - *Ntshangase*

103. Dipolelo Malebada - 910206 6113 080 - 5923 Solomon Plaatjie Street, Extension 7, DIEPSLOOT, 2096 - *Nkanyane*

104. Mpume Promise Ndlovu - 900125 1038 088 - Fredville, Old Main Road, PINETOWN, 3600 - *Mkhize*

105. Njabulo Sipho Tembe - 961105 6306 082 - 35 Mahlalela Road, Woodland Site Level, PIETERMARITZBURG, 3200 - *Mlambo*

106. Kgothatso Sello Phillip Moloisane - 910112 5779 089 - 73 Block X, MABOPANE, 0190 - *Mosweu*

107. Zinhle Witness Dlamini - 950720 1202 087 - T 1182 Umlazi Township, UMLAZI, 4001 - *Mkhize*

108. Power Prince Menzie Ndhlovu - 970915 6396 084 - 4 Spruit Street, HEIDELBERG, 1441 - *Mavuso*

109. Zethembe Thembani Mbuyazi - 980326 6109 089 - Mvutshini Area, MTUBATUBA, 3960 - *Zwane*

110. Ntuthuko Mphuzeni Buthelezi - 941008 5956 086 - Ekubusedi Area, NONGOMA, 3950 - *Masuku*

111. Mlungisi Nhlakanipho Msweli - 950303 5901 085 - Okhazeni Area, INGWAVUMA, 3968 - *Zikhali*

112. Siphiwe Nxumalo - 991030 0912 087 - Ndlovu Village, MTUBATUBA, 3935 - *Zungu*

113. Luyanda Zenzile - 941109 6015 086 - Rwantsana, LADY FRERE, 5410 - *Qaka*

114. Lebohang Keratiloe Pule - 010109 0429 081 - 21 B Nola Avenue, Buccleuch, SANDTON, 2090 - *Mokoena*

115. Lucky Njabulo Shandu - 690712 5720 086 - Macambini, MANDENI, 3900 - *Mntambo*

116. Kwanele Wendy Mkhize - 010504 0249 085 - Smilowbar Location, PIETERMARITZBURG, 3200 - *Zuma*

117. Kamogelo Mahlangu - 010217 0266 088 - 73 Phase 10, Block 94, ALEXANDRA, 2010 - *Masala*

118. Teboho Francis Jali - 930908 6552 086 - 1962 Motlatla Location, THABANCHU, 9780 - *Khalienyane*

119. Sheldon Kruger - 010719 5068 088 - 872 Malie Street, CLAREMONT, 0110 - *Bronkhorst*

120. Khanyisile Faith Nhlapo - 990612 1350 085 - Stand No 859, SIYABUSWA, 0472 - *Mabuza*

121. Dumisa Gantsho - 980820 5928 085 - Talimofu Area, MQANDULI, 5080 - *Hlanjwa*

122. Abner Thorome Mofokeng - 640817 5391 084 - 99 Mabuya Street, Wattville, BENONI, 1516 - *Nkadimeng*

123. Thapelo Lucas Shabangu - 991116 5394 080 - 70589 Zone 24, SEBOKENG, 1982 - *Machoga*

124. Mbekezeli Sihle Vuzani - 000301 5914 082 - Emvuzini Area, EMONDLO, 3105 - *Buthelezi*

125. Nolwazi Innocentia Mpumlwana - 950304 0213 088 - 508 Sauer Street , Metro Views, JOHANNESBURG, 2001 - *Tshabalala*

126. Funani Edward Letwaba - 800710 5773 086 - 613 Section E, Palm Springs, EVATON, 1984 - *Phakathi*

127. Zwelakhe Petric Mahlangu - 910418 5478 089 - 751 Phelandaba Street, Extension 2, LANGAVILLE, 1550 - *Miya*

128. Kutullo Seaman Mothoti - 951122 5455 085 - D 29 Lindelani, Kingsway, BENONI, 1501 - *Skosana*

129. Ayanda Chonco - 000430 5067 086 - 621 Unit 14, Imbali, PIETERMARITZBURG, 3200 - *Mshengu*

130. Bongani Gift Mogotsi - 981214 5701 081 - 1135 Beyi Street, Extension 2, EMBALENHLE, 2200 - *Nkosi*

131. Mariam Nondelwa Khumalo - 731201 0471 086 - 16421 Shahlala Village, NEWCASTLE, 2940 - *Maduna*

132. Khomotso Molemane - 010518 5597 082 - Ga-Mashishi, DRIEKOP, 1129 - *Mosoma*

133. Madimetja Frans Photang - 540125 5234 085 - 1615 Block 1, Ga-Madiba, MOKOPANE, 0626 - *Sebatane*

134. Sbahle Primrose Ndlovu - 940102 0854 080 - Malekane Reserve, RICHARDS BAY, 3900 - *Gwala*

135. Ndidzulavhe Simon Tshimusana - 770610 5854 082 - P O Box 4207, MUTALE, 0956 - *Netshidzivhani*

136. Malibekho Hope Pukwana - 010628 5584 087 - Gxwalubomvu Area, TSOMO, 5400 - *Qwane*

137. Mogale Anthony Mashai - 930819 6077 083 - Stand No 11, Mokomotile Village, LENYENYE, 0857 - *Lebepe*

138. Mzamo Tshaka - 961125 6286 084 - 29653 Kerk Street, Missionvale, PORT ELIZABETH, 6001 - *Mxinwa*

139. Nakedi William Mathole - 840914 5720 087 - Plot 52, House No 161, Extension 10, HONEYDEW, 2120 - *Rapetsoa*

140. Randloos Ngija Mokase - 700601 6083 081 - 1069 Block H, SOSHANGUVE, 0152 - *Makhubedu*

141. Tshepo David Molekoa - 940102 5470 080 - Unit 2, TEMBA, 0407 - *Phetlhe*

142. Thabisile Mothothi - 900801 1008 087 - D 29 Kingsway, Lindelani, BENONI, 1501 - *Skosana*

143. Siphiwe Maxwell Zondo - 840222 5528 082 - 166 Hostel 5, Block A, Masoheng, SEBOKENG, 1983 - *Mazibuko*

144. Tony Vuyani Buso - 950206 6124 088 - 390 Plot 52, Zandspruit, HONEYDEW, 2040 - *Tshikorororo*

145. Mzovele Nkosinathi Hlongwa - 761212 6154 082 - House No 8041, Greyland Road, TONGAAT, 4380 - *Maphumulo*

146. Nduduzo Gcaba - 981002 6401 086 - Charlodale, STANGER, 4400 - *Zondi*

147. Lungisani Gcaba - 010105 6549 088 - Charlotdale, STANGER, 4450 - *Zondi*

148. Evans Xolani Mahlangu - 000904 5815 082 - 530 Tokologo, MHLUZI, 1053 - *Mokoena*

149. Asiphesona Onako Mhlom - 010517 0121 088 - 5 Mbuqe Extension, MTHATHA, 5100 - *Mampofu*

150. Thokoza Londeka Qwabe - 000802 0927 086 - Ward 22, Madakane, MURCHISON, 4250 - *Mteshane*

151. Lungelo Dlungwana - 000113 5922 084 - 75 Lovedale, JOHANNESBURG, 2001 - *Madinane*

152. Thapelo Kgowa - 970801 5774 085 - 1258 Zone 3, SESHEGO, 0670 - *Sehlako*

153. Thabo Ismael Mutangwa - 821227 5425 083 - 3918 Block L, SOSHANGUVE, 0152 - *Theledi*

154. Jerry Mashinini - 891207 6135 084 - 1614 Block Pp 3, SOSHANGUVE, 0152 - *Sithole*

155. Amogelang Nkashe - 020423 0473 082 - 10490 Verdwaal 1, ITSOSENG, 2744 - *Lekhu*

156. Victoria Matanjana - 990121 0278 081 - 15 Parkridge Park, Parkridge, EAST LONDON, 5209 - *Ruiters*

157. Tseko Ngwenya - 000414 5232 080 - 1108 Sikhosana Street, Sakhile, STANDERTON, 2430 - *Sebiloane*

158. Eric Mnguni - 000627 5592 084 - 548 Petsana Location, REITZ, 9810 - *Mahlaba*

159. Jonathan Fitchet - 020521 5085 080 - 1 Ahrbeck, MACLEAR, 5480 - *Coetzee*

160. Benjamin Maritz Van Wyk - 871203 6105 080 - 69 Heemstede Estate, BELLVILLE, 7600 - *Welthagen*

161. Asanda Dlungwana - 961029 5916 081 - 75 Loveday, PIETERMARITZBURG, 3200 - *Madinane*

162. Ofentse Botele - 000324 1153 083 - Bb 169 Robesa, CHARENS, 0300 - *Mofokeng*

163. Sabelo Nkanyiso Ngongoma - 990915 5610 085 - Rocky Mount, UMZIMKULU, 3297 - *Tshambula*

164. Edmond Ramokgopa - 761103 5201 083 - 3780 Paanet Street, FREEDOM PARK, 1811 - *Mohomi*

165. Lungisani Qiniso Dlamini - 970625 6169 080 - 100 Mnatulo Street, VOSLOORUS, 1475 - *Khumalo*

166. Kgomotso Ben Musi - 930617 5221 086 - 45 Dibetso Street, BOKSBURG, 1460 - *Malatsi*

167. Mpilonde Blessing Nkomo - 980723 5426 086 - 578 Saints Street, ZWAVELPOORT, 0001 - *Mhambi*

168. Mandla Ernest Ximba - 901126 5292 084 - 15828 Extension 15, EMBALENHLE, 2285 - *Hartzenberg*

169. Lindokuhle Charles Khuzwayo - 990205 5221 087 - 36 Ihlahiodge Wakens, BALLITO, 2010 - *Hadebe*

170. Zama Sinethemba Kunene - 970616 1153 088 - D 5816 Section 4, MADADENI, 2951 - *Ndwandwe*

171. Vincent Themba Siluma - 861012 6247 087 - 24389 Extension 16, EMBALENHLE, 2200 - *Ngcobo*

172. Samkelo Ndamase - 860526 6151 081 - 1385 Extension 2, EMBALENHLE, 2285 - *Zulu*

173. Lucky Philemon Nkabinde - 850612 5909 083 - 1828 Extension 22, EMBALANHLE, 2285 - *Nkosi*

174. Mogau Setholo Ratau - 921128 5545 087 - 1392 Newtown, MHLUZI, 1053 - *Makuwa*

175. Tilly Makhubedu - 910113 6007 082 - P O Box 450, Mafanafana Village, BURGERSFORT, 1150 - *Magabe*

176. Sindisiwe Malefane - 910831 1167 086 - 528 Zone 11, Midowlands, SOWETO, 1852 - *Buthelezi*

177. Aneesa Jabaar - 650828 0594 082 - 9 Grasryk Place, Hector Avenue, OTTERY, 7800 - *Jacobs*

178. Lesetja Orishen Mathatho - 770924 5392 088 - House No 2137, Zone 5, SESHEGO, 0742 - *Maleka*

179. Nhlanhla Ncube - 900910 6752 084 - Kwalubisi Area, PONGOLA, 3170 - *Dlomo*

180. Masinga Yeko - 991013 5639 087 - 31428 Geesbloom Street, DUNOON, 7441 - *Mathibela*

181. Tebogo Isaac Bopape - 980914 5720 087 - No 1231, WESTERNBURG, 0699 - *Tefu*

182. Walter Tsimane - 630804 5918 084 - 304 Kooko Street, Munsieville, KRUGERSDORP, 1739 - *Nakedi*

183. Phindile Mabinda - 601125 5976 087 - D 342 Shack, Kyasands Squater, RANDBURG, 2125 - *Mpantu*

184. Mathews Gladwin Serebane Tlhwaele - 920617 5337 082 - 7740 Kgatle, Section V, MAMELODI, 0122 - *Mogola*

185. Sibusiso Phakathi - 761224 5649 087 - 180 Cnr Pawcus & Macdonald Street, BELGRAVIA, 2054 - *Manyoni*

186. David Kgomotso Mashego - 900524 5343 082 - 36546 Mashishi Street, Extension 22, MAMELODI, 0122 - *Mothupi*

187. Fattny Nape - 890303 6216 080 - Mookaneng Section , THOKWANE, 0833 - *Shokane*

188. Kgabiso Percival Tsawane - 910327 5665 084 - 209 Zondi 2, Kwa Xuma, SOWETO, 1868 - *Molefe*

189. Sibusiso Protters Zuma - 940615 6196 081 - 1443 Town View, MOOI RIVER, 3800 - *Sithole*

190. Linda Sbongokuhle Hlabisa - 000308 5589 087 - P O Box 4002, HLABISA, 3937 - *Radebe*

191. Katobatoba Reginald Mampane - 981113 5315 084 - 496 Thokozane Street, MAMELODI, 0152 - *Malunga*

192. Mzingisi Finiza - 001229 6119 089 - Nogbozana Area, LUSIKISIKI, 4820 - *Arnold*

193. Avela Gobingca - 960202 1472 083 - Lutshage, LUSIKISIKI, 4820 - *Malekehle*

194. Halalisani Praisegod Zungu - 870731 6007 089 - Msinga Top Area, TUGELA FERRY, 3010 - *Zwane*

195. Simon Itumeleng Thabana - 890505 6235 080 - 1751 Selbourne Road, ALEXANDRA, 2090 - *Mokiti*

196. Sibusiso Nathalian Masango - 980715 5675 084 - 7332 Section U, Moeketsi Street, MAMELODI, 0122 - *Mogalane*

197. Réghard Tredoux - 990506 5039 084 - 88 A Mill Street, PAARL, 7620 - *Van Wyk*

198. Luthando Presenties Zenzile - 941107 5287 086 - Bamboesspruit, STERKSPRUIT, 9462 - *Mdebuka*

199. Matthews Tsepo Legodi - 821029 5818 089 - 28466 Padi Street, MAMELODI, 0122 - *Mokwena*

200. Kaizef Nkosi - 680911 5477 083 - 124 / 625 Enhlanzeni Section, TEMBISA, 1632 - *Masuku*

201. Stephens Mogari - 690511 5910 089 - 9980 Chris Hani, TEMBA, 0407 - *Bapela*

202. Sonto Patrica Nyalunga - 691003 0423 085 - 1495 Block F, SOSHANGUVE, 0152 - *Ndhlovu*

203. Phumlani Ernest Mthembu - 980606 5653 082 - Kwasokhulu Area, MBONAMBI, 3915 - *Khumalo*

204. Maizen Marape - 921001 5430 081 - Mashantana, BURGERSFORT, 1120 - *Magoro*

205. Edward Johannes Bilankulu - 860127 6038 087 - 614 Shaka Stand, WINTERTON, 0190 - *Levembe*

206. Nhlanhla Paul Ntiniso - 860218 6091 083 - 6571 Stalagmite Street, Extension 8, ENNERDALE, 1830 - *Phala*

207. Johanna Mbali Motsenga - 870705 1226 084 - 4119 Malatjie Street, Phomolong, TEMBISA, 1632 - *Dladla*

208. Luvo Gusha - 860315 6121 082 - Ntlonyana Area, ELLIOTDALE, 5070 - *Mvulankulu*

209. Jabulani Victor Tsila - 800825 5659 083 - No 699, KABOKWENI, 1245 - *Magagula*

210. Thabile Shabalala - 981012 0757 086 - 460320 Caluza Location, Mbanjwa Road, PIETERMARITZBURG, 3200 - *Ngubane*

211. Thendo Amos Vilakazi - 990508 5531 086 - Ph 3610, Phomolong, SAULSVILLE, 0125 - *Nembilwi*

212. Sisipho Sofoniya - 951010 0847 085 - Manka Area, TSOLO, 5170 - *Makedama*

213. Sipho Paulus Mokwena - 741212 6363 084 - 8453 Extension 24, MIDDELBURG, 1050 - *Sithole*

214. Garemoitse Nyelenda - 980806 0699 086 - Jq 510, MAGALIESBURG, 1700 - *Nkosi*

215. Thulani Emmanual Mzila - 720610 5925 081 - 99 Patrays Place, Eastwood, PIETERMARITZBURG, 3200 - *Ngcobo*

216. Sifiso Fortune Mbatha - 860324 5925 089 - 459 Oliphant Street, ROCKVILLE, 1717 - *Sibeko*

217. Phathutshedzo Ternatia Tshisimba - 861001 1261 086 - D 01136, Tshibolwe, NZHELELE, 0900 - *Matshira*

218. Sebokie Frans Morobisi - 590204 5930 080 - House No B112, Selosesha, MOROKWENG, 8614 - *Swartz*

219. Mapusetso Adelina Salman - 851015 0695 088 - 33 Becker Street, YEOVILLE, 2198 - *Ramapaeane*

220. Mthandeni Nkanyiso Mabhida - 940315 6410 083 - A 540 Siyanda, KWA MASHU, 4136 - *Gumede*

221. Siphiwe Gift Mankebe - 970329 6269 087 - 66 Russel Street, Room 1029, DURBAN, 4001 - *Ngobese*

222. Meluleki Innocent Dlamini - 981112 6115 089 - Okhombe, BERGVILLE, 3350 - *Mlotshwa*

223. Bongumenzi Bongani Luthuli - 981012 6337 081 - 213011 No, UMGABABA, 4126 - *Mkhize*

224. Vhutshilo Ramalamula - 970315 6094 088 - 98 – 10th Avenue, ALEXANDRA, 2090 - *Ratombo*

225. Mpumelelo Ndumiso Mchunu - 980726 5762 087 - Ethaleni, NQUTU`, 3135 - *Dlomo*

226. Frekkie Kleinbooi Molekwa - 810624 5776 080 - Stand No 30070, Shongane, LEPHALALE, 0555 - *Modisa*

227. Mukonazwothe Mmurigwathoho - 961004 5884 084 - P O Box 2025, THOHOYANDOU, 0950 - *Muhali*

228. Tshetloane Darius Ramodike - 831105 5337 086 - Apel-Cross, MASEMOLA, 1060 - *Mahlare*

229. Masego Keabetswe Bojosi - 870327 0536 080 - 60 Fifth Avenue, LICHTENBURG, 2740 - *Nchoe*

230. Nkosinathi Goodman Nene - 010505 5567 082 - Private Bag X6134, NONGOMA, 3950 - *Mthethwa*

231. Molatelo Jeffrey Malefo - 770913 5860 087 - 315 B Mohodi, Ga-Madikana, DENDRON, 0715 - *Manthata*

232. Thabang Christopher Maretlwa - 010506 5740 083 - House No 522, Thabeng Section, LEROME, 0318 - *Nnawa*

233. Regomoditswe Perfect Mosidi - 001219 5482 083 - House No E48 B, Section 3, MABELE-A-PODI, 0354 - *Shole*

234. Nqobile Nonkululeko Mnisi - 020122 1202 082 - 2912 Nkonkoni Street, Phola Location, OGIES, 2230 - *Msibi*

235. Xolisile Lhilhi Dosini - 670614 5395 089 - 6750 Extension 8, Joza, GRAHAMSTOWN, 6140 - *Mnana*

236. Harry Sidu Ntuli - 670712 5220 081 - 2470 Sepenyane Street, Extension 3, DELMAS, 1022 - *Zulu*

237. Brendan Brian Errens - 841010 5138 088 - 2493 Kamati Drive, Waterfall Country Village, SOWETO, 1717 - *Mazibuko*

238. Surprise Ennocent Mkhonto - 880925 6444 080 - Private Bag X9314, BUSHBUCKRIDGE, 1280 - *Mgwenya*

239. Moeti Isaac Matla - 840726 5865 088 - 3430 Bluegumbosch Location, PHUTHADITJHABA, 9866 - *Mofokeng*

240. Mxolisi Mishack Mabunda - 860916 5997 081 - Stand No 2, Sinqobile, BARBERTON, 1300 - *Sithole*

241. Cebolozakha Sabelo Nyandeni - 810104 6082 085 - Hlobane Area, VRYHEID, 3100 - *Zondo*

242. Thembinkosi Mzamo Mdletshe - 881228 6432 083 - Cwakeme Area, HLUHLUWE, 3960 - *Dube*

243. Lebogang Moses Motene - 860526 6145 083 - 2044 Tshithuthune Avenue, Extension 2, Chiawelo, SOWETO, 1717 - *Marago*

244. Edwin Mothoiwana Mojapelo - 860914 6011 085 - 26383 Mandela X 8, MAMELODI EAST, 0122 - *Mashaba*

245. Maleko Pauline Matloa - 840608 0905 087 - 535 Leebarope Street, Zone 8, MEADOWLANDS, 1868 - *Mkwanazi*

246. Philani Cyprian Khumalo - 840912 6409 080 - St Chad, LADYSMITH, 3370 - *Twala*

247. Wesi Debris Phakoe - 860805 6174 081 - 1656 Molahloe Street, ORLANDO EAST, 1804 - *Vinger*

248. Jaki Abram Mathamela - 801218 6010 085 - 5643 Extension 17, Tswelelang, WOLMARANSSTAD, 2630 - *Lekgetho*

249. Sfiso Patrick Ndabula - 860916 6752 089 - 4615 Zeph Monthupen, Extension 2, DELMAS, 1022 - *Majozi*

250. Fana Sydwel Ngoma - 880303 6842 085 - 661 Gatsheni Street, Botleng, DELMAS, 1022 - *Masango*

251. Philisiwe Prudence Sibiya - 870412 1268 089 - Silutshane Area, NQUTU, 3135 - *Ndebele*

252. Sifiso Efnes Nkosi - 840515 5960 084 - House No 10, VOLKSRUST, 2470 - *Kunene*

253. Peace Xolo Mzomba - 801011 5852 080 - 6 Ntengu Street, Phakamisa, KHAYELITSHA, 7525 - *Mhaga*

254. Richard Moosa Mnisi - 811221 5983 086 - 3227 Block, Nokedi, STINKWATER, 0400 - *Sithole*

255. Bongani Floyd Nkabinde - 820823 5854 081 - 548 Mngeni Street, Senaoang, CHIAWELO, 1818 - *Msipha*

256. Chief Amos Maseko - 670101 6992 080 - 1360 Extension 2, SILOBELA, 1185 - *Mhlanga*

257. Philemon Thabang Phakoane - 670305 5374 089 - 689 Section G, PALMSPRINGS, 1950 - *Pule*

258. Eslinah Bethiwe Masango - 670331 0416 089 - 1025 Vaalwater Street, Faerie Glen, PRETORIA, 0081 - *Mashiane*

259. Semangele Dinah Mlambo - 980815 1032 080 - Rdp 838, Monsterlus, NEBO, 1059 - *Mphela*

260. Simphiwe Njokweni - 950415 6364 087 - P O Box 1078, NONGOMA, 3950 - *Mbatha*

261. Ntombiza Princess Mwandla - 950930 1174 083 - P O Box 1017, VERULAM, 4340 - *Ngcobo*

262. Goodenough Karabo Makhubela - 980619 5983 086 - D 14157 Greenside, MAUBANE, 0407 - *Matsimbi*

263. Siyabonga Amos Magola - 950206 6192 085 - 1229 Kolofane Village, DENNILTON, 1030 - *Mashiloane*

264. Solwethu Mvula - 940801 6289 080 - 15003 Nondumiso Street, KRAAIFONTEIN, 7570 - *Maduna*

265. Teboho James Nare - 910131 5329 083 - 6852 Thubelitsha, Thabong, WELKOM, 9463 - *Leshoro*

266. Akhona Erec Fudumele - 860831 5818 080 - S 928 Nkanini, KHAYELITSHA, 7784 - *Kewuti*

267. Walter Tieho Tsolo - 950428 5397 081 - 6401 Maphiso Street, BLOEMFONTEIN, 9300 - *Kgoboko*

268. Senzo Ndlangalavu - 961214 5898 089 - Lower Gxulu Location, KEISKAMMAHOEK, 5670 - *Sawule*

269. Vhutshilo Brighton Mushavhela - 990911 5979 083 - 02 Cliffside Mews, Earls Avenue, Windsor East, RANDBURG, 2194 - *Mufamadi*

270. Mosidi Moses Nyatlo - 620529 5350 085 - 4371 Marapyane, SIYABUSWA, 0472 - *Makgatho*

271. Mhlekhona Sthembiso Mncwabe - 010501 6480 086 - Hluthankungu Location, HIGHFLATS, 3276 - *Mkhize*

272. Kgahliso Daphne Luhlongwane - 900521 0375 085 - 117 Janson Street, Dagbreek, WELKOM, 9463 - *Hlongwane*

273. Nosection Mehana Nkebe - 450111 0425 082 - 39129 Phamba Street, KHAYELITSHA, 7500 - *Mehana*

274. Sylvester Lehlohonolo Motheto - 900115 6095 084 - 5636 Zone 14, Meloding, VIRGINIA, 9430 - *Nkhobo*

275. Mothusi Aron Naledi - 810506 5929 084 - 10081 Gamotsokwana Section, Dithakong, KURUMAN, 8460 - *Powane*

276. Willie Reginald Molutsi - 871005 5994 087 - 1054 Mathe Street, Selosesha, THABA-NCHU, 9783 - *Van Tonder*

277. Vusi Komsasa Mashiane - 950811 6156 087 - 1589 Maphotla, MBIBANE, 0400 - *Sibanyoni*

278. Oscar Confidence Tsholofelo Matabane - 780214 5543 080 - 111 – 16 Avenue, ALEXANDRA, 2090 - *Masango*

279. Lunga Bongani Mofokeng - 931222 6363 083 - 385 Extension 9, Alliance, BENONI, 1400 - *Lunga*

280. Thandeka Innocentia Mkhuzangwe - 801218 0893 080 - 6324 Madulo Street, Phahameng, BLOEMFONTEIN, 9300 - *Makhanya*

281. Fhumulani Walter Netshitungulu - 800728 5392 087 - 1524 Wrasse Street, 10de, Kaalfontein, MIDRAND, 0900 - *Ratombo*

282. Dumisani Raphael Dlamini - 800414 5625 087 - Caluza Mavuso Road, PIETERMARITZBURG, 3200 - *Mtolo*

283. Celumusa Wiseman Mavundla - 891209 6111 081 - Mcitsheni, LADYSMITH, 3370 - *Mbatha*

284. Vhutali Khoba - 870910 6241 084 - Mxt 0125, SOSHANGUVE, 0152 - *Mamali*

285. Mfundo Leroy Mbonambi - 850824 5827 088 - C 918 Phongolo Road, KWA MASHU, 4020 - *Msomi*

286. Abie Abram Baloyi - 710114 5442 082 - 32 Tshepo Section, TEMBISA, 0100 - *Rathethe*

287. Angeline Nkotswe - 710118 0406 083 - 1275 Algeria Street, Phase 1, BRAAMFISCHER, 1875 - *Pule*

288. James Bongumusa Sokhabase - 710918 5468 081 - 680 Dube Village, INANDA, 4309 - *Dladla*

289. Sydney Mbongeni Ndlovu - 700411 5596 087 - Stand No 2585, Msholozi, WHITE RIVER, 1240 - *Wyken*

290. Neo Marshall Citha - 800312 6277 082 - 466 Chuene Street, WATTVILLE, 1516 - *Makhubedu*

291. Siyabonga Percy Cibane - 890706 6228 089 - 189608 Esikebweni Area, INANDA, 4310 - *Maphumulo*

292. Siyabonga Wiseman Mtshali - 871123 5956 087 - No 2366 D, OSIZWENI, 2952 - *Dakile*

293. Shadrack Johan Ndhlovu - 700625 5759 086 - 30 Tuscan Village, BRONKHORSTSPRUIT, 1020 - *Ngwenya*

294. Pauline Dieketseng Mapule Montsho - 951216 0999 087 - 14209 Badiredi Street, Extension 7, Ikageng, POTCHEFSTROOM, 253 *Present*

295. Siyandanathi Dolosi - 010714 0504 088 - 157 Mahlangu Village, Nu 13, MDANTSANE, 5219 - *Madondile*

296. Keneth Kheswa - 850304 6475 088 - 1091 Nhlapo Section, Katlehong, GERMISTON, 1432 - *Manyapi*

297. Musawenkosi Joseph Madonsela - 830303 8159 083 - St Chads, LADYSMITH, 3370 - *Shabalala*

298. Sipho Lincoln Mwandla - 880219 6055 082 - Block C 5, Municipal Flats, NEWCASTLE, 2940 - *Mthembu*

299. Thulani Simo Mthembu - 861230 6145 081 - Ngudwini Reserve, MANDENI, 4490 - *Nxumalo*

300. Babane Aaron Kolobe - 700112 5624 081 - 943 Stand, Maripathekong Village, GA-MOLEPO, 0732 - *Ramaboka*

301. Phillipi Ndaba - 700528 5446 086 - 3034 / 116 Extension 21, NATURENA, 2095 - *Zikhali*

302. Christopher Chunkie Zwane - 701025 5615 082 - 191 Extension 2, LESLIE, 2265 - *Ngwenya*

303. Sipho William Silabe - 711209 5345 084 - 1734 Ncala Section, KATLEHONG, 1431 - *Sibiya*

304. Maure Solomon Skosana - 700808 6065 089 - 2570 – 14th Street, Mzinoni, BETHAL, 2310 - *Mthimunye*

305. Thabo Cedrick Alcock - 701001 5652 086 - 8214 B Mabaxa Street, Zone 6, DIEPKLOOF, 1862 - *Zondo*

306. Emmanuel Vusumuzi Ngubane - 711010 5716 088 - No H 119, KWADABEKA, 3600 - *Mbambo*

307. Sduduzo Innocent Mthembu - 810125 5275 081 - 32 Oride Centre, MTUBATUBA, 3935 - *Dlamini*

308. Morris Mooko - 671206 5630 083 - No-Rus, KWAMHLANGA, 1022 - *Mabhena*

309. Lazarus Johannes Zathu - 540801 5757 081 - 146 Block A, Mandela Village, HAMMANSKRAAL, 0400 - *Malema*

310. Elijah Johannes Tshabangu - 550525 5966 080 - 515 Mphamele Street, TSAKANE, 0400 - *Matseke*

311. Mbongiseni Hlengwa - 870219 5418 085 - P O Box 1650, Gwegwebe Area, HLABISA, 3937 - *Khoza*

312. Zoleka Lifa Zulu - 980601 1145 084 - 1984 Ingwe Street, Extension 2, IVORY PARK, 1685 - *Mbatha*

313. Namhla Ncemane - 900328 1340 088 - Lubacweni Area, MT FRERE, 5090 - *Mnqonywa*

314. Avelino David Molamodi - 930512 6340 086 - House No 535, Unit 8, MOGWASE, 0300 - *Munguambe*

315. Phelelani Mzizi - 960407 5996 082 - P O Box 153, UMZIMKULU, 3297 - *Bunge*

316. Thandeka Promise Msweli - 911113 1067 080 - Qakwini Area, MTUBATUBA, 3935 - *Ndlovu*

317. Mosenagabo Mokgotho - 520910 0635 087 - Extension 10, Next To Boxer, BURGERSFORT, 1150 - *Thwala*

318. Bhekokwakhe Walter Majola - 520414 5211 085 - Lunga Road, Umzinyathi, INANDA, 4310 - *Shozi*

319. Mantane Magampa - 460923 0474 086 - Stand No 357, Tafelkop, BOLEU, 0424 - *Matladi*

320. Boisane Frans Mahlakwane - 390615 5202 083 - Leboeng, PRAKTISEER, 1125 - *Mogakala*

321. Raisibe Flora Kgatla - 330502 0196 085 - 1317 Zone 10, Winnie Mandela, TEMBISA, 1632 - *Sebetha*

322. Pretty Busisiwe Mthembu - 820408 0789 084 - 908 Area 1, Nhlungwane, DURBAN, 4001 - *Msimang*

323. Mthobeli Ndlovu - 960416 6371 088 - Hlathikhulu Area, OZWATINI, 3242 - *Phakathi*

324. Phelelani Thubelihle Gazu - 970903 6083 084 - Dabhasi Area, NONGOMA, 3950 - *Ntombela*

325. Ntokozo Mkhize - 951105 5985 086 - Emsangweni Area, TUGELA FERRY, 3010 - *Ndlovu*

326. Puseletso Mologadi Euginia Lepatla - 960223 1177 084 - Khukeng Village , ZEBEDIELA, 0631 - *Nkwagatse*

327. Johannes Zulu - 670608 5616 080 - Stand No 1256, EMTHONJENI, 1100 - *Mhlanga*

328. Kmietsch Zolile Folokwe - 561108 5106 085 - Lubisi Area, COFIMVABA, 5380 - *Kalipa*

329. Masungwini Stanley Mhaule - 670121 5575 082 - Stand No 945, Tokologo, MHLUZI, 1055 - *Nkosi*

330. Nkanyiso Bonwayinkosi Mkhize - 930617 5858 085 - Mabomvini Area, MAPHUMULO, 4400 - *Ngubane*

331. Tshimangadzo Mudau - 920513 6017 080 - Hamutsha, VUWANI, 0952 - *Tshinavha*

332. Butinyane William Gabu - 851107 5427 086 - 4295 Mphupu Street, SCHWEIZER RENEKE, 2780 - *Qabe*

333. Ephraim Tshoko Pholokgolo - 650407 5907 084 - 720 Phiring Section, RUSTENBURG, 0300 - *Morwane*

334. Agnes Van Neel - 770512 0668 089 - 431 Ngaba Street, VRYBURG, 8600 - *Newton*

335. Tseko Samuel Moloi - 890306 5475 086 - 6574 Seeiso Street, TSAKANE, 1550 - *Phiri*

336. Lungi Vincent Motsamai - 920807 5919 084 - 2379 M Extension 1, SOSHANGUVE, 0152 - *Nkosi*

337. Piet Malose Baloyi - 960108 5593 081 - 514 Extension 1, Leseding, VAALWATER, 0530 - *Majoko*

338. Nlokozo King Mkhize - 000906 5263 080 - 3681 Nkwanyane Street, DELMAS, 1500 - *Masilela*

339. Edga Emete - 001004 6184 080 - P O Boxd 4477, GIYANI, 0826 - *Maweya*

340. Sharon Koketso Nyathi - 000202 0697 088 - Stand No 363, Elandsdoorn A, DENNILTON, 1030 - *Phora*

341. Thato Glen Rampa - 000613 5434 089 - Simpson Village, BOCHUM, 0790 - *Selomo*

342. Mpho Gifty Thobejane - 000208 5662 084 - Stand No 21 C 160, Nyarelang Section, BOLEU, 0474 - *Mathibela*

343. Sijmen Frank Sebola - 000811 5802 087 - P O Box 65, KWAMBONAMBI, 3915 - *Van Der Merwe*

344. Katso Modukanele - 000925 5149 081 - House No 845, Maruping Village, KURUMAN, 8460 - *Mphakama*

345. Piet Johannes Maphanga - 841111 5976 087 - 2144 Mandala Village, MASHISHING, 1120 - *Nkosi*

346. Thato Mthulu - 840808 6098 081 - Room F 9, Khutsong Hostel, CARLETONVILLE, 2499 - *Majodina*

347. Kenneth Morithi Tau - 841030 5799 085 - Kutollo Area, STEELPOORT, 1133 - *Segogela*

348. Andries Gezani Masingi - 781228 5584 083 - 20222 Allemansdrift, MBIBANE, 0449 - *Chauke*

349. Xolani Lordwick Sibutha - 770212 5562 086 - 2582 Taute Street, Spruitview, KATLEHONG, 1437 - *Xathasi*

350. William Thando Ncapayi - 780808 6798 088 - 1246 Nu 9, Thembalihle, MDANTSANE, 5219 - *Balfour*

351. Lorato Precious Setlhodi - 880415 1094 080 - House No Y76, Imibogang Section, GANYESA, 8613 - *Motlakase*

352. Kamohelo Victor Chabalala - 850805 6694 080 - 13324 Extension 8, ORANGE FARM, 1841 - *Sebule*

353. Sinqobile Cynthia Mkafane - 841014 0960 082 - 204 Limore Court, St Peter Street, HOUGHTON, 2195 - *Moyo*

354. Xoliswa Matinise - 841005 1316 084 - Ag 4 Bosasa, BELLVILLE, 7300 - *Nontyi*

355. Siyabonga Vusi Ntimbane - 840620 6436 082 - Thengani, KWAMGWANASE, 3973 - *Manzini*

356. Thapelo Macdonald Mokaila - 851206 6152 089 - 13475 Magogoe, MAHIKENG, 2745 - *Bogatsu*

357. Phila Sibongakonke Msimango - 990630 5321 084 - W 449, UMLAZI, 4001 - *Ndlovu*

358. Temoso Elton Aphane - 920519 5926 080 - P O Box 0232, GOMPIES, 0631 - *Tswai*

359. Nomfanelo Ndlovu - 941108 1354 086 - Ndakeni Location, Ward 8, HARDING, 4680 - *Mbanjwa*

360. Karabo Danny Thutlwa - 971117 5456 089 - House No 10145, Tibanefontein Village, POLOKWANE, 0800 - *Kgomo*

361. Sbonelo Perfect Mseleku - 921020 5769 082 - 1725 Tokologo, MHLUZI, 1053 - *Ndlovu*

362. Zodwa Norah Kunene - 751215 0477 088 - Magongqo Location, PIETERMARITZBURG, 3200 - *Madlala*

363. Nompumelelo Angel Msibi - 951128 1309 085 - Hous Eno 378, Section 1, MADADENI, 2951 - *Ndlela*

364. Daniel Mashilo Fenyane - 960511 6151 082 - Stand No 666, BELFAST, 1195 - *Mamonyane*

365. Mfankhona Joseph Mahlangu - 850412 5338 080 - 7063 Extension 4, Shonalanga Street, MHLUZI, 1050 - *Rakgalakane*

366. Winti Joyce Mtana - 481015 0352 084 - Lower Gqumahashe Location, ALICE, 5700 - *Matakane*

367. Thabiso Clement Maake - 821008 6173 082 - Maune, PHALABORWA, 1390 - *Malatji*

368. Simiso Thembinkosi Nene - 990520 6376 080 - Nkombose Area, MTUBATUBA, 3935 - *Gumede*

369. Sihle Richard Mkhize - 840530 5808 084 - No 2732, Tuhla Street, KATLEHONG, 1431 - *Vezi*

370. Cebo Kambule - 921004 5309 081 - Hlokozi Location, HIGHFLATS, 3276 - *Radebe*

371. Andile Aubrey Mkwanazi - 880813 5934 089 - D 387 Masakhane Road, UMLAZI, 4001 - *Bhengu*

372. Katleho Mofokeng - 000531 5532 084 - 5421 Kabanyane Street, ORLANDO EAST, 1717 - *Tshabalala*

373. William Mathakgala Maripane - 980128 5801 082 - 63 Gamtoor Drive, NORKEM PARK, 0100 - *Tsweleng*

374. Frederick Molefe Matlhatsi - 841227 5696 085 - 503 Block D, MABOPANE, 0190 - *Ratlou*

375. Zanele William Bhayi - 741106 5603 088 - 1355 Rockville, MASHISHING, 1120 - *Nkosi*

376. Mpho Donald Mailola - 920414 5509 088 - Sephaku, NEBO, 1051 - *Mokobaki*

377. Fora Tekemane Makgaloa - 000605 5809 088 - 464 Dimpho Street, Extension 37, OLIEVENHOUTBOSCH, 0187 - *Mthembu*

378. Malose Thomas Mogotlane - 780118 5467 085 - 358 Mabogay, KORINGPUNT, 0632 - *Phalane*

379. Micheal Malatsi Kabini - 710806 5938 080 - No 4015, Moloto, KWAMHLANGA, 1022 - *Bhuda*

380. Tinyiko Lucky Mashele - 950318 6011 080 - 386 Extension 1, Tswelapele, TEMBISA, 0150 - *Hlungwane*

381. Londeka Gcinile Mahlobo - 930810 1532 081 - P O Box 350, CEZA, 3866 - *Ndwandwe*

382. Thayimile Elias Mtshweni - 890303 6862 081 - 487 Sun City, KWAMHLANGA, 1022 - *Masimula*

383. Kabelo Caroul Vuma - 900914 6137 080 - 35 Levubu Street, Cosmos Ridge, TRICHARDT, 2300 - *Chauke*

384. Leonard Mlungisi Mabuza - 860824 5432 085 - 76 Athens Street, EVANDER, 2280 - *Manabe*

385. Pinkie Thandeka Maluleka - 900430 0997 080 - X 11 A – 143, Rethabile, MAMELODI EAST, 0122 - *Mbatha*

386. Phillip Mthobisi Gumede - 961018 5835 086 - Mthanda Area, MAPHUMULO, 4470 - *Maphumulo*

387. Mthokozisi Rudolph Sikhakhane - 890306 6201 085 - Private Bag X99, ULUNDI, 3838 - *Nyembe*

388. Amukelani Calvin Mathebula - 931119 6144 085 - No 354, Makosha, GIYANI, 0826 - *Maluleke*

389. Thabo Semenya - 860617 5714 084 - 11771 Eastside Crescent, Extension 11, LENASIA, 1700 - *Mavuso*

390. Vusumuzi Fanyana Sigasa - 900808 5453 086 - 2174 Bolani Road, Jabulani, KWA XUMA, 1868 - *Moloi*

391. Khethabahle Eric Ngidi - 840220 5593 080 - Ntuthuko Store, KWANYUSWA, 3660 - *Ngcobo*

392. Bantu Prudence Nombewu - 961116 5667 085 - 2 Sooty Street, Villa Reinette Amberfield, Glen Estate, ROOIHUISKRAAL, 0 *Tyobeka*

393. Kagiso Phqophi Mokwela - 990312 6369 087 - P O Box 313, BOCHUM, 0790 - *Kubu*

394. Thamaga Reuben Mawela - 800920 5813 085 - Stand No 446, Walkraal B, DENNILTON, 1030 - *Makena*

395. Tumisho Courage Mojakgomo - 950630 5598 085 - Stand No 107, Dikgalaopeng, BOLEU, 0474 - *Matemotsa*

396. Simon Mpho Mawela - 820303 7047 083 - Stand No 446, DENNILTON, 1030 - *Makena*

397. Nkosinathi Michael Nkosi - 870604 5366 089 - Stand No 10055, GA-MASEMOLA, 1060 - *Kgaditsi*

398. Norma Dippenaar - 880807 0218 084 - 16105 Mathibe-Ledwaba Street, MAMELODI EAST, 0122 - *Lebelo*

399. Zamuxolo Frank Magoqo - 800211 5978 080 - Zadungeni, NGCOBO, 5050 - *Shinya*

400. Siphelele Sanele Sibonginkosi Ntombela - 970819 5173 082 - 997 Xhuma Street, Extension 5, VOSLOORUS, 1475 - *Dlangalala*

401. Godfrey Tshepo Makgotla - 911027 5831 087 - 1012 Tshwene Street, Boitumelong Location, BLOEMHOF, 2660 - *Sekete*

402. Xolani Eward Thwala - 791211 5264 086 - C 847 Folweni, UMBUMBULU, 4105 - *Nyuswa*

403. Luvuyo Thabo Shago - 901126 5940 088 - 4485 Mcknley, Extension 4, LENASIA, 2010 - *Lekwape*

404. Tevin Jaimie Resca - 901217 5042 080 - 67 Cotswold Drive, Dawncliff, PINETOWN, 3610 - *Armstrong*

405. Precious Mpho Marobe - 930303 0297 088 - 7316 / 157 Stand, Extension 4, SOSHANGUVE, 0152 - *Moeng*

406. Mfundo Thembelani Gumede - 930330 5929 084 - Kwa-Jobe Area, UBOMBO, 3970 - *Nhlenyama*

407. Maropeng Phineas Setlau - 800101 5964 083 - 1165 Nyathi Street, Wattville, BENONI, 1516 - *Maoko*

408. John Lebanja Tshehla - 901114 6076 086 - 6289 Ibisi Street, BRONKHORSTSPRUIT, 1035 - *Nzimande*

409. Welfred Sifiso Jiyane - 830407 5878 080 - 772 Mountain View, KWAMHLANGA, 1022 - *Mahlangu*

410. Lebogang Sinah Mokone - 000202 0567 083 - Stand No 576, Moganyaka, MARBLE HALL, 0450 - *Manasoe*

411. Fatima Bee Bee Cassim - 690528 0017 082 - 21 Sinoli Street, SHALL CROSS, 4093 - *Suliman*

412. Asemahle Vilakazi - 991010 0348 086 - 11 Ngqangqolo Street, Kwa-Nobuhle, UITENHAGE, 6242 - *Yanta*

413. Tando Tweni - 930829 6021 080 - Nomhala Location, TSOLO, 5170 - *Mxatule*

414. Solomon Sipho Mahlangu - 860801 5342 084 - 10197 Vosman, KWAGUQA, 1039 - *Mlotshwa*

415. Mabushe Cedric Mohlala - 891216 6399 087 - Room 29, Munsieville Hostel, MUNSIEVILLE, 1739 - *Maphoru*

416. Lusizo Mzana - 890323 6221 088 - Sigidini Location, MOUNT AYLIFF, 4735 - *James*

417. Khonziwe Zamantungwa Zuma - 880705 1048 080 - 165 – 3rd Avenue, ALEXANDRA, 2010 - *Khumalo*

418. Phakamani Vethe - 870815 5937 089 - P O Box 314, Ezingolweni, HARDING, 4680 - *Ngubane*

419. Lindani Mzamo Sithole - 880409 6129 082 - Emagcekeni Area, VRYHEID, 3100 - *Jiyane*

420. Sifiso Cosmos Hlatshwayo - 830523 5877 086 - 6945 / 29 Van Koller, Stanwest, STANDERTON, 2430 - *Mdluli*

421. Mfihlelwa Clement Mavundla - 850611 5989 087 - A Section , Block 485, Musa Road, KWAMASHU, 4020 - *Mhlongo*

422. Tebogo Kodisang - 880129 6103 081 - 500 Thutlo Street, VRYBURG, 8600 - *Tladi*

423. Haward Bheki Nkosi - 800913 6096 081 - 14124 Mphefumulo Street, Extension 8, KATLEHONG, 1401 - *Nkambule*

424. Vusi Agrippa Sibiya - 831010 7370 087 - 91 Eleka Road, Flat 23, Mount Moriah, DURBAN, 4001 - *Dube*

425. Bongani Magqwirha - 880607 6337 080 - 49001 Amalinda Forest, EAST LONDON, 5201 - *Mqwanyisa*

426. Zakhele Mkhize - 840214 6320 080 - Mfundisweni Area, FLAGSTAFF, 4810 - *Goya*

427. Nonhlanhla Patience Mkhize - 860117 0886 086 - P O Box 155, BULWER, 3244 - *Musandiwa*

428. Hermine Seemole Mononyane - 871215 0788 083 - 20216 Ga-Monyeki Village, LEPHALALE, 0558 - *Teffo*

429. Rendani D931023zhiagome - 850323 5852 089 - Tshisaulu, THOHOYANDOU, 0950 - *Bugana*

430. Thato Godfrey Nculu - 870113 6071 086 - 318 Letsatse Street, NALEDI, 1868 - *Xulu*

431. Mthokozisi Mishack Vilakazi - 860809 5988 087 - 5353 Thusi Village, ERMELO, 2350 - *Ngubeni*

432. Jabulani Sibiya - 891226 6282 084 - 8047 / 16 Mzwokhe Mbuli Street, Kwaguqa, VOSMAN, 1030 - *Ngwane*

433. Sibusiso Patric Vilakazi - 840520 6109 087 - 5353 Thusi Village, ERMELO, 2350 - *Ngubeni*

434. Khatelihle Thobelani Mtshali - 880912 6376 082 - 11372 No, Ivory Park, NONGOMA, 3950 - *Vilane*

435. Mandisi Madondo - 001010 6013 088 - Bhokweni Area, MAHLABATINI, 3865 - *Ngqulunga*

436. Khotatso Mabushe Matjila - 880602 5676 083 - Zone A, LEBOWAKGOMO, 0700 - *Motebejane*

437. Oupa Phillemon Manale - 750818 5666 083 - 615 Mthambela Section, TEMBISA, 1632 - *Shabalala*

438. Mpuseng Stephinah Nape - 010209 0854 088 - 12095 Block X, MABOPANE, 0008 - *Mosupye*

439. Sanele Bongumusa Nelson Dlamini - 940811 5665 081 - A 1237 Mthethwa Road, HAMMARSDALE, 3700 - *Mhlangu*

440. Ayabulela Majavu - 961009 5697 089 - B 146 Klein Street, Bongani Village, KNYSNA, 6570 - *Mbiza*

441. Hope Kutlwano Molekoa - 990303 0067 082 - 2774 Nicoll Street, Extension 19, NATURENA, 2095 - *Motlogelwa*

442. Radiete David Magampa - 631006 5441 088 - Stand No 421, Kgokokwane, DENNILTON, 1030 - *Tshwane*

443. France Jabulani Kabini - 741208 5326 080 - Stand No 47, Vlakfontein, MPUDULLE, 1057 - *Mahlangu*

444. William Mbhapathizi Dumisa - 980203 5355 080 - Mdonini Area, PONGOLA, 3170 - *Kunene*

445. Mshumayeli Caleb Dumisa - 950706 5420 080 - Mdonini Area, PONGOLA, 3170 - *Kunene*

446. Rolivhuwa Nkhamane - 990713 1152 081 - No 060162, Mampala Tshamusamane, NZHELELE, 0993 - *Mulaudzi*

447. Jesus Maudubatje Molobela - 991126 5507 086 - P O Box 369, SEDIBENG, 1150 - *Morabe*

448. Zubaid Vosloo - 990627 5438 082 - 38 Amur, EINDHOVEN, 7100 - *Noordien*

449. Itemogeng Vincent Batlhaodi - 000822 5350 084 - 10030 Billebrits Village, KURUMAN, 8460 - *Jacobs*

450. Nonkululeko Jacqueline Zwane - 951110 0252 086 - 9 Bortle Avenue, KEMPTON PARK, 1619 - *Mbatha*

451. Nompumelelo Thulisile Buthelezi - 731205 0888 082 - Deckville Area, PONGOLA, 3170 - *Sasa*

452. Motsumi Lucky Mathebe - 790625 6293 086 - Stand No 57, Thabakhubedu, DENNILTON, 1030 - *Phora*

453. Frans Thabiso Malatji - 990915 5152 088 - A 23 Malaeneng Section, MOOINOOI, 0325 - *Jujuju*

454. Wiseman Katlego Makola - 990308 6176 084 - No 9 / 5, Pineridge, WITBANK, 1035 - *Marole*

455. Muzi Innocent Manzini - 990923 6379 080 - Private Bag X1008, WHITE RIVER, 1240 - *Mahlalela*

456. Sihle Dunyana - 980611 5547 086 - Machibi Area, PORT ST JOHNS, 5120 - *Rauka*

457. Thabo Wellington Mlangeni - 910202 6813 084 - 4169 Muvhango Street, Munsieville, KRUGERSDORP, 1740 - *Ndlovu*

458. Sandile Buthelezi - 901115 6166 082 - Eskom No 1403, Ntendeka, NEWCASTLE, 2940 - *Hadebe*

459. Lee Oosthuizen - 900203 5049 086 - 33 Primula Drive, Fairbridge Heights, UITENHAGE, 6230 - *Humphreys*

460. Thapelo Shubane - 021112 5766 082 - Stand No 74, ACORNHOEK, 1360 - *Mabasa*

461. Thabile Raymond Tsele - 010128 5580 086 - 17386 Tswelo Street, Kutlwanong, KIMBERLEY, 8300 - *Mgidi*

462. Siphesihle Masango - 020525 5401 080 - 754 Block Gg, SOSHANGUVE, 0152 - *Kubeka*

463. Agreement Urgent Sibuyi - 800427 5563 082 - P O Box 9314, PHULAMAHASHE, 1200 - *Mthethwa*

464. Alfred Khutso Mamorobela - 900112 5894 088 - 409 B Mohlabaneng Village, MOLOTOTSI, 0827 - *Mokhwanase*

465. Siyabonga Mbuyazi - 980711 5940 081 - Mpekayi Area, MTUBATUBA, 3935 - *Mdletshe*

466. Bongumusa Ngwane - 990131 5851 089 - C 1741 Ibhuca Road, DURBAN, 4020 - *Dlamini*

467. Mthetheleli Pitwell Bexesha - 800907 5277 080 - 75675 New Life, EAST LONDON, 5200 - *Rala*

468. Tshepo Owen Mhlanga - 910222 5401 087 - 1277 Moletsana, Kwa Xuma, SOWETO, 1868 - *Mothoosele*

469. Sibongiseni Msizi Ntshangase - 000626 6390 084 - Private Bag X2223, INGWAVUMA, 3968 - *Zwane*

470. Vincent Tshepo Seake - 770822 5312 082 - P O Box 76, KOSTER, 0348 - *Magadze*

471. Anele Mandisa Doyisa - 000924 0335 084 - R 784, UMLAZI, 4001 - *Msimango*

472. Mpilo Magaqa - 880214 6221 081 - Didi Area, BIZANA, 4800 - *Mnisi*

473. Slindele Innocentia Khuzwayo - 960829 0856 088 - P O Box 139, KRANSKOP, 3268 - *Zuke*

474. Dion Sithole - 980704 6134 085 - Stand No 9443, Extension 6, MHLUZI, 1050 - *Ngwenya*

475. Ezekiel Tshepiso Mashabela - 931006 5958 088 - 131 Waalkraal, SIYABUSWA, 0472 - *Maila*

476. Sabelo Mhlomiseni Ngema - 790505 6998 084 - P O Box 377, MELMOTH, 3835 - *Majola*

477. Sipho Sphiwe Sishosonke Mzimela - 760924 5929 089 - Mtakwente Reserve, ESHOWE, 3815 - *Shoba*

478. Nomthandazo Mokoena - 001228 0329 082 - 14770 Amanda Street, PROTEA GLEN, 2001 - *Mngomezulu*

479. Thabo Lloyd Mohammed Zulu - 760810 5782 083 - 16 Lake Street, Southdowns Estate, ALBERTON, 1448 - *Moloi*

480. Cebani Velenkosini Biyela - 980411 5402 089 - P O Box 108, MELMOTH, 3835 - *Sibiya*

481. Jabulile Thema - 001230 5090 081 - 5110 Extension 2, Khutsong Location, CARLETONVILLE, 2502 - *Bhubesi*

482. Sakhile Nyawo - 921005 6403 088 - Mazimazane Reserve, Nseleni, RICHARDS BAY, 3900 - *Mkhize*

483. Tshwarelo Dora Ntamo - 890607 0401 088 - 105 Eccelston Crescent, Bryanston, SANDTON, 2100 - *Mahloele*

484. Lehlogonolo Victor Jr Mangena - 961030 5101 088 - 193 Block Area, SOSHANGUVE, 0152 - *Mokoena*

485. Tshepo Silas Ramatlho - 881227 5401 081 - 24937 Granadilla Street, Extension 28, PROTEA GLEN, 1818 - *Mosetlhe*

486. Jodi Botha - 960209 0067 087 - 25 Hord Street, Newtown Park, PORT ELIZABETH, 6000 - *Bailey*

487. David Monnanyana Vuma - 660609 5349 088 - 4371 Unit 6, TEMBA, 0407 - *Choma*

488. Bongani Mdluli - 971111 6225 080 - Plot 14, Bleskoppie, HEIDELBERG, 1441 - *Mayisa*

489. Mcedisi Siphahlanga - 910901 6038 085 - Room 2, Block D, KWAMASHU, 4020 - *Ndonyela*

490. Gudani Mawela - 920317 1392 088 - Tshithuthini Village, NZHELELE, 0950 - *Manameni*

491. Matodzi Ramano - 991019 6128 087 - Ha-Ramantsha Village, SINTHUMULE, 0938 - *Mutheiwana*

492. Kleinbooi Maile Letsoalo - 990913 6498 089 - P O Box 401, SOVENGA, 0727 - *Mabetlela*

493. Nondumiso Nontobeko Sithole - 960826 1425 087 - Malagiet Crescent, Extension 5, ENNERDALE, 1830 - *Vilakazi*

494. Romario Mosimanegape Mokhasi - 980109 6044 088 - 2475 Sewende Avenue, DELPORTSHOOP, 8377 - *Combrink*

495. Kuphilakuni Madlala - 941004 6363 083 - Othame Area, TUGELA FERRY, 3010 - *Ngubane*

496. Xolane Mahlaba - 991030 5754 088 - 1724 Rolihlahla Street, SOWETO, 1717 - *Kunene*

497. Samuel Fiki Chauke - 940722 6166 088 - Plot 25, Zorgviet, BRONKHORSTSPRUIT, 1020 - *Ndala*

498. Trevor Simon Da Costa - 920730 5556 088 - 15 – 6th Street, La-Rochelle, JOHANNESBURG, 2001 - *Rodrigues*

499. Tshepo Mabuza - 970116 6327 084 - P O Box 791, LYDENBURG, 1120 - *Monareng*

500. Mahlomola Thobejane - 910110 6545 087 - Stand No MB 812, TAFELKOP, 0400 - *Mosoma*

501. Thulani Bradley Gwacela - 900924 6559 084 - K 1338 , Umlazi Township, DURBAN, 4001 - *Mkize*

502. Nkoko Morica Kola - 941202 6312 080 - Stand No 175, Sekageng, GA-MAMPANA, 0400 - *Moswathupa*

503. Mpho Given Ribisi - 860115 5362 087 - 13731 Phase 2, Braamfischerville, ROODEPOORT, 1724 - *Shongwane*

504. Natasha Siziba - 010625 0720 088 - Chris Hani Street, HERMANUS, 7200 - *Gubu*

505. Sogo Annah Masetlane - 791224 0446 087 - House No 503, MOTETEMA, 0473 - *Makua*

506. Karabo Abednigo Lefowa - 811104 6016 082 - Stand No 40, MASHANDA, 0900 - *Sadiki*

507. Bhekinkosi Malvin Makhanya - 910117 6252 085 - Mayekeni Area, NDWEDWE, 4400 - *Dube*

508. Kenneth Nyalungu - 910809 6190 089 - Stand No 438, KABOKWENI, 1243 - *Masite*

509. Khayelihle Sibonelo Mbathu - 991003 5577 080 - Maqadini Area, MAPHUMULO, 4470 - *Xulu*

510. Tshepo Tshabalala - 900606 6303 080 - 259 Block T, SOSHANGUVE, 0182 - *Kekana*

511. Samukelisiwe Sibiya - 890419 0870 084 - Ntinyane, UMBUMBULU, 4105 - *Sibisi*

512. Kgomotso Adolph Mathebekaze - 931027 5642 084 - 2274 Phase 2, ITSOSENG, 0200 - *Sebegoe*

513. Luyanda Ndhlovu - 970514 5644 089 - 2402 B Ndou Street, Emndeni, KWA XUMA, 2100 - *Ngcatsha*

514. Nkosinathi Nzolo - 960601 5225 084 - 491 Cwayi Street, DUDUZA, 1400 - *Mavuso*

515. Beauty Tinyiko Makwakwa - 850619 0739 084 - 4877 Avenue, ALEXANDRA, 2010 - *Hlungwane*

516. Dineo Selina Khahla - 981223 0776 089 - 2420 Inomfi Street, Extension 15, OLIEVENHOUTBOSCH, 0170 - *Nakeng*

517. Kamogelo Innocent Morupane - 970403 5471 083 - 1805 Extension 1, LAKESIDE, 1984 - *Phasa*

518. Onthathile Fana Mokoena - 000316 5113 089 - 4127 Tsotetsi Street, Zone 3, SOWETO, 1717 - *Mjiako*

519. Tumelo Leonard Sikhosana - 000525 5606 088 - 47 – 8th Avenue, ALEXANDRA, 1600 - *Mogorosi*

520. Caswell Mmolawa Galane - 980513 5446 089 - 8267 Zone 1, SESHEGO, 0100 - *Hlongwane*

521. Yolanda Thando Mahlangu - 010729 0209 082 - 41940 Extension 19, Lekoelea, TSAKANE, 1500 - *Masilela*

522. Cynthia Batshwarele Tlatla - 990316 0811 085 - Mokwena Village, BOCHUM, 0790 - *Moremi*

523. Lesedi Keabetswe Mokotedi - 980901 5822 088 - House No 1942, Sehosesha Section, LEDIG, 0316 - *Monkwe*

524. Anele Kumalo - 990730 0311 088 - 10644 / 11 Malalane Street , Extension 3, DOBSONVILLE, 1863 - *Dhlamini*

525. Nhlanganiso Dlamini - 910203 5433 080 - Mthanti Area, LADYSMITH, 3370 - *Cebekhulu*

526. Singwali Arasmas Ndlovu - 891225 6369 081 - U 709 Zamani Area, UMLAZI, 4001 - *Msani*

527. Theophillus Nyaria Sekgobela - 910706 5594 081 - 3622 Block A, Duduza, MIDRAND, 1685 - *Lamola*

528. Amos Thabang Selemela - 900712 5449 088 - 6067 Extension 4, SOSHANGUVE, 0152 - *Mailula*

529. Maboko Nicholus Maela - 890327 5553 086 - 831 Uil Singer, Rabie Ridge, MIDRAND, 1685 - *Mamadi*

## DEPARTMENT OF HOME AFFAIRS

**NO. 1332** **18 OCTOBER 2019**

**ALTERATION OF FORENAMES IN TERMS OF SECTION 24 OF THE BIRTHS AND DEATHS REGISTRATION ACT, 1992 (ACT NO. 51 OF 1992)**

The Director-General has authorized the following persons to assume the Forenames printed in *italics*:

1. Raxolile Ludwele - 860720 5905 080 - 1014 Goniwe Street, HOUTBAY, 7806 - *Baxolile*
2. Janice Jacobs - 970106 0821 083 - 33 Aughulhas Court, WYNBERG, 7824 - *Minaaz*
3. Waterson Malibongwe Fente - 760427 6110 089 - 85 Lynx Way, WESTLAKE, 7945 - *Malibongwe Waterson*
4. Nina Liesering - 990720 1287 080 - 10 Luther Way, OTTERY, 7800 - *Imaan*
5. Orapeleng Hutire - 910104 5876 080 - House No 91, Ulco West, KIMBERLEY, 8300 - *Orapeleng Mcdonald*
6. Patrick Mampangashe - 960421 6103 085 - 231243 Fox Street, Bongweni, UMTATA, 5100 - *Patrick Lebogang*
7. Linky Lubisi - 970619 0459 084 - 8648 Extension 3, WINTERVELDT, 0010 - *Millicent*
8. Annie Fang - 940711 1102 081 - 9 Pilatus Crescent, Impala Park, BOKSBURG, 1459 - *Annie Tayla*
9. Sanele Memela - 961009 1075 082 - Mnani Location, UMBUMBULU, 5100 - *Zanele*
10. Fibian Steyn - 940220 5097 081 - Sunnyside Plaas, CALEDON, 7230 - *Fabian*
11. Ivy Lerato Mncube - 920503 0235 085 - 66 A Smuts Avenue, VEREENIGING, 1930 - *Ivy Kahiso*
12. Sivagami Allie - 610816 0273 087 - Redcliff, VERULAM, 4340 - *Salma*
13. Makhosazana Tyam - 990901 1366 088 - 434 Emmangweni Section, KEMPTON PARK, 1520 - *Kayle*
14. Simphiwe Denglao Dlomo - 840320 5329 087 - D 1776 Sigwegwe Road, KWA MASHU, 4360 - *Simphiwe Douglas*
15. Makomane Belik Mabitle - 800811 5481 082 - 1108 Zithebeng, Extension 9, BRONKHORSTSPRUIT, 1022 - *Makomane Derick*
16. Zamantungwa Sibusisiwe Khumalo - 951102 0567 084 - 460399 Caluza Location, PIETERMARITZBURG, 3200 - *Nathan Akani Philippe*
17. Lenny Perumal Pillay - 741003 5011 083 - 330 Taj Street, LAUDIUM, 0037 - *Muhammad Taariq*
18. Bridget Cornelius - 650126 0202 081 - 31 Captain Street, HOUTBAY, 7806 - *Muneeba*
19. Andries Senwamadi - 960613 5718 083 - 340 Motau Street, MODIMOLLE, 0510 - *Andries Nakedi*
20. Nolwazi Sanegizwe Dlamini - 980519 1047 086 - 336 Mshayazafe, INANDA, 4309 - *Nolwazi Sanelisiwe*
21. Tendani Siphuma - 981106 0883 080 - 0627 Toms Place, 227 Minnaar Street, PRETORIA, 0002 - *Tendani Daria*
22. Chervonne Wilson - 850117 0042 088 - 11 Blombos Street, BONTEHEUWEL, 7764 - *Qasima*
23. Simbonile Alfred Ludidi - 900623 6105 084 - 35 Diamond Street, SALDANNA, 7395 - *Siphesihle Alfred*
24. Pinky Johanna Molose - 970505 1271 083 - House No 1319, Mopikela Section, THABAZIMBI, 0380 - *Pinky Johanna Tshepo*
25. Forgiveness Molope - 970703 5509 083 - P O Box 6925, MAHLATJANE, 0736 - *Forgiveness Motsapane*
26. Sipho Jackson Ncokazi - 801203 5723 086 - 174 Mashiloane Street, THOKOZA, 1426 - *Thandisile Tollman*
27. Ndivhoniswani Dagada - 910824 0655 086 - 16 Stude Baker Street, Eden Park, ALBERTON, 1458 - *Yaya*
28. Maletabata Rosina Matsabisa - 870721 0405 082 - 1765 Itumeleng Location, ZASTRON, 9950 - *Nthabiseng Rosina*
29. Yamuna Ganga Sarasvati Josephs - 960405 0114 081 - 74 Pin Oak, 251 Timbavati Street, MORELETA PARK, 0181 - *Lara Meone Gray*
30. Marcia Mmatsela Muthathi - 840411 0370 083 - 7 Jubilee Creek, Northview Estate, BENDOR, 0699 - *Batya*

31. Gilbert Rangwane Seshwene - 880402 5896 082 - P O Box 66, BOCHUM, 0790 - *Gilbert Rawane*
32. Kabelo Molabe - 990401 5100 088 - P O Box 2239, MOROKE, 1154 - *Ntobeng Kabelo*
33. Monica Nontlhupheko Fatuse - 971207 0131 082 - 29 Goud Street, VREDENBURG, 7380 - *Nomaphelo*
34. Tshepo Kgobane - 850822 5883 085 - 129 Block Mm, SOSHANGUVE, 0152 - *Tshepo Ramoroka*
35. Tetelo Francinah Kanyane - 940530 0690 080 - 14354 Imbila Street, Ivory Park, MIDRAND, 1685 - *Tetelo Kgolane*
36. Rulph Mosoma - 990527 5649 086 - 555 New Stand, LEBOENG, 1126 - *Rulph Bonolo*
37. Margaret Van Wyk - 890822 0490 086 - 15090 Snake Park, Maokeng, KROONSTAD, 9500 - *Margaret Lerato*
38. John Themba Madonsela - 970309 5833 083 - 6 Apple Close, Extension 3, EDENVALE, 1609 - *Karabo John Themba*
39. Nomthandazo Joyce Madiseng - 701111 1065 082 - 50294 Extension 18, Themba Dimba Street, MAMELODI EAST, 0122 - *Nomthandazo*
40. Maria Suziwe Mathambo - 740704 1031 089 - House No 254, Rdp, MARIKANA, 0284 - *Maria Buhle Zuziwe*
41. Lizzie Matsheka - 811002 0692 082 - 7540 Extension 39, MMABATHO, 2735 - *Pelonomi Lizzie*
42. Tamara Mhlekwa - 831127 0800 082 - 17102 Extension 22, BOITEKONG, 0299 - *Tamara Limise*
43. Chantel Schroeder - 880720 0006 088 - 299- 21st Avenue, VILLIERIA, 0186 - *Chantel Mackenzi*
44. Esther Ditshele Sere - 840805 0438 081 - 7225 Melanite Street, Ratinum Village, RUSTENBURG, 0300 - *Esther Lesego*
45. Hazel Luputa - 830507 0642 082 - 3 Twinspot, Ridgehill, Drum Park, NELSPRUIT, 1200 - *Hazel Amanda*
46. Nozabalise Margaret Soposi-Qayiya - 740101 1462 085 - K 147 Mdala Street, Khayamnandi, STELLENBOSCH, 7600 - *Bukhanye*
47. Cockie Sarah Legodi - 770507 0283 087 - Stand No 86, GROBLERSDAL, 0470 - *Kuki Makgwale*
48. Kwase Evodia Shau - 980709 0256 081 - 10181 Snake Park, KROONSTAD, 9499 - *Sebabatso Evodia*
49. Riaas Moosa - 760109 5029 086 - Le Seur Street, WORCESTER, 6849 - *Riyaaz*
50. Bhulukazi Masangweni - 920406 6196 089 - Magutywa Area, TSOLO, 5170 - *Akhona*
51. Anna Motouda Leokaoke - 830327 0590 086 - 1506 Kgotsong, BOTHAVILLE, 9660 - *Anna Molouwa*
52. Annaline Carolus - 750530 0184 083 - 154 Batavia Street, Extension 13, BELHAR, 7493 - *Aneesa*
53. Tshokolo Stuurman Serame - 900418 5752 089 - 10782 Majemantsho, MAHIKENG, 0730 - *Tshidiso Tshokolo Stuurman*
54. Senzo Sithole - 980905 6384 089 - 289 Tshepisong West, ROODEPOORT, 1724 - *Senzo Enouge*
55. Ntsoaki Motete - 960309 1234 080 - 6085 Zone 8, FICKSBURG, 9730 - *Ntsoaki Joyce*
56. Mkuseli Sikayi - 980501 6057 088 - 10090 Mdongwe, THEMBALETHU, 6500 - *Mkhuseli*
57. Mamosa Phashe - 910521 1108 087 - 20160 Peach Street, Extension 20, JOUBERTON, 2574 - *Mamosa Maching*
58. Khunjulwa Gulwa-Vangani - 561112 0900 088 - 5757 Langa Street, Boysdown, NYANGA, 7750 - *Khunjulwa Nomandla*
59. Petros Tshepiso Matjila - 960817 5871 087 - 3952 Extension 4, ZITHOBENI, 1024 - *Lesego Tshepiso*
60. Mhlongwe Petrus Kutloano - 651013 5294 082 - 1357 Mantenou Street, Extension 3, VOSLOORUS, 1460 - *Kutloano Petrus*
61. Monare Isaac Masemola - 860319 6014 081 - 1247 Makwane, GA-MASEMOLA, 1060 - *Monare Selby*
62. Leonard Luko Tyolo - 891204 6275 085 - Unit 207, Smit & Bankert, Block C, JOHANNESBURG, 2001 - *Leonard Lukho*
63. Boy Boy Mnqonono - 780205 5378 089 - 5748 Ulundi Street, Extension 3, MIDDELBURG, 1053 - *Boy Mpendulo Alfred*
64. Toughtense Ngarihlanga Silinda - 910123 0871 086 - Stand No 304, Block C, KOMATIPOORT, 1340 - *Lucia Amanda*

65. September Bongani Tshabangu - 900928 5504 082 - 336 Zakheni, Extension 2, KWAMHLANGA, 1022 - *Genius Bongani*

66. Rashila Mathgopaul - 650528 0091 085 - 39 Moorton Drive, CHATSWORTH, 4092 - *Rashila Emrith*

67. Masefako Grace Mashilwane - 870111 0354 086 - Stand No 140, Ga-Molepo, POLOKWANE, 0700 - *Ramaabela Grace*

68. Kagisho Moetanalo Selala - 881008 5666 083 - Private Bag X0180, S.A.A.F.C, THABATSHWANE, 0143 - *Kagisho Malekutu*

69. Gloria Mogapi - 920226 0925 089 - 95 Moedi Section, TEMBISA, 0100 - *Lindiwe*

70. Magdeline Patrick Papier - 980912 1418 086 - 16563 Thulani Street, KIMBERLEY, 8300 - *Magdeline Patricia*

71. Jeanette Mosadiwamarope Montsho - 730924 0785 087 - 5964 Extension 10, JOUBERTON, 2574 - *Jeanette Reneilwe*

72. Tonkase Emily Muiambo - 960926 1475 080 - 640 Bagale Village, TARLTON, 1749 - *Keneiloe Emily*

73. Finna Msiza - 870910 0449 089 - 85 Struben Street, RYNFIELD, 1520 - *Finna Dina*

74. Mahlubandile Emmanuel Radebe - 870108 5399 082 - 4th Avenue 31, WELVERDIEND, 2499 - *Israel Emmanuel*

75. Nkosnathi Nicho Mabena - 940921 5593 082 - 17199 Extension 17, EMBALENHLE, 2288 - *Kgaugelo Nkosnathi Nicho*

76. Epeleng Euphracia Hantise - 830427 0593 088 - 1019 Takeng Section, BATHLAROS, 8476 - *Ipeleng Euphracia*

77. Meja Edith Motsumi-Toka - 721225 0780 081 - 197 Reginald Street, KAREN PARK, 0118 - *Sarah Edith*

78. Joseph Mofokeng - 950509 6245 088 - 7090 Rebone Street, Extension 2, LAWLEY, 1824 - *Selebedi Joseph*

79. James Teddy Chesney - 670118 5176 085 - 4 Aquarims Close, Gelvandale, PORT ELIZABETH, 6089 - *Jameel*

80. Michael Dickson Abrahams - 680126 5239 082 - 6 Snowdrop Square, Bridgetown, ATHLONE, 7764 - *Rameez*

81. Muniamma Nadasen - 680911 0208 087 - 4 Zandberg Street, Haaszendal, KUILSRIVER, 7580 - *Lorna Muniamma*

82. Jeanette Solomons - 690511 0266 081 - 13 Corridor Road, HEIDEVELDT, 7764 - *Hafeezah*

83. Kamal Katherine Naicker - 750406 0176 082 - 5 Wallgate Close, Southgate, `, PHOENIX, 4068 - *Karmel Katherine*

84. Mickyle Daniels - 931202 5319 088 - 5 Acaspian Place, HANOVER PARK, 7945 - *Muneeb*

85. Zakiyya Jack - 960717 0144 086 - 5 Molteno Close, Portlands, MITCHELLS PLAIN, 7785 - *Zakiyyah*

86. Nadien Bean - 920407 0085 088 - 56 Apricot Street, BONTEHEUWEL, 9764 - *Nuhaa*

87. Terresa Odwa Kula - 970804 0326 083 - F 66 Xabiso Square, KHAYELITSHA, 7784 - *Odwa Cwerhelihle*

88. Treasure Jonas - 990630 5641 085 - 1828 Fuzi Street, KNYSNA, 7000 - *Ndyebo Treasure*

89. Sophie Hannah Wheeldon - 990324 0026 084 - 12 Old Farm Road, RONDEBOSCH, 7700 - *Jacob Elijah*

90. Mabutsi Khumalo - 000620 0332 085 - 9 Antrem Crescent, Grown Gardens, RIDGEWAY, 1400 - *Mabutsi Charmaine*

91. Sibabalo Malindi - 000914 6034 088 - Hombe Area, LUSIKISIKI, 4800 - *Songezo*

92. Nqobile Victoria Ngwadla - 001018 0674 086 - Cepeville Area, NTABANKULU, 5130 - *Nqobile*

93. Asisiphe Nqanqarhu - 010808 5528 082 - Ezinlqolweni, LADY FRERE, 5410 - *Asisiphe Bulela*

94. Florence Ntamboxolo Klaas - 850103 0418 080 - 455 / 31 Gaba Road, BEAUFORT WEST, 6970 - *Florence Ntomboxolo*

95. Manhlanyane Cedrick Mamaila - 860913 5814 085 - P O Box 410, NEBO, 1059 - *Kolwane Cedrick*

96. Nomwusalala Cetywayo - 900729 0820 089 - Ntlonyana Area, ELLIOTDALE, 5070 - *Ntombovuyo*

97. Zukiswa Charmaine Maya - 780626 0536 084 - Flat No 5, Ring Road, ALICE, 5700 - *Zukiswa*

98. Darren Leon Craig - 960115 5289 081 - 20 Tagus Road, Manenberg, CAPE TOWN, 7764 - *Azaam*

99. Chokgolo Johannes Rakgotho - 581115 5592 087 - Gedroogte , ZEBEDIELA, 0631 - *Chokgolo Johannes Malose*

100. Palesa Mautswane Sefoka - 990219 0362 085 - Ga-Masemola, NEBO, 1059 - *Palesa Mmataamane*

101. Rendani Rasila - 820918 5492 088 - 33 Modisane Street, Thalhill Estate, CENTURION, 2001 - *Tshifhiwa*

102. Abram Mashoto Kgaabi - 891215 5793 084 - Stand No 244, Ga-Makweya Village, POLOKWANE, 0700 - *Abraham Mphepu*

103. Ngoato Joan Makgoka - 640803 0633 084 - 163 Gamakgoka, Moletjie, KOLOTI, 0709 - *Ditebogo Joan Ethel*

104. Madimetja Tshephang Kekana - 001012 5591 080 - Rakgusatha, GROOTHOEK, 0608 - *Mpoto Tharollo*

105. Tsholofelo Naane - 881010 0523 087 - 533 Extension 23, GA-RANKUWA, 0200 - *Jasree Michael*

106. Lesego Motete - 990310 0321 088 - 7545 Darius Mhlongo Street, MOHLAKENG, 1750 - *Lesego Agnes*

107. Avela Mphathi - 921215 1477 082 - Thekwini Area, FLAGSTAFF, 4810 - *Avela Nofikile*

108. Phindile Maria Sambo - 920318 0819 089 - P O Box 6230, MHALA, 1281 - *Phindile Gugu*

109. Tiny Faith Magubane - 891213 0774 084 - 14 Keerom Street, WITPOORTJIE, 1700 - *Faith Nontsikelelo*

110. Orapeleng Moses Madito - 851102 5748 086 - 0839 Zone 1, THABA NCHU, 9780 - *Orapeleng*

111. Sebilaro Abram Molefe - 820102 6855 086 - Basambilu CNR, MIDRAND, 1683 - *Goarimbo*

112. Jhhouenni Soffieja Damons - 890818 0230 084 - 13 Compasberg, New Tafelsig, MITCHELLS PLAIN, 7789 - *Inshaaf*

113. Winile Nozinhlanhla Nkambule - 860625 0988 082 - Odondolo Reserve, EMPANGENI, 3910 - *Gabriella*

114. Dumalile Mbatha - 860301 1197 087 - Hopewell Location, IXOPO, 3276 - *Dumalile Zinhle*

115. Thembeka Khanyisile Mthethwa - 870408 1217 084 - Maqumbe Reserve, KWADUKUZA, 4450 - *Khanyisile Confidence*

116. Thayana Freedom Khambule - 881102 5996 085 - 14 Area, KWADUKUZA, 4450 - *Azaad Freedom*

117. Obakeng Joseph Kgatlhane - 850818 5978 081 - 345 Beirut, Block 1, MABOPANE, 0201 - *Divine*

118. Tsholofelo Ofentse Adesuyi - 831001 0520 083 - 19 Smuts Avenue, Unit 5, Panorama, SOMERSET WEST, 7130 - *Tsholofelo Oluwayemisi Ofentse*

119. Jeremia Gello Modikeng - 800802 6102 082 - 689 Fine Town, GRASMERE, 1828 - *Jeremia Sello*

120. Maqerie Ntebogang Motona - 810805 0830 085 - 18 Umtaya Drive, Joe Slovo, MILNERTON, 7441 - *Magerie Ntebogang*

121. Mashienyane Tumile Mamadise - 890422 0876 085 - 2281 Berkeboom Street, Extension 15, WITBANK, 1035 - *Mashienyane Tumelo*

122. Tebogo Kekana - 000201 0721 088 - P O Box 8326, KORINGPUNT, 0632 - *Tebogo Alenda*

123. Ntombozuko Mnyatheli - 840310 5547 085 - 2787 Ntsivane Street, PHILIPPI, 7750 - *Ntabozuko*

124. Onica Nokwazi Hlabisa - 910521 1051 089 - P O Box 5036, HLABISA, 3937 - *Nokwazi Oncar*

125. Sinesipho Mchunu - 981015 0259 086 - Mhlangeni Area, VRYHEID, 3105 - *Sinesipho Nolwazi Zamacingwane*

126. Nokwethemba Mtshali - 980205 0473 081 - Ogedleni Area, CEZA, 3866 - *Nokwethemba Sinikiwe*

127. Modiehi Amelia Khotle - 940916 1229 087 - 430 Phase 3, Clubview, WITSIESHOEK, 9866 - *Nthabiseng Mary*

128. Nathan Oscar Terry - 780707 5220 088 - 24 Casino Street, BEACON VALLEY, 7785 - *Nashief*

129. Ntsoaki Mamphuthi Khambule - 851217 0863 084 - 693 C Makaneng, WITSIESHOEK, 9870 - *Ntsoaki Lucy*

130. Nkosingiphile De Klerk Mbili - 960301 5472 089 - Tani Ngcibo Road, GAMALAKHE, 4249 - *Nkosingiphile*

131. Ramokone Lelani Moloantoa - 990115 1108 081 - 5865 Extension 7, MODIMOLLE, 0510 - *Ramokone Lillian*

132. Sazela Lungisani Zondo - 960516 6217 080 - P O Box 1402, NONGOMA, 3950 - *Thabiso Sazela Lungisani*

133. Pinky Lucia Mkhabele - 910514 1310 084 - 8502 Zone 8, Winnie Mandela, TEMBISA, 1734 - *Pinky Portia*

134. Nastassja Alexa George - 870326 0060 083 - 1 Burgundy Crescent, Westridge, MITCHELLS PLAIN, 7800 - *Isra*

135. Bonita Patricia Pietersen - 650507 0585 080 - 30 Steyn Street, Eastridge, MITCHELLS PLAIN, 7789 - *Sedicka*

136. Viola Fischer - 791226 0185 086 - 9 Laura, Lost City, TAFELSIG, 7700 - *Fadwa*

137. Ashley Stanley Adams - 820607 5205 083 - 16 Mavis Street, Tafelsig, MITCHELLS PLAIN, 7785 - *Amaad*

138. Chevon Anastasia Arendse - 900923 0116 081 - 106 Frankfort Street, PARROW, 7500 - *Amara*

139. Philisiwe Mercy Nhliziyo - 930129 0407 082 - 60 – 15th Avenue, ALEXANDRA, 2090 - *Miranda Mercy Philisiwe*

140. Phathuxolo Dudu - 921001 6261 089 - 726 Bhashe Street, Duncan Village, EAST LONDON, 5200 - *Phathuxolo Lihle*

141. Thandimbeko Manci - 901003 6406 080 - 3531 Extension 4, Thubelihle, KRIEL, 2271 - *Luzuko Thandimbeko*

142. Johannes Boy Khoza - 950527 5386 083 - 10790 Mocoseng, Phefeni, MAFIKENG, 2745 - *Elijah*

143. Keitumetse Macucwa - 901013 0444 086 - 417 A , Setmo Park, MMABATHO, 2735 - *Keitumetse Benediction*

144. Mahomed Irshaad Khan - 960622 5386 080 - 16 Bhyat Street, ERMELO, 2350 - *Muhammed Irshaad*

145. Fanisile Ntombela - 880721 0679 080 - B 45 H 39, Section 6, MADADENI, 2951 - *Fanisile Zama*

146. Masego Molemane - 980409 0481 082 - 5522 Wolk Street, Extension 2, BRAAMFISCHER, 1700 - *Penelope Masego*

147. Nhlanhla Nkambule - 831114 5613 082 - 45 Deyer Street, BALFOUR, 2410 - *Nhlanhla David*

148. Thabisile Mahlaba - 990405 0197 080 - 20 Gigger Road, KEMPTON PARK, 1616 - *Thabisile Wendy Pricilla*

149. Patience Nonhlanhla Madonsela - 820424 0908 087 - Flat 138, 245 Basden Avenue, CENTURION, 0150 - *Thembisile Patience Nonhlanhla*

150. Ntombikayise Rineth Mabaso - 941024 0656 084 - 35 Richmond Avenue, Aucland Park, JOHANNESBURG, 2001 - *Seskhona Ntombikayise*

151. Lakiwe Omphemetse Mabe - 951018 0197 088 - 13718 Inhababa Street, Extension 10, Eastfield, VOSLOORUS, 1475 - *Omphemetse*

152. Bolitsane Annah Khwela - 710810 0520 083 - 1108 Paff Street, BOOYSENS, 0182 - *Bolitsane Annah Success Nompelo*

153. Emily Nombuyiselo Yanta - 740417 0626 086 - 782 Mokwena Street, ,TLHABANE, 0299 - *Zoé Nombuyiselo*

154. Nicolene Fornieri - 901003 0046 080 - 2 Kei Street, Three Rivers, VEREENIGING, 1939 - *Winter Nicolene Bez*

155. Ndumiso Thokozani Sishi - 941003 0973 087 - 54121 Nkonka, ISIPINGO RAIL, 4110 - *Nondumiso Thokozani*

156. Tendani Cynthia Matshata-Nthutang - 720916 1176 086 - 15049 / 210 Umfolozi Street, Extension 6, KAGISO, 1754 - *Tendani*

157. Tursia Nicolete Hanekom - 950428 0152 085 - 11 Meadow Ridge, Blesbok Street, MOOIKLOOF, 1400 - *Tursha Nicolete*

158. Pinky Shabangu - 881222 0423 081 - 1148 Block G, SOSHANGUVE, 0152 - *Phumzile Annah Pinky*

159. Nkwane Rodney Mohlala - 820610 6776 086 - Stand No 590, MAMONE, 1063 - *Tšhahledi Rodney*

160. Beki Donald Khathide - 480610 5594 085 - 90 Eugen Marais Drive, ELANDSPARK, 2001 - *Bheki Donald*

161. Thulani Sandile Maunga - 880925 5202 083 - 3 De Beer Sumphony Way, BELLVILLE, 4100 - *Sandile Thulani*

162. Anastacia Grashna Versfeld - 001026 0493 084 - 44 Ryston Road, HANOVER PRAK, 7780 - *Aniqah*

163. Thabang Lebogo - 010402 5832 080 - Mokwena, RADITSHABA, 0710 - *Thabang Semaka*

164. Elizabeth Sebeta Maphalle - 860225 0872 087 - 784 Lakeside Proper, LAKESIDE, 1981 - *Sabeta Elizabeth*

165. Piet June Mahlangu - 591221 5482 085 - 659 Block Cc, MABOPANE, 0201 - *John*

166. Radibitswang Herman Mosiane - 760423 5463 082 - 581004 Zone 3, SEBOKENG, 1983 - *Rakebitsang Herman*

167. Samkelisiwe Shezi - 851111 1109 086 - Othulini Area, MSINGA, 3010 - *Samanisile*

168. Valelakazi Mihlali Hlalimobic Tiwani - 941226 1043 085 - Gxwalubomvu Area, COFIMVABA, 5380 - *Valelakazi Mihlali*

169. Nompilo Mntuthini Hlabisa - 930417 1044 081 - 394 C Mzemhlompe, SOWETO, 2010 - *Nompilo Neliswa*

170. Nthabiseng Lydia Moeng - 890209 0657 080 - 1183 Hans Kekana View, TEMBA, 0400 - *Paul*

171. Selby Mahele Mahumane - 850705 5453 084 - Zone 16, GA-RANKUWA, 0208 - *Selby Meele*

172. Mpfumiseni Shadrack Ramunawa - 950422 5891 086 - Sefako Makgatho Health Sciences, 4 B Molotledi Street, Zone 1, GA-RANKUWA, 0208 - *Mpfumiseni*

173. Kagontle Motsaathebe - 971204 5633 089 - P O Box 239, GANYESA, 8613 - *Kagontle Bruno*

174. Lekokonyane Johh Lekoko - 590118 5753 088 - 1284 Zone 2, THABA NCHU, 9780 - *Lekokonyane John*

175. Sanyane Hendrick Ledwaba - 801112 5538 081 - 5918 Th Avenue, ,ALEXANDRA, 2090 - *Lesego Hendrick*

176. Kamvelihle Mabho - 010328 0811 086 - Sigubudwin I Area, FLAGSTAFF, 4810 - *Kamvelihle Brightness*

177. Matihatsi Brain Mathebula - 991209 5187 081 - 18308 Extension 8 SOSHANGUVE, 0152 - *Matlhatsi Brian*

178. Hlanganani Amose Mchunu - 920322 5905 083 - P O Box 20, HLUHLUWE, 3960 - *Mthobisi Hlanganani*

179. Phumulle Precious Mchunu - 830302 1190 087 - 192 – 5th Avenue, CLERMONT, 3602 - *Thabile Phumulile Precious*

180. Motsepe Maila - 990728 5518 087 - 42 Cestrum Street, FLORA PARK, 0701 - *Motjepe*

181. Clementina Mpanzela - 950919 1488 080 - 12100 Barwa Street, DAVEYTON, 1500 - *Clementine Lethabo*

182. Sheila Ratefane - 831121 0729 086 - 10425 Extension 7 B, ORANGE FARM, 1805 - *Lerato*

183. Nandipha Bhili - 961117 0981 083 - Bhugneni Area, TABANKULU, 4800 - *Nandipha Avela*

184. Tshotlhego Aloycious Danster - 850324 5499 087 - 22513 Santa, Zone 2, GALESHEWE, 8301 - *Lopang Aloycious*

185. Michae Frederick Damster - 600501 5115 085 - 15 Luckybean Avenue, WELTEVREDEN PARK, 1709 - *Michael Frederick*

186. Diketso Matsimela - 941020 0720 086 - 28 A Madeliefie Street, Riamar Park, BRONKHORSTSPRUIT, 1020 - *Diketso Mohlokwa Rakgwale*

187. Mandla Bruce Ngwenya - 910517 5281 086 - 337 Injabule Avenue, LOMBARDY EAST, 2090 - *Love*

188. Mamoswanyane Sarah Letsoalo - 931105 0546 086 - House No 939, Muhlava Cross, TZANEEN, 0850 - *Sarah*

189. Hlulani Zaniwe Ngobeni - 981112 0477 089 - Mandlhakazi, TZANEEN, 0850 - *Hlulani*

190. Lisa Khethiwe Biyela - 970201 0499 087 - D 1004 Phumekhaya Road, CATORIDGE, 3600 - *Khethiwe Lisa*

191. Thabile Mpelegeng Makola - 000807 0640 084 - P O Box 37070, NEBO, 1051 - *Thabile Thipana*

192. Cynthia Honono - 840307 0970 080 - 173 Fountain View, 14th Road, MIDRAND, 1685 - *Cynthia Nabo Bukeka*

193. Monwadibe Cecil Ramagaga - 921201 5861 083 - 12866 Rooifontein, THABA NCHU, 9780 - *Tsoedi Cecil Glorious*

194. Cindile Florence Ndlozi - 860211 0730 087 - 14 – 22 Nd Street, MALVERN, 2001 - *Makhosazane Cingile Florence*

195. Mahlatse Phago - 950530 0465 084 - 546 Pele Street, SOSHANGUVE, 0152 - *Veronica*

196. Lindiwe Joyce Kabini - 920116 1148 080 - 25 The Height Estate , Cnr 5th And Smuts Drive, MIDRAND, 1606 - *Lindiwe Joy*

197. Christina Essa - 710518 0192 080 - 30 Orm Skirk, WOODSTOCK, 7925 - *Yusrah*

198. Jerome Brown - 711222 5092 085 - 9 Suther Peak Street, HEIDEVELDT, 7764 - *Junaid*

199. Tshogofatso Caswell Mkhwanazi - 970812 5965 086 - 2188 Block P, SOSHANGUVE, 0152 - *Phomotso Caswell*

200. Gugu Khoza - 821013 0705 087 - 110 Section B, PALMSPRINGS, 1984 - *Gugulethu*

201. Mapiyate Kebogile Rebecca Letube - 760430 0677 087 - 15853 Extension 15, JOUBERTON, 2574 - *Napyade Kelebogile Rebecca*

202. Ela Mguzulwa - 950710 1430 085 - 641 Berlin Crescent, QUEENSTOWN, 5320 - *Ela Gabriella*

203. Manko Edwin Makae - 830313 5753 085 - 2212 Indwe Street, Kanana Township, KLERKSDORP, 2570 - *Edwin*

204. Molatlhegi Godfrey Rankwe - 740307 5836 089 - 12562 Mosino Street, LEEUDORINGSTAD, 2640 - *Tshidiso Godfrey*

205. Elobi Lebone Lumbu - 770514 0199 081 - 17 Simonest Flats, OUDTSHOORN, 6625 - *Elaine Margaret*

206. Simtole Simfumene Allen Vimba - 751223 5512 081 - 103 Katdoring, 40 Vandalsen Street, PRETORIA WEST, 0183 - *Simtole*

207. Alton Tsietsi Mashibini - 761119 5322 083 - 20 Warden Street, Noordhoek, BLOEMFOTNEIN, 9300 - *Ntsika Alton Tsietsi*

208. Tovhowani Loraine Nevondo - 761214 0641 080 - 68 Wolmarans Street, The Orchards X10, PRETORIA, 0100 - *Tovhowani Murunwa*

209. Albert Musoliwa - 760304 6538 082 - Plot 108, Phola, OGIES, 0930 - *Thilivhali Albert*

210. Johannes Morakei Brown - 700202 5961 086 - 1 Blair Street, The Reeds, CENTURION, 0157 - *Phillip Thabo*

211. Noluthando Brown - 801030 1116 084 - 1 Blair Street, The Reeds, CENTURION, 0157 - *Noluthando Thando*

212. Mandhla William Thwala - 530707 5809 081 - Observation Hill, LADYSMITH, 3370 - *Mandla William*

213. Roshan Mansingh Mansingh - 010111 5178 085 - The Regent, 21 West Road , South Morningside, SANDTON, 2196 - *Maximilian*

214. Yi-Jing Chen - 820921 0350 087 - 15 Caledon Street, Brooklands Estate, Extension 33, NORTHCLIFF, 2195 - *Judy*

215. Olfa Jovela - 891224 1611 084 - Justicia, XIMHUNGWE, 1289 - *Olfa Thembisile*

216. Saltinah Mpuleng Mpetha - 591222 0868 088 - 953 Extension 1, Boitekong, RUSTENBURG, 0308 - *Salamina Maswai*

217. Lloyd Eugene Hendricks - 721015 5072 083 - 7 Bartman Street, BLOEMFONTEIN, 9300 - *Kgositsile Lloyd Eugene*

218. Disebo Seloane - 850603 0986 085 - 47 Block 4, Kutloanong, ODENDAALSRUS, 9483 - *Favored*

219. Sam Mphale - 920722 5381 088 - 126 Relebohile, LUCKHOFF, 9982 - *Kgethang Sam*

220. Semakaleng Veronica Dinkebogile - 870528 0326 089 - 2698 Tsanana Section, Khutsong Location, CARLETONVILLE, 2500 - *Malerato Semakaleng Veronica*

221. Qaqamba Qengeba Siyabulela Theophilus Makula - 790607 5621 087 - 15 Glenian Road, Magaliessig, FOURWAYS, 2064 - *Qaqamba Siyabulela Theophilus*

222. Queenie Irene Badat - 741114 0235 088 - 12 Rose Avenue, DE DEUR, 1900 - *Amina-Kashifah*

223. Modisaotsile Isaac - 971209 6188 082 - Motsoseng Village, MMABATHO, 2735 - *Phenyo Godfrey*

224. Sikhumbuzo Shavito Mthethwa - 950326 5438 089 - 3475 – 10th Avenue, CLERMONT, 3.610 - *Alex Xavito*

225. Anna Selato - 840531 0300 085 - House No 50361, Tsweleng Section, MODDERKUIL, 0352 - *Anna Kedibone*

226. Ayanda Nada Mlotshwa - 910705 0395 080 - 23 Alemein Street, Pollar Park, SPRINGS, 1560 - *Ayanda*

227. Kopoza Jimmy Mofpa - 790919 5417 089 - 126 Crescendo, Wagner Lane, MIDRAND, 2010 - *Lesiba Jimmy*

228. Macmillian Kokotso Shakwave - 811220 5579 084 - Stand 7717, 8 Chilly Street, Extension 52, ORCHARDS, 0182 - *Koketso Macmillian*

229. Sandikazi Makhetha - 680818 0774 085 - 34 Ferreira Street, Turffontein, JOHANNESBURG, 2001 - *Nozamikhaya Sandikazi*

230. Mususumeli Emmanuel Mutengo - 910331 5506 082 - House No 3842, SIYATHUTHUKA, 1102 - *Emmanuel Zane Shandukani*

231. Rita Alexandra Taborda Cook - 860811 0149 087 - 5 Oa Dickens Road, The Edge Complex, BARBEQUE DOWNS, 1685 - *Rita Alexandra*

232. Sehleko Sidney Diabela - 010219 5487 081 - P O Box 349, NEBO, 1051 - *Mpilwane Sidney*

233. Sampson Jan Ngwenya - 690303 5850 089 - 14 Johannes Koch Road, THABATSHWANE, 0187 - *Bafanyana Sampson*

234. Johann Mnisi - 930307 5025 089 - House No 1401, AMERSFOORT, 2490 - *Nkosinathi Johann*

235. Thandiwe Mogane - 940419 1334 080 - Hlabekisa, MOREMOLE, 1571 - *Thandiwe Agreement*

236. Hobo Joel Nzimande - 001214 5024 084 - P O Box 289, RIETSPRUIT, 2231 - *Hope Joel*

237. Valani Lekhuleni - 940911 0585 084 - Somapmepha Village, MIDDELBURG, 1050 - *Valani Gamelihle*

238. Kabelo Phuti Ngoepe - 001120 0291 083 - Norma, BOCHUM, 0970 - *Kabelo Phokela*

239. Lesemathapelo Mafilika - 010112 5792 081 - Caba Area, NTABANKULU, 5130 - *Lisema*

240. Sanelisiwe Brain Ndumiso - 001206 5092 087 - Bengu, LADY FRERE, 5410 - *Yonela Brain*

241. Joshua Warren Whiteboy - 000401 5171 087 - 12040 Extension 10, Chatty, PORT ELIZABETH, 6200 - *Sameer*

242. Masamo Constance Cuefer - 670622 0893 081 - 1712 Tseki Village, WITSIESHOEK, 9870 - *Honey Constance*

243. Masilo David Padima - 670227 5402 084 - Stand No L7, Ga-Sebone, EISLEBEN, 0810 - *Masilu David*

244. Anthea Rene Buys - 820521 0226 087 - 93 Anaboom Street, DELFT, 7100 - *Azra*

245. Johannes Stefanus Brink Van Der Wat - 890415 5033 082 - 16 Pallinghurst Road, Westcliff, JOHANNESBURG, 2193 - *Steven Brink*

246. Mfanelo Piet Makhamba - 890608 5418 085 - 1216 Vaal Rock, BRANDFORT, 9400 - *Andile*

247. Nonkululeko Cynthia Mchunu - 861015 1136 080 - 1807 Extension 6, ALBERTON, 1450 - *Nonkululeko Cynthia Nompilo*

248. Nosimo Alicia Mnge - 861022 1137 084 - 3663 Golf Course, Kwanomzamo, HUMANSDORP, 6300 - *Noneka Alicia*

249. Zintathu Shibe - 980908 0532 083 - Ward 24, Betania, PORT SHEPSTONE, 4240 - *Sithabile Zintathu*

250. Esmelda Van Jaarsveld - 841023 0045 083 - 434 Vanessa Road, GARSFONTEIN, 0081 - *Esnelda*

251. Nasstasta Chantelle Adams - 870411 0152 088 - 7 Acacia Road, GORDONS BAY, 7140 - *Nazreen*

252. Jana Van Der Meulen - 870201 0085 085 - 12 Central Square, Paulshof, JOHANNESBURG, 2191 - *Jana Cecilia*

253. Sathyabama Naidoo - 861228 0202 080 - 727 House 109, Montford, CHATSWORTH, 4092 - *Rhode*

254. Bianca Mary Hansen - 890515 0098 087 - 65 Madeira Drive, Costa Da Gama, MUIZENBERG, 7945 - *Amani*

255. Jankins Koos Esau - 861115 5053 081 - 136 Dahlia Street, Topline, UPINGTON, 8800 - *Jenkins Jemaz*

256. Magarani Devaracha - 871018 0129 088 - 31 Hopecroft Place, Longcroft, PHOENIX, 4068 - *Laura*

257. Hester Estelle Goliath - 661221 0092 082 - Golf Crescent, CERES, 6835 - *Estelle Hester*

258. Bongiwe Nakile Khumalo - 000216 1422 080 - 8843 Maluti College, WITSIESHOEK, 9866 - *Bongokuhle Saselihle*

259. Kgotlelelo Maureen Wendy Kgalema - 000401 0815 084 - Cresteo Eagle, KEMPTON PARK, 1619 - *Wendy Maureen*

260. Noncedo Dumiso - 001207 1147 081 - Lutshaya, LUSIKISIKI, 4820 - *Thozama*

261. Siyanda Njunguza - 000913 6385 086 - Silangwe Area, BIZANA, 4800 - *Siyavuya*

262. Pamerot Kamogelo Maphakela - 000806 5739 081 - 4937 Section B, EKANGALA, 1021 - *Kamogelo Nimrod*

263. Dimond Msibi - 001226 5097 084 - 5259 Extension 2, Khutsong South, CARLETONVILLE, 2500 - *Diamond*

264. Vincent Rohanlall - 640906 5236 082 - 76 Masouri Road, Springfield, DURBAN, 4001 - *Afzil*

265. Vasantha Naidoo - 710503 0253 082 - 1650 Plave Street, Extension 1, LENASIA, 1829 - *Varshni*

266. Jerome Anthony - 710830 5008 082 - 2 C Seine Walk, MANENBERG, 7764 - *Jamiel*

267. Nicolene Joharie - 720417 0291 083 - 21 Taaibos Avenue, BONTEHEUWEL, 7764 - *Nuraan*

268. Zaheera De Klerk - 720529 0219 086 - 25 Radbourne Road, WARNER BEACH, 4126 - *Auric Georgina*

269. Sidney Raad - 490117 5069 082 - 3 Halnstaw, Oakhill, SUNNINGDALE, 8010 - *Said Youssef Saaddine*

270. Eveline Sandra Frost - 500926 0104 084 - 11 Van Zyl Street, SOMERSET WEST, 7129 - *Sandra Evelyn*

271. Brenda Susan Jardine - 690709 0067 083 - 4 Isak Court, Antoinette Street, CLAREMONT, 2001 - *Badroonisha Brenda*

272. Aletta Catharina Jooste - 960927 0111 080 - 452 C Queens Crescent, Lynnwood, PRETORIA, 0001 - *Cathrin*

273. Wonderboy Hamilton Mzobe - 970213 6041 086 - 358 B Old Main Road, AMANZIMTOTI, 4100 - *Titus Wonderboy*

274. Sylvia Shabalala - 990808 0929 081 - 11827 Mbheka Section, Tumahole, PARYS, 9585 - *Sylvia Lahliwe*

275. Mminah Ramatsobane Mamogoane - 910320 0845 082 - 106 Howard Court, 5 Newick Road, GRASSWOLD, 2090 - *Ramogohlo Maria*

276. Cherrine Nkuna - 911113 0835 081 - Stand No 386, 22 A Nkomo, GIYIANI, 0826 - *Charity*

277. Geraldo Petersen - 900704 5271 083 - 139 Harvest Street, Westridge, MITCHELLS PLAIN, 7785 - *Niyaaz*

278. Thoriqira Fagodien - 990318 0222 081 - 21 B Bonteheuwel Avenue, BONTEHEUWEL, 7764 - *Thaaqirah*

279. Jason Du Preez - 900130 5196 080 - 136 Koedoe Street, Kewtown, ATHLONE, 7764 - *Jameel*

280. Noyolo Yutu - 920705 1132 084 - Sigodlweni Location, BIZANA, 4800 - *Noyolo Sizeka*

281. Helenah Pedro Dimba - 950419 0725 087 - 114 Ferreira Street, TURFFONTEIN, 2190 - *Helena Nothando Pedro*

282. Thembane Godfrey Mpama - 871203 5825 084 - 520 Pitso, Mochwani Street, MOTHIBISTAD, 8474 - *Thembani*

283. Mhlabeni Mhlageni - 900614 1256 089 - Mapuzi Area, MQANDULI, 5080 - *Ntombifikile*

284. Righiet Mohamed - 981111 0177 087 - 1343 Protea Street, LENASIA, 1829 - *Farzanah Ismail*

285. Lenias Mashigo - 930810 6320 086 - Stand No 653, SABIE, 1200 - *Kgomotso Lenias*

286. Sanelisiwe Nyamazana - 950708 6105 082 - No 6908, Shayamoya, KOKSTAD, 4700 - *Sanele*

287. Annemarie Kgeti - 931129 0799 081 - 69 Soga Street, KIMBERLEY, 8300 - *Thando Annemarie*

288. Petronella Hendrina Terblanche - 900404 1725 089` - 9 Octopus Street, Extension 7, ZWARTKOP, 0157 - *Rolien*

289. Yolanda Simkana - 910825 1096 089 - 1986 Shayamoya, KOKSTAD, 4700 - *Yolanda Nory*

290. Charmain Jabulile Bayda - 000809 0467 088 - B148 New Stands, MODDERSPRUIT, 0274 - *Keitumetse Charmain*

291. Lucky Gqalo Gumbi - 760306 5478 087 - 26 Dissotis Drift, Aquadene, RICHARDS BAY, 3900 - *Lucky*

292. Motahabo Betty Matlou - 700202 1227 086 - 037 Sekgopo, MODJADJISKLOOF, 0835 - *Moyahabo Betty*

293. Ntombizomtshato Hlantwana - 981222 0656 085 - Mswakazi Area, LUSIKISIKI, 5100 - *Zingisa*

294. Goodwill Sithembiso Gwala - 930428 5689 086 - 53 Juta Street, ,BRAAMFONTEIN, 2000 - *Goodwill Sithembiso Hamm*

295. Nhlakanipho Gumede - 910815 5834 080 - C 415 Maphumulo Road, Mpumalanga Township, HAMMARSDALE, 3700 - *Nhlakanipho Common*

296. Kristen Paige Cornell - 970223 0164 081 - 14 Landsdowne Road, BRYANSTON, 2195 - *Keagan Paige*

297. Riekkie Makoke - 650906 0685 082 - 3037 Pampierstad, PAMPIERSTAD, 8566 - *Ricky Oatlhotse*

298. Thabang Vusi Victor Moleko - 800220 5198 086 - 1123 Subway Street, Extension 27, DEVLAND, 1811 - *Vusi Victor*

299. Masindi Romanuelle Marada - 000927 5316 082 - 23 Protea Avenue, ALAN MANOR, 2091 - *Romanuelle Mulalo*

300. Karabo Barakile Mguni - 000309 0455 084 - Mabocha, PRAKTISEER, 1150 - *Karabo Katlego*

301. Shoneese Alyssa Strydom - 901009 0010 083 - No 35 Riviera Palms, Wasbank Street, Little Falls, ROODEPORT, 1724 - *Aadilah Anjali Mudra*

302. Comfort Mokiti Kgopa - 861105 5730 085 - Ga – Mampa, MAFEFE, 0738 - *Comfort*

303. Ramadimetja Germinah Mphahlele - 620105 1135 083 - Dithabaneng, MPHAHLELE, 0736 - *Mpetlele Ramadimetja*

304. Joyce Nkapu Manyaka - 710919 0707 085 - 22 Mindalore Exchange Street, KRUGERSDORP, 1739 - *Mariah*

305. Ratshupana Seroke - 890428 5861 089 - House No 1984, Mmaudu Section, HAMMANSKRAAL, 0400 - *Ratshupana Jacob*

306. Lunikha Lisana - 000626 0793 085 - 20688 Fara Fata Street, Mandela Park, KHAYELITSHA, 7784 - *Lunica*

307. Sibusiso Walter Tshabalala - 840701 5256 083 - 2 B Naledi Matshaya Street, PO KWA – XUMA, 1868` - *Sylvesta*

308. Zukile Mnqanqeni - 760411 5771 083 - Mhlopekazi Area, NGCOBO, 5050 - *Zukile Sydwell*

309. Nnana General Maphoso - 540321 5395 089 - 1240 Drawwetjie Street, Extension 8, WINDMILL PARK, 1459 - *General Nnana Sokgotho*

310. Nditsheni Madzhie - 871104 0683 082 - 4811 Mothibi Street, Ilibaba Section, TEMBISA, 1632 - *Raphaella*

311. Tlangelani Ngomane - 940603 1044 084 - No 14501 /30, Extension 12, PROTEA GLEN, 1818 - *Tlangelani Cassie*

312. Thembinkosi Mankqoyi - 010423 5413 085 - Lindile Location, MTHATHA, 5099 - *Sinoxolo*

313. Eljerome Jason Cosmos - 920620 5037 082 - 25 Marigold Street, Protea Park, ATLANTIS, 7349 - *Jason*

314. Ramphohlane Koos Mohapi - 910321 5611 081 - 574005 Zone 3, SEBOKENG, 1983 - *Hlompho Lehlohonolo Mpho Bohlale*

315. Johannes Makwisa Moloi - 831125 5718 085 - 286 Cluetoview, WITSIESHOEK, 9872 - *Tladi*

316. Shaaista BI Ameed - 860422 0230 081 - 19 Newgreen Close, Greenbury, PHOENIX, 4068 - *Shaaista Shakeel*

317. Neville Andrew Murray Youle - 860421 5220 089 - 41 Tsane Klay, OTTERY, 7764 - *Natheer*

318. Angela Harrison - 840529 0064 081 - 291 Main Road, KENILWORTH, 7708 - *Angela Hobbs*

319. Freddie Meyer - 830101 5211 083 - 7 Kastreelberg Weg, Bishop, LAVIS, 7490 - *Fayaad*

320. Mitchelle Diana Claudette Gouse - 821018 0174 085 - 2 Studebaker Street, Eden Park, ALBERTON, 1450 - *Michelle Diana Claudette*

321. Tshepo Abednigo Mocwagole - 910919 6367 080 - 13 Cowburn Street, KURUMAN, 8460 - *Tshepo*

322. Joy Van Rooyen - 700711 0166 087 - 59 Boston Street, Boston, BELLVILLE, 7530 - *Joy Denise*

323. Katrina Bekeur - 650917 0252 088 - 38 Gardenia Street, LEWINGTON, 7655 - *Katy*

324. Ian Dennis Namhing - 630616 5125 084 - , No 7 Vickus Court, CLAREMONT, 2093 - *Ebrahim*

325. Strike Skosana - 990217 5396 082 - 63 Pailane , Masichaba, DUDUZA, 1496 - *Strike Thamsanqa*

326. Machoene Margaret Sekalo - 740405 0522 082 - 2734 Rockville, HEBRON, 0193 - *Pearl Margaret*

327. Moipone Alice Mosothoane - 881017 6138 083 - 2577 Ricerside View, Extension 33, RANDBURG, 2194 - *Mosothoane*

328. Nicolette Claudine Said - 890421 1011 080 - 9 D Surwood Walik, CAPE TOWN, 7824 - *Nuraan*

329. Mbulelo Njokweni - 850907 5279 085 - 1542 Mthimunye Extenaion 2, Botleng, DELMAS, 2210 - *Mbulelo Gift*

330. Ismaeel Scholtz - 331002 5192 089 - 65 A Jansen Road, MAITLAND, 7405 - *Isaac*

331. Christiaan Rodriques - 451014 5502 088 - 9 Wegstraat, Macassar, CAPE TOWN, 7130 - *Christian Epaul*

332. Anthony Arendse - 760921 5168 080 - No 33 Navarre Crescent, BELHAR, 7498 - *Ashuraf*

333. Griet Snyman - 630605 1052 087 - 2866 Hane Street, DANDSKUIL, 8405 - *Kediemetse Soes*

334. Beuty Nobahle Mali - 620331 0670 082 - 143 Itsomo Street, Extension 6, MFULENI, 7100 - *Nobahle*

335. Zama Shezi - 610305 5349 084 - Nonguqa Location, BULWER, 3244 - *Zamokwakhe Apheos*

336. Samantha - Sue Marx - 820309 0003 080 - 45 Figulus Street, KRUGERSDORP WEST, 1739 - *Tanwen Samantha*

337. Baron Baron - 780627 5136 086 - Wakkerstroom Farm, Agter, WITZENBERG, 6835 - *Elroy*

338. Doris Veronica Cecilia Ebrahim - 770716 0114 081 - 4202 Buys Street, WESTBURY, 2093 - *Fatima*

339. Nicky Fredericks - 511222 5100 088 - 139 A Summerville Road, Mornignside, PORT ELIZABETH, 6025 - *Najoemoedeen*

340. Esmereldé Yolandé Fredericks - 740614 0123 086 - 139 A Summerville Avenue, Morning Side, Parsonsvlei, PORT ELIZABETH, 6025 - *Fadeelah*

341. Sameer Ismail - 960103 5279 088 - 18 Celliers Street, RIDGEWAY, 2092 - *Sameer Cassim Haniff*

342. Boitumelo Kamanga - 950123 0863 084 - 1106 Plettenburg Street, BEREA, 2001 - *Alice Nandi*

343. Mosebi John Nkomo - 840923 5304 081 - 8304 Phakoe Street, VOSLOORUS, 2000 - *Sebbie*

344. Mabheľandile Vananda - 970217 5022 088 - 19612 France Street, KRAAIFONTEIN, 7570 - *Mabhelandile Lutho*

345. Thobhathi Ndwandwa - 001119 5754 087 - Gcebedi Area, UMZIMKHULU, 3297 - *Mphathi Thobhathi*

346. Kyle Beukes - 940621 5101 080 - 63 Reyersdal Avenue, Bayview, STANDFONTEIN, 7798 - *Adbul – Malik*

347. Semakaleng Jacob Msimango - 990419 5480 086 - 441 Sediba Street, Phagameng Location, MODIMOLLE, 0510 - *Semakaleng Jacob Leroy*

348. Ramatsobane Patricia Tladi - 890105 0768 085 - 4 Samson Street, KIMBERLEY, 8300 - *Ramatsobane Poncho*

349. Mosiuoa Tsoeliane - 761114 5323 082 - 200 A Lengau Street, Zone 1, MEADOWLANDS, 1852 - *Moeketsi*

350. Dumisani Treasure Nkinika - 920722 0978 086 - 408 Elangeni Gardens, 79 Albert Street, Marshalltown, JOHANNESBURG, 2001 - *Dzunisani Treasure*

351. Lusanda Mthakathi - 990207 5710 085 - Dubana Area, LUSIKISIKI, 4820 - *Lusanda Elvis*

352. Ramabanta Samuel Hlobelo - 811231 5766 084 - 1709 H3 Section, BOTSHABELO, 9781 - *Samuel*

353. Willem Kapile Matheolana - 930303 5562 080 - 1464 /89 Koning Street, Aksiepark, POTCHEFSTROOM, 2531 - *Rapule Willem*

354. Pheagane Samuel Seabela - 010603 6114 085 - 269 Makeketela , GA - MAMABOLO, 0727 - *Hendrick Samuel*

355. Mpekwa Portia Thobakgale - 930421 0213 085 - Stand No 9610, Extension 44, Norlan Klaasen 56, POLOKWAME, 0699 - *Maite Maria*

356. Lungile Kubheka - 941201 0374 088 - 1090 C Tshabangu Drive, White City, JABAVU, 1809 - *Lwazi Lungile*

357. Eric Andile Madi - 830111 5665 089 - 1785 Mtambo Street, Dlamini No 1, SOWETO, 1818 - *Andile*

358. Samuel Thungu Tabane - 780510 5546 084 - 10 Extension 24, GA – RANKUWA, 0208 - *Samuel*

359. Morobula Joshua Matheera - 940929 5156 081 - 27 Jakala Street, Weilers Farm, Kanana Park Extension 1, GRASSERE, 1829 - *Mpho Morobula Joshua*

360. Macétta Merle Heath - 981109 0275 083 - 7 Nederberg Drive, RICHWOOD, 7441 - *Bastian Stone*

361. Mthokozisi Brain Kubeka - 991120 6111 089 - 1033 Mayibuye Inendele Street, Extension 34, TEMBISA, 1632 - *Mthokozisi Brian*

362. Roneila Sewpersadh - 910914 0114 083 - 36 Lucknow Road, LADYSMITH, 3370 - *Laana*

363. Sphiwokuhle Snobolo - 990215 0564 084 - 2252 Mdantsane , EAST LONDON, 5219 - *Siphiwokuhle*

364. Charl Anthony Sauls - 720113 5026 083 - 16 Ten Street, Rusthof, STRAND, 7140 - *Akram*

365. Naughty Mametje - 981117 5723 080 - 164 Nwamarhanga Village, GIYANI, 0826 - *Elijah Thabo*

366. Tozana Diko - 770831 0487 088 - 104 Main Street, BIZANA, 4800 - *Thozama*

367. Petronella Mathiba - 710426 0422 087 - 180 Mafoda Street, KIMBERLEY, 8301 - *Petronella Connie*

368. Zinongo Tom - 010919 5248 082 - 61 Queens Road, KING WILLIAMS TOWN, 5600 - *Lizwi*

369. Karabo Ezekiel Mampa - 940527 5764 084 - Po Box 105, MPHAHLELE, 5736 - *Ngwanamakwe Ezekiel*

370. Thembinkosi Godfref Gambu - 821018 5319 081 - 7487 Extension 4, ORANGE FARM, 1841 - *Themba*

371. Petrus Matlala - 930519 5612 084 - 6503 Sec 5, MASHIMONG, 0402 - *Tony Petrus*

372. Filiyasi Dineka - 971104 6044 080 - Shinira Area, ELLIOTDALE, 5070 - *Phyllius*

373. Matlhogonolo Phidiesih Dinoko - 860422 0660 089 - 20782 Ga Modisenyane, TLAKGAMENG, 8616 - *Matlhogonolo Felicia*

374. Phillimon Nare Pitjeng - 850901 5761 085 - 22496 Extension 7, SOSHANGUVE, 0152 - *Isrom Nare*

375. Jacobo – Mosebetsi Nyathi - 841015 5485 082 - 18 Callington Crescent, PARKLANDS, 7441 - *Mosebetsi*

376. Xolani Stanley Shai - 800730 5453 083 - No 5 Lowestoft, MOWCLAIR, 1862 - *Potlako Stanley*

377. Dunayne Bayrone Conradie - 990404 5266 081 - 61 Kilimanjalo, Tafelsig, MITCHELLS PLAIN, 7785 - *Duwayne Byron*

378. Engeline Nthapedisang Maneedi - 980315 1169 081 - 147 Lotlhakeng Section, BATLHAROS, 8476 - *Nthapedisang Engeline*

379. Ramogohlo Tebogo Magogudi - 981017 0507 084 - Po Box 523, LEFALANE, 0741 - *Hunadi Tebogo*

380. Mareme Innocent Mampa - 980722 5507 085 - Dithabaneng, DRIEKOP, 1129 - *Pholagolwa Innocent*

381. Siyamcela Nqadini - 980608 6378 081 - 12648 Mathapelo Street, Phola Park, TOKOZA, 1426 - *Jaden*

382. Vhangani Goderey Tshishonga - 850306 5653 086 - 9 Robert & Zelda Court, Park Street, KRUGERSDORP, 1739 - *Vhangani Godfrey*

383. Moditjana Lazarus Selahle - 390315 5249 081 - 7629 Section V, MAMELODI WEST, 0122 - *Mohumi Lazarus*

384. Rowan Montagwe Montague - 010104 6310 088 - 115 Hilltop Street, SCARBOROUGH, 7975 - *Rowan*

385. Thanda Ehrens - 000920 1671 089 - Ireland B 554, SUNDUMBIU, 4491 - *Thanda Chantelle*

386. Siboniseni Santos - 000523 5418 083 - Grootville Area, STANGER, 4400 - *Brenden Siboniseni*

387. Thoriso Ramadimetje Maila - 990506 0748 085 - Po Box 959, LEBOWAKGOMO, 0737 - *Thoriso Kanyane*

388. Selina Nkosi - 820606 2554 089 - 767 Embalenhle, EMBALENHLE, 2285 - *Selina Tholakele*

389. Nomfundo Brandy Dladla - 860220 1041 089 - 23604 Extension 16, MBALENHLE, 2285 - *Nomfundo Brenda*

390. Senelisiwe Zungu - 961010 0980 082 - Makala, DUNDEE, 3000 - *Sanelisiwe*

391. Nonsongo Sister Msiya - 850901 1155 084 - Mahobe Location, Ward 22, UMZIMKHULU , 3297 - *Nonjongo Sister*

392. Tsweletso Ditsepu - 000830 6135 081 - 188 Masehlaneng, GA – PHAAHLA, 1085 - *Tsweletso Lesolo*

393. Mokete Simelane - 880619 5845 088 - Ritela Location, UNDERBERG, 3257 - *Mokete Allen*

394. Sibonisiwe Bongiwe Ximba - 890922 1095 080 - Mbusweni Road 2, CHESTERVILLE, 4000 - *Sibongile Buyephi*

395. Segolo Abram Maredi - 691008 5313 082 - Seleteng Village, MPHAHLELE, 0736 - *George Abram*

396. Cindi Maseko - 990729 0712 089 - Embalenhle , Extension 2, WHITE CITY, 1199 - *Cindy Lopper*

397. Sphindile Mtshali - 911206 6288 089 - Po Box 110, Edendel PIETERMARITZBURG, 3200 - *Andile Rassul*

398. John Khuloane Mahloko - 790331 5375 087 - Stand No 302, JANE FURSE, 1085 - *John*

399. Bonkazi Happiness Ntlebi - 861013 0958 083 - T 180 Dromedarie Street, MBEKWENI, 7626 - *Nwabisa*

400. Musa Mdumiseni Shamase - 730418 5373 080 - 338 Umbilo Road, DURBAN, 4000 - *Muhle Mdumiseni*

401. Latheffa Suraya Moosa - 771028 0201 085 - 100 A Underwood Road, Sarnia, PINETOWN, 3610 - *Latheffa Maheera*

402. Phatudi Maponya Maponya - 791028 5745 082 - Coner Fox Galexander Street, JOHANNESBURG, 2001 - *Gabriel Maponya*

403. Helena Dorothea Coetzee - 701110 0108 083 - 435 Geel Street, ARNISTON, 7280 - *Helen*

404. Nkosinawo Mbeki - 010124 5583 089 - New Rest Area, LUSIKISIKI, 4820 - *Yawo Kennedy*

405. Moroamadile Jackson Lekgau - 590701 5733 083 - Phase 4, GA – MPHAHLELE, 0736 - *Moroamdile Benjamin*

406. Mahlatse Dories Koma - 691112 0507 084 - 6894 Hertz Street, Extension 33, DEVLAND, 1864 - *Mmapeu Dories*

407. Dimpho Millicent Makwana - 000221 0518 086 - Ga – Mogashoa, SEKHUKHUNE, 1124 - *Marebutse Millicent*

408. Lerato Andries Sethemane - 740414 5503 089 - Po Box 110, SOVENGA, 0727 - *Mamacheu Leputla Andries*

409. Mmogo Emily Rabodila - 590409 0729 086 - 5 Tokyo Avenue, Mahlasedi Park 1, POLOKWANE, 0699 - *Mookgo Mmabatho*

410. Tyron Ross Mc Donald - 910324 1171 084 - 22 Bundu Estate, WHITE RIVER, 1240 - *Thea Alice*

411. Khutso Teffu - 940916 5927 082 - 16 Kenneth Road, Savoy Estate, JOHANNESBURG, 2090 - *Lefa Matli*

412. Veli Lindelani Zwane - 900823 5993 080 - Po Box 317, EMPANGENI, 3910 - *Velemseni Lindelani*

413. Nongcebo Nombuso Centaine Thembinhlanhla Mnikati - 960912 1277 080 - Unit 9 Lincoln Hall, 92 Lena Ahrensroad, Glenwood, DURBAN, 4001 - *Enoch*

414. Francina Lebogang Matlhapa - 960329 1355 081 - 1333 Extension 3, SWARTRUGGENS, 0299 - *Francina Mamikie*

415. Thanduxolo Peacelove Mngadi - 910712 6029 085 - No 31 Madlala Road, DURBAN, 4066 - *Sabelo Peacelover*

416. Moropane Clarance Mahlokwane - 900130 6272 088 - 54 Felix , KIBLER PARK, 1822 - *Rasupi Clarence*

417. Samkelo Khanyi - 980713 6276 085 - Mazaretha, WASBANK, 2920 - *Samkelo Muhle*

418. Mpho Monica Mrwebi - 910810 1346 080 - 1910 Gwala Street, Kokosi, FOCHVILLE, 2515 - *Nosipho Monica*

419. Lesego Ishmail Phawe - 981125 5938 087 - 15763 Sonderwater, Extension 12, IKAGENG , 2531 - *Lesego Ishmael*

420. Christopher Plaatjies - 970518 5993 081 - 10 Cacadu Street, KWANOBUHLE, 6242 - *Christopher Siphesihle*

421. Priveshan Pillay - 900824 5138 080 - 1537 Heron Street, LENASIA SOUTH, 1829 - *Dartanian Michael*

422. Bonginkosi Emmanuel Mkhize - 990201 5599 085 - Ogonothini Area, NDWENDWE, 4342 - *Bongumenzi Emmanuel*

423. Liezel Karriem - 890214 0943 084 - 20 A 27th Avenue, ELSTESRIVER, 7493 - *Lafeeza*

424. Vidonia Under - 890617 0103 089 - No 25 Saldanha Street, RUYTERWACHT, 7460 - *Laeeqah*

425. Shana Octania Dolly – Philander - 890920 0230 088 - 50 Waaihoek Street, Tafelsig, MITCHELLS PLAIN, 7785 - *San'aa*

426. Jessica Koopman - 890826 0106 089 - 63 Glider Crescent, FACTRETON, 7405 - *Zayaan*

427. Jauslin Smith - 891028 0039 084 - 198 Ventura Street, FACTRETON, 7405 - *Natheerah*

428. Nomathamsanqa Muhammad - 890615 1354 081 - No 144 Queens Street, Time Hoosing, NGCOBO, 5050 - *Nomathamsanqa Razia*

429. Amecy Davalety Sitoe - 990216 0178 081 - 37 2nd Street, La Rochelle, ROSETTENVILLE, 2190 - *Jennifer Aminah*

430. Themba Success Mkhombo - 871023 6037 087 - Stand No 541, BUSHBUCKRIDGE, 1246 - *Thembinkosi Success*

431. Mpolokeng Agnes Sayi - 880125 0943 084 - 3287 Zambezi Street, Shalima Ridges, HEIDELBERG, 1441 - *Bonolo Agnes*

432. Confidence Maswanganye - 871218 0654 081 - 908 Block H , SOSHANGUVE, 0152 - *Katlego Confidence*

433. Mapaseka Norah Mothae - 900414 0265 086 - 18860 Meriting, Phelindaba Rockland, BLOEMFONTEIN, 9300 - *Thatohatsi Mapaseka*

434. Richard John Dirks - 781105 5194 081 - 29 Surrey Street, GOODWOOD, 7460 - *Ridha*

435. Maria Van Der Horst - 930211 0204 089 - Platdrif, RAWSONVILLE, 6845 - *Elmarie*

436. Phumza Nosindwa - 880202 0623 089 - 4 Avalon Rodid, Beacon Bay, EAST LONDON, 5200 - *Phumza Pesika*

437. Sphiliselo Magayana - 980324 1368 081 - 979 Malgal Street, GERMISTON, 1400 - *Portia Sphiliselo*

438. Stephance Godnes Khumalo - 840508 5766 080 - 28111 Partridge Street, Protea Glen, Extension 24, SOWETO, 1818 - *Stephance Goodman*

439. Ngoako Nicholas Mamatlepa - 860318 6036 086 - 140 Boshoff Street, Flora Park, POLOKWANE, 0699 - *Ngoako Nicholas Preston*

440. Themba Nkosi - 890926 5890 081 - Stand No 364, ZWELISHA, 1249 - *Mfundo Themba*

441. Geovona Cleophas - 010418 0507 089 - 3 Derwent Court, HANOVER PARK, 7780 - *Raiqah*

442. Mamphonyana Selina Mponya - 910306 0501 080 - 1191 Mahlatswetsa, EXCELSIOR, 9760 - *Mamphonyane Selina*

443. Curtly Domonic Poole - 960311 5037 089 - 3 Hazey View, Clark Estate, ELSIESRIVER, 7493 – *Qiyaam*

444. Khutso Makhura – 011127 6079 089 – House No 1706, Sefene, BOTLOKWA, 0812 – *Khutso Modisa*

445. Sello Lebohang Ernest Plaatjies – 930912 5294 088 – 51 Old Location, ZASTRON, 9950 – *Lebohang Ernest*

446. Nozenza Adelina Nofala – 770308 0836 085 – 2289 Nozizwe Location, VENTERSTAD, 9798 – *Thembeka Adelina*

## DEPARTMENT OF LABOUR

**NO. 1333** **18 OCTOBER 2019**

ANNEXURE

TAKE NOTICE THAT THE NATIONAL UNION OF FOOD BEVERAGE WINE SPIRITS AND ALLIED WORKERS ON BEHALF OF MEMBERS (the applicants) employed by VECTOR LOGISTICS (PTY) LIMITED has applied to the CCMA for a determination in terms of section 62 of the Labour Relations Act, 1995 ("the LRA")

(a) whether or not the applicants and their employer are engaged and/or employed in a sector(s) not falling within the road freight and logistics sector; and

(b) whether or not the applicants and their employer are engaged and/or employed in the road freight and logistics sector and/or any other sector including the wholesale and/retail sector referred to in Sectoral Determination 9; and

(d) whether or not the merchandising business that the applicants and their employer are engaged or employed in, is a separate business falling within the wholesale and retail sector referred to in Sectoral Determination 9.

TAKE NOTICE FURTHER THAT amongst the underlying issues that parties require the arbitrator to decide, are the following issues:

1. Whether the employer party and its employees are associated wholly or partly for the common purpose of distributing RCL Food's products to RCL Foods' customers; and, if so, what the effect thereof is.

2. Whether or not the applicants and their employer is the distribution arm of RCL Foods and, if so, what the effect thereof is.

3. Whether the employer party and its employees or some of its employees distribute non-RCL Foods' products and, if so, whether this is incidental to the business of the employer party or a separate business;

4. Whether other logistics providers, such as Logico Logistics and Digistics, are providing logistics to RCL Foods and are registered to the National Bargaining Council for the Road Freight and Logistics Industry ("the NBCRFLI") and, if so, what the effect thereof is.

5. Whether other merchandising providers, such as Imperial Logistics, On the Dot Media Logistics and Clover Logistics are providing merchandisers to customers and are registered with the NBCRFLI and, if so, what the effect thereof is.

6. Whether the employer party provides transport and warehousing (including cold storage and distribution) exclusively to RCL Foods.

7. What percentage of the revenue that the employer party derives from the transport and warehousing business is derived from services provided to third party customers (excluding RCL Foods).

8. What percentage of the income that the employer party derives from its transport and warehousing business, is derived from transporting goods for gain from third party customers (excluding RCL Foods)?

9. What is the core business of the employer party?

TAKE NOTICE FURTHER THAT the issues are to be determined under Case No. RFBC51392 at the Head Office of the CCMA, 28 Harrison Street, Johannesburg on a date to be determined by the Registrar.

TAKE NOTICE FURTHER THAT any interested party may, within 21 days of date of publication of this notice, make written representations envisaged by section 62 (7) and (9) in relation to the issues to be determined and that such written representations are to be directed to The National Senior Commissioner, Legal Services, CCMA Head Office, 28 Harrison Street, Johannesburg, 2001.

**DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**

**NO. 1334** **18 OCTOBER 2019**

## GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO.22 OF 1994)

Notice is hereby given in terms of section 11 (1) of the Restitution of Land Rights Act, 1994 (Act No.22 of 1994 as amended) that a claim for restitution of land rights on:

| | |
|---|---|
| REFERENCE | : 6/2/2/D/1078/0/0/106 |
| CLAIMANT | : Anthony R. Jewell (On behalf of Jewell Family) |
| PROPERTY DESCRIPTION | : Portion 1 of Farm No. 350, Mpofu/Stockenstrom, under Raymond Mhlaba Local Municipality, Amathole District Municipality, in the Eastern Cape Province |
| EXTENT OF LAND | : 1.9968 Hectares |
| TITLE DEED | : T9766/1972 |
| CURRENT OWNER | : Department of Rural Development and Land Reform |
| DATE SUBMITTED | : 30/11/1998 |

Has been submitted to the Regional Land Claims Commissioner for the Eastern Cape and that the Commission on Restitution of Land Rights will investigate the claim in terms of the provisions of the Act in due course.

Any person who has an interest in the above-mentioned land is hereby invited to submit, within fourteen (14) days from the publication of this notice, any comments/information to:

**Office of the Regional Land Claims Commissioner : Eastern Cape**
**Department of Rural Development and Land Reform**
**PO Box 1375**
**East London**
**5200**
**Tel : 043 700 6000**
**Fax : 043 743 3687**

**Mr. L.H. Maphutha**
**Regional Land Claims Commissioner**

**DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**

**NO. 1335** **18 OCTOBER 2019**

## GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO.22 OF 1994)

Notice is hereby given in terms of section 11 (1) of the Restitution of Land Rights Act, 1994 (Act No.22 of 1994 as amended) that a claim for restitution of land rights on:

| | |
|---|---|
| REFERENCE | : 6/2/2/D/968/0/0/11 |
| CLAIMANT | : Mbulaleko Dondolo (On behalf of Holela Community) |
| PROPERTY DESCRIPTION | : Unregistered and unsurveyed property known as Holela Location No. 7 Qora'A' Centane District, Mnquma Local Municipality under Amathole District Municipality, in the Eastern Cape Province |
| EXTENT OF LAND | : 4098 Hectares |
| TITLE DEED | : n/a |
| CURRENT OWNER | : Department of Rural Development and Land Reform |
| DATE SUBMITTED | : 2nd /12/1998 |

Has been submitted to the Regional Land Claims Commissioner for the Eastern Cape and that the Commission on Restitution of Land Rights will investigate the claim in terms of the provisions of the Act in due course.

Any person who has an interest in the above-mentioned land is hereby invited to submit, within fourteen (14) days from the publication of this notice, any comments/information to:

**Office of the Regional Land Claims Commissioner : Eastern Cape**
**Department of Rural Development and Land Reform**
**PO Box 1375**
**East London**
**5200**
**Tel : 043 700 6000**
**Fax : 043 743 3687**

**Mr. L.H. Maphutha**
**Regional Land Claims Commissioner**

**DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**

**NO. 1336** **18 OCTOBER 2019**

## GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO.22 OF 1994)

Notice is hereby given in terms of section 11 (1) of the Restitution of Land Rights Act, 1994 (Act No.22 of 1994 as amended) that a claim for restitution of land rights on:

REFERENCE : 6/2/2/D/1078/0/0/55

CLAIMANT : John Joseph Groep (On behalf of Groepe Family)

PROPERTY DESCRIPTION : Farm No. 647, situated in Stockenstrom/Mpofu, Raymond Mhlaba Local Mucipality, Amathole District Municipality in the Eastern Cape Province

EXTENT OF LAND : 5310 $m^2$

TITLE DEED : T54861/84

CURRENT OWNER : Department of Rural Development and Land Reform

DATE SUBMITTED : 31 / 12 / 1998

Has been submitted to the Regional Land Claims Commissioner for the Eastern Cape and that the Commission on Restitution of Land Rights will investigate the claim in terms of the provisions of the Act in due course.

Any person who has an interest in the above-mentioned land is hereby invited to submit, within fourteen (14) days from the publication of this notice, any comments/information to:

**Office of the Regional Land Claims Commissioner : Eastern Cape**
**Department of Rural Development and Land Reform**
**PO Box 1375**
**East London**
**5200**
**Tel : 043 700 6000**
**Fax : 043 743 3687**

**Mr. L.H. Maphutha**
**Regional Land Claims Commissioner**

**DEPARTMENT OF TRADE AND INDUSTRY**

**NO. 1337** **18 OCTOBER 2019**

**CO-OPERATIVES THAT HAVE BEEN REMOVED FROM THE REGISTER**

1. **INTSHONTSHO CO–OP LTD**
2. **SAKHISIZWE MASAKHANE CO–OP LTD**
3. **SEKGOLOLO AGRICULTURAL CO–OP LTD**
4. **THUTHUKANI AGRICULTURAL CO–OP LTD**
5. **NHLALO-ENHLE POULTRY CO–OP LTD**
6. **MAFEFE FARMERS AGRICULTURAL CO-OP LTD**
7. **MAANDA NGAU PFANA WOMEN AGRICULTURAL CO–OP LTD**
8. **ILANGALABAQULUSI CO–OP LTD**
9. **SINCELULWAZI AGRICULTURAL CO–OP LTD**
10. **CHICK CHICK AGRICULTURAL CO–OP LTD**
11. **PHUMELELA SIGISI CO-OP LTD**
12. **MPENDULO TRADING CO-OP LTD**
13. **NGATHA NNGWE FARMERS CO-OP LTD**
14. **RALEMA AGRICULTURAL CO-OP LTD**
15. **CICIRA NTUNGELE AGRICULTURAL CO-OP LTD**
16. **HALELLUHI POULTRY AGRICULTURAL CO-OP LTD**
17. **TSOGA O ITIRELE AGRICULTURAL CO-OP LTD**
18. **IMPATHO CO-OP LTD**
19. **MPOTO FARMERS CO-OP LTD**
20. **INQOPHAMLANDU FARMERS AGRICULTURAL CO-OP LTD**
21. **SEBENZELA ISIZWE AGRIC CO-OP LTD**
22. **AMAGORHA CO-OP LTD**
23. **KROMKUIL AGRICULTURAL DEVELOPMENT CO-OP LTD**
24. **TSHEPANANG GROUP 2 BURIAL SOCIETY CO-OP LTD**
25. **AROCHA CROP AND LIVESTOCK CO-OP-LTD**
26. **SEENO AGRICULTURAL CO-OP LTD**
27. **EMZAMWENI AGRICULTURAL CO-OP LTD**
28. **MAKHUPELLE AGRICULTURAL CO-OP LTD**
29. **WINGS OF THE NATION TRANSPORT CO-OP LTD**
30. **ROFHIWA AGRICULTURAL CO-OP LTD**

Notice is hereby given that the names of the abovementioned co-operatives have been removed from the register in terms of the provisions of section 73(1) of the Co-operatives Act, 2005 as amended.

**REGISTRAR OF CO-OPERATIVES**

Office of the Registrar of Co-operatives
Dti Campus
77 Meintjies Street
**Pretoria**
0002

Private Bag X237
**Pretoria**
0001

## DEPARTMENT OF TRADE AND INDUSTRY

**NO. 1338** **18 OCTOBER 2019**

**CO-OPERATIVES THAT HAVE BEEN REMOVED FROM THE REGISTER**

**1. FEEL AT HOME CO–OP LTD**
**2. BAHLOKI AGRICULTURAL CO–OP LTD**
**3. LUNGELOLUNTU CO–OP LTD**
**4. BARANGKUWI CO–OP LTD**
**5. VUKUZAKHE AGRICULTURAL CO–OP LTD**
**6. UPPER QORA AGRICULTURAL AND FARMING CO-OP LTD**
**7. PHUMELELA MLIMI AGRICULTURAL CO–OP LTD**
**8. ZIZWELE AGRICULTURAL CO-OP LTD**
**9. MPHAPOGENG AGRICULTURAL CO-OP LTD**
**10. ZENDELINGSTOP-DONKERHOEK AGRICULTURAL CO-OP LTD**
**11. GENERAL SUPPLIES AND MAINTENANCE CO-OP LTD**
**12. BILANYONI PIGGERY AND POULTRY CO-OP LTD**
**13. QHUBEKELA PHAMBILI CO-OP LTD**
**14. SIBONAKUDE AGRICULTURAL CO-OP LTD**
**15. LADIES FIRST AGRICULTURAL CO-OP LTD**
**16. THAKASA CO-OP LTD**
**17. ARELEBOGENG CO-OP LTD**
**18. IMBUMBA HYDROPONIC CO-OP LTD**
**19. EMALAHLENI PRIMARY AGRICULTURAL CO-OP LTD**
**20. EZINTINI FARMING CO-OP LTD**
**21. KWAMQAMATHI AGRICULTURAL CO-OP LTD**
**22. CAPE WINELANDS BRICKS AND BLOCKS SUPPLIER CO-OP LTD**
**23. UKHAHLAMBA CO-OP LTD**
**24. SENZOKWETHU YEBO CO-OP LTD**
**25. SIYANQOBA MPUMALANGA POULTRY FARMING CO-OP LTD**
**26. OKWETHUSONKE CROP FARMING CO-OP LTD**
**27. SIDALUXOLO AGRICULTURAL CO-OP LTD**
**28. UTHANDO LWETHU POULTRY FARMING CO-OP LTD**
**29. ACHIB FREE STATE (BETHLEHEM) CO-OP LTD**
**30. BUZAMADODA NKULULEKO AGRICULTURAL CO-OP LTD**
**31. SIYAQONGELA CO-OP LTD**
**32. EYETHU LE-ENTERPRISE CO-OP LTD**

Notice is hereby given that the names of the abovementioned co-operatives have been removed from the register in terms of the provisions of section 73(1) of the Co-operatives Act, 2005 as amended.

**REGISTRAR OF CO-OPERATIVES**

Office of the Registrar of Co-operatives
Dti Campus
77 Meintjies Street
**Pretoria**
0002

Private Bag X237
**Pretoria**
0001

**DEPARTMENT OF TRADE AND INDUSTRY**

**NO. 1339** **18 OCTOBER 2019**

Companies and Intellectual Property Commission
a member of the dti group

# NOTICE OF INTRODUCTION OF NEW ELECTRONIC FILING CHANNEL BY WAY OF THE WORLD WIDE WEB FOR COMPANY AND CLOSE CORPORATION FORMS

I, Adv Rory Wayne Voller, Commissioner of the Companies and Intellectual Property Commission (CIPC) hereby designate new electronic filing channel for Company and Close Corporation forms by way of an electronic web based portal called Bizportal, as pursuant to section 6(13) of the Companies Act, 71 of 2008 read with Companies Regulation 169, 2011.

This new electronic channel will be introduced as from 1 October 2019 or a later date communicated via the CIPC website www.cipc.co.za. The available services on such channel will also be communicated via the CIPC website www.cipc.co.za as and when such services become available.

**Adv R Voller**
**Commissioner: CIPC**
**27/9/2019**

ISO 9001: 2008 Certified
The dtiCampus (Block F - Entfutfukweni), 77 Meintjies Street, Sunnyside, Pretoria I P O Box 429, Pretoria, 0001
Call Centre: 086 100 2472
Website: www.cipc.co.za

**DEPARTMENT OF TRADE AND INDUSTRY**

**NO. 1340** **18 OCTOBER 2019**

## CO-OPERATIVES TO BE STRUCK OFF THE REGISTER

1. **SEKUNJALO AGRICULTURAL CO-OP LTD**
2. **MANDIWANA STONE CRUSHERS CO-OP LTD**
3. **HLOMULABASHA CO-OP LTD**
4. **AMANDLEMBOKODO CO-OP LTD**
5. **NOKUTHOMA CO-OP LTD**
6. **NTSHANTSHONGO SIYAPHAMBILI CRAFTERS AND SEWING CO-OP LTD**
7. **MOCHOCHONONO CO-OP LTD**
8. **KHUTHALA AGRICULTURAL CO-OP LTD**
9. **FORT MALAN KHULANI FARMING AND AGRICULTURAL CO-OP LTD**
10. **ZIGI ZENDODA CONSTRUCTION CO-OP LTD**
11. **KGATO-NTLE CO-OP LTD**
12. **PALESA FLOWERING CO-OP LTD**
13. **SHOSHOLOZA MNGUNGUNDLOVU CO-OP LTD**
14. **BOTAKI BOTHAKGA CO-OP LTD**
15. **YENZANAWE CO-OP LTD**
16. **SAKHILE BEATRICE CO-OP LTD**
17. **NCABAMBILE CO-OP ENTERPRISE LTD**
18. **EERSTERUST WOMEN'S CO-OP LTD**
19. **LETSITELE PAPIERSNY SEKONDERE KOOPERASIE BEPERK**
20. **BLYBANK WOMEN'S CO-OP LTD**
21. **UMSIMBITHI POULTRY AND CROP FARMING CO-OP LTD**
22. **BOKAMOSO ICT CO-OP LTD**
23. **KAREEFONTEIN SAAMSTAAN KOOPERASIE BEPERK**
24. **POVERTY STRICKEN FARMERS CO-OP LTD**
25. **AMANDLENKOSI AGRICULTURAL CO-OP LTD**
26. **SIYAZIZAMELA AGRICULTURAL CO-OP LTD**
27. **ZINESHE AGRICULTURAL CO-OP LTD**
28. **BOSHATSHE AGRICULTURAL AND FLOWER CO-OP LTD**
29. **SOK (KOOPERATIEF) BEPERK**
30. **MASITHEMBE AGRICULTURAL CO-OP LTD**

Notice is hereby given that the names of the abovementioned co-operatives will, after the expiration of sixty days from the date of this notice, be struck off the register in terms of the provisions of section 73(1) of the Co-operatives Act, 2005 as amended, and the co-operatives will be dissolved unless proof is furnished to the effect that the co-operatives are carrying on business or are in operation.
Any objections to this procedure, which interested persons may wish to raise, must together with the reasons therefore, be lodged with this office before the expiration of the period of sixty days.

**REGISTRAR OF CO-OPERATIVES**
Office of the Registrar of Co-operatives
Dti Campus
77 Meintjies Street
**Pretoria**
0002

Private Bag X237
**Pretoria**
0001

## DEPARTMENT OF TRADE AND INDUSTRY

**NO. 1341** **18 OCTOBER 2019**

### CO-OPERATIVES TO BE STRUCK OFF THE REGISTER

1. **INKUNZEMOLAKA CO-OP LTD**
2. **KHALIPHA SIZANANI CO-OP LTD**
3. **ISULETHU MTUBATUBA CO-OP LTD**
4. **MARHAGWA TOURISM AND TRANSPORT CO-OP LTD**
5. **SONDELANI FARMING AND AGRICULTURAL CO-OP LTD**
6. **RE BONE BURIAL SOCIETY CO-OP LTD**
7. **TIPFUXENI EGGS DISTRIBUTERS CO-OP LTD**
8. **PHILA SIPHILE WOMEN'S CO-OP LTD**
9. **MASIBAMBISANE POULTRY AND FARMING PROJECT CO-OP LTD**
10. **VEZIMBALI CO-OP LTD**
11. **MPHITHI MY HOME CO-OP LTD**
12. **MASAKHANE SIBEMUNYE CO-OP LTD**
13. **SINDAWONYE BURIAL SOCIETY CO-OP LTD**
14. **SAGQIGQA YOUTH ORGANISATION CO-OP LTD**
15. **UTHONGATHI CO-OP LTD**
16. **SEASONS CO-OP LTD**
17. **AMAVIYO CO-OP LTD**
18. **IZIGIZAMADODA CO-OP LTD**
19. **SIFIKILE TRANSPORT CO-OP LTD**
20. **SIZABANTU TRANSPORT AND TOURISM CO-OP LTD**
21. **FOX-WORTH SERVICES CO-OP LTD**
22. **PRO AND SHAI'S AGRICULTURAL CO-OP LTD**
23. **BOHANGE BOTLE BAKERY AND MULTI-PURPOSE CO-OP LTD**
24. **POTLAKA TRANSPORT CO-OP LTD**
25. **SIYAPHAMBILI AGRICULTURAL CO-OP LTD**
26. **BUMBANO AFRICA TZ PRIMARY CO-OP LTD**
27. **SIPHAKAMILE AGRICULTURAL CO-OP LTD**
28. **S'PHIWAYINKOSI AGRICULTURAL CO-OP LTD**
29. **CEZA FARMERS CO-OP LTD**
30. **TLHOMA MOGOMA CO-OP LTD**

Notice is hereby given that the names of the abovementioned co-operatives will, after the expiration of sixty days from the date of this notice, be struck off the register in terms of the provisions of section 73(1) of the Co-operatives Act, 2005 as amended, and the co-operatives will be dissolved unless proof is furnished to the effect that the co-operatives are carrying on business or are in operation.
Any objections to this procedure, which interested persons may wish to raise, must together with the reasons therefore, be lodged with this office before the expiration of the period of sixty days.

**REGISTRAR OF CO-OPERATIVES**
Office of the Registrar of Co-operatives
Dti Campus
77 Meintjies Street
**Pretoria**
0002

Private Bag X237
**Pretoria**
0001

# GENERAL NOTICES • ALGEMENE KENNISGEWINGS

## DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

## NOTICE 553 OF 2019

**NOTICE OF DECLARATION OF PARTICULAR GROUPS OF TREES "CHAMPION TREES" UNDER THE NATIONAL FORESTS ACT, 1998 (ACT NO. 84 OF 1998), AS AMENDED.**

By virtue of powers vested in me under Section 12(1)(a) and (b) of the National Forests Act, 1998, I, Barbara Creecy, Minister of Environment, Forestry and Fisheries hereby declare all particular trees and particular groups of trees set out in the schedule below as protected trees.

The effect of this declaration is that in terms of Section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence granted by the Minister or in terms of an exemption from the provisions of this subsection published by the Minister in the Gazette.

Contravention of this declaration is regarded as a first category offence that may result in a person who is found guilty of being sentenced to a fine or imprisonment for a period up to three years, or both a fine and imprisonment.

**For more information, contact**

**Shumani Dzivhani**

**Department of Environment, Forestry and Fisheries**

**Telephone number: 012 309 5765**

**Email: ShumaniD@daff.gov.za**

## SCHEDULE A

| CHAMPON TREE REGISTER NUMBER | Tree Species / Tree Name | Other common names | General Description | Location |
|---|---|---|---|---|
| 83 | *Sequoia sempervirens* (Californian redwood) The Harkerville Giants | Kaliforniese rooihout (A) | Tall, scenic redwoods planted in 1925, offering a resting place along a popular cycle track. | Harkerville State Forest, Garden Route National Park, Western Cape |
| 84 | *Ficus elastica* (rubber tree) The Company's Garden Giant | Rubberboom (A) | Large tree forming a focal point to the entry to the Company's Gardens | Company's Gardens, Cape Town, Western Cape |
| 85 | *Ficus sur* (broom cluster fig) The Sabie River Giant | Trosvy (A), Mogo-tshetlo (Sep), Umkhiwane (X), Umkhiwane (Z) | Very large tree along the Sabie River. | Erf 312, Sabie Park Mpumalanga |
| 86 | *Ficus burkeii* (common wild fig) The Whisper Tree | Gewone wildevy (A) | Very large tree in the grounds of a guest house. Estimated to be more than 150 years old. | Voëlroepers-fontein Guest House, Albertinia, Western Cape |
| 87 | *Eucalyptus viminalis* (manna gum tree) The Frankfort Big Trees | Mannaboom (A) | Two very large landmark trees on a farm near the Vaal Dam. | The farm Brakwal /Grootdam-Alma 1440, Frankfort, Free State |
| 88 | *Eucalyptis saligna* (Saligna gum) The Dwarsrivierkloof Lane | Saligna bloekom (A) | A lane of very large landmark trees on a farm, planted more than 150 years ago. | The farm Dwarsrivierkloof, Winelands District Municipality, Western Cape |
| 89 | Adansonia digitata (baobab) The Honnet Giant | Kremetart (A), Seboi (Sepedi), Muwana (Setswana), Muvhuyu (Venda) | The tree with the second thickest trunk diameter in South Africa. | Honnet Nature Reserve, Tshipise, Limpopo |
| 90 | *Corymbia ficifolia* (Red flowering gum) The Wolfskloof Tree | Rooiblom bloekom (A) | Very large landmark tree, 170 years old, on a farm. | Wolfkloof Farm, Robertson District, Western Cape |
| 91 | *Ficus anulata* (Anulata fig) The Durban Big Tree | No local names | Very large and rare landmark tree in botanical garden. | Durban Botanical Gardens, Ethekwini Municipality, KwaZulu-Natal |
| 92 | *Ficus benghalensis* (Banyan tree) The Durban Banyan Tree | Banyanboom (A) | Very large landmark tree in botanical garden. | Durban Botanical Gardens, Ethekwini Municipality, KwaZulu-Natal |
| 93 | *Eucalyptus camaldulensis* (River red gum) The Plesir de Merle Trees | Rooirivier bloekom (A) | Grove of very large trees. | Plesir de Merle, Simondium, Western Cape |

# ECONOMIC DEVELOPMENT DEPARTMENT

## NOTICE 554 OF 2019

**COMPETITION TRIBUNAL**
**NOTIFICATION OF DECISION TO APPROVE MERGER**

The Competition Tribunal gives notice in terms of rules 34(b)(ii) and 35(5)(b)(ii) of the "Rules for the conduct of proceedings in the Competition Tribunal" as published in Government Gazette No. 22025 of 01 February 2001 that it approved the following mergers:

| Case No. | Acquiring Firm | Target Firm | Date of Order | Decision |
|---|---|---|---|---|
| LM008Apr19 | RO Metrics Trading (Pty) Ltd | The Passanger Vehicle Dealership Business | 04/09/2019 | Approved |
| LM059Jun19 | Peermont Holdings (Pty) Ltd | LCI (Overseas) Investment (Pty) Ltd | 04/09/2019 | Approved |
| LM068Jul19 | Senwes Ltd | Grainovation (Pty) Ltd | 04/09/2019 | Approved |
| LM069Jul19 | Hulamin System (Pty) Ltd | The Alluminium Rolling Slab Casting Business | 04/09/2019 | Approved |
| LM187Oct18 | The South African Breweries (Pty) Ltd | The licensed brands and related assets currently held by Diageo SA (Pty) Ltd | 05/09/2019 | Approved Subject to Conditions |
| LM053Jun19 | Kagiso Media Investments (Pty) Ltd | MediaMark (Pty) Ltd | 11/09/2019 | Approved |
| LM074Jul19 | OCI Fertilizers Exports Holding Ltd | Adnoc Fertilizers | 11/09/2019 | Approved |
| LM079Jul19 | CPG in Store (Pty) Ltd | The Merchandising Business of the Consumer Packaged Goods (Pty) Ltd | 12/09/2019 | Approved Subject to Conditions |
| LM072Jul19 | Navitas Holdings (Pty) Ltd | Main Street 1606 (Pty) Ltd | 18/09/2019 | Approved |
| LM075Jul19 | Footgear (Pty) Ltd | The Assets and Business Associated with the Edgars Active and High Key Brands | 18/09/2019 | Approved |
| LM087Aug19 | Bioko 752 (Pty) Ltd | Cargo Compass (Pty) Ltd | 19/09/2019 | Approved |
| LM029May19 | Saudi Arabian Oil Company | Saudi Basic Industries Corporation | 25/09/2019 | Approved |
| LM263Mar19 | Milco SA (Pty) Ltd | Clover Industries Ltd | 25/09/2019 | Approved Subject to Conditions |
| SM325Mar18 | Joyson KSS Holdings NO.2 S.A.R.L | Takata Corporation | 27/03/2018 | Approved Subject to Conditions |

**The Chairperson**
**Competition Tribunal**

**DEPARTMENT OF ECONOMIC DEVELOPMENT**

**NOTICE 555 OF 2019**

# NORTHERN CAPE LIQUOR ACT, 2008 (ACT NO. 2 OF 2008): REGULATIONS REGARDING THE CHIEF EXECUTIVE OFFICER

In terms of the powers vested in me by section 12(6) of the above Act, I Maruping Lekwene, Member of the Executive Council of the Northern Cape Province responsible for Finance, Economic Development and Tourism, hereby make the Regulations contained in this Notice. The previous Regulations promulgated in terms of section 12(6) are therefore revoked and replaced in terms of this Notice.

**M LEKWENE: MPL**

**MEC: Finance, Economic Development and Tourism**

## REGULATIONS: CHIEF EXECUTIVE OFFICER

### Definitions

**1.** In these Regulations, unless the context otherwise indicates, -

**"Board"** means the Provincial Liquor Board established in terms of section 6 of the Act;

**"Chief Executive Officer"** means the chief executive officer of the Board appointed in terms of section 12 of the Act;

**"responsible Member"** means the Member of the Executive Council of the Northern Cape Province responsible for liquor matters; and

**"the Act"** means the Northern Cape Liquor Act, 2008 (Act No. 2 of 2008).

### Determination of requirements for appointment of Chief Executive Officer

**2.** (1) The Board shall determine and record composite requirements for appointment of the Chief Executive Officer on the basis of the main objectives, core functions and the inherent requirements of the job.

(2) The Board shall –

(a) ensure that the requirements for appointment of the Chief Executive Officer do not unfairly discriminate against any person; and

(b) comply with all statutory requirements for the appointment of the Chief Executive Officer.

### Advertising of post

**3.** (1) The Board shall ensure that the vacant post of the Chief Executive Officer is advertised, as efficiently and effectively as possible, to reach the entire pool of potential applicants, including designated groups.

(2) The advertisement shall as a minimum specify the job title,

salary scale, core functions, place of work, inherent requirements of the job, including any other requirements prescribed in these Regulations.

(3) The Board shall advertise the vacant post in at least:

(a) one widely distributed newspaper and/or online platforms; and

(b) in a manner that, through public invitation, request applications, to be submitted to the Board as directed in the advertisement.

(4) An advertisement for the post the Chief Executive Officer shall not unfairly discriminate against or prohibit any suitably qualified person from applying.

(5) The post the Chief Executive Officer shall be advertised within six months after becoming vacant and be filled within twelve months after becoming vacant.

**Selection procedure**

**4.** (1) The Board shall appoint a selection committee to make a recommendation on the appointment of a suitable and competent Chief Executive Officer. The selection committee shall consist of at least three members of skill and competence in human resources management and corporate governance.

(2) A selection committee shall, where possible, include adequate representation of designated groups.

(3) Any suitably qualified person or employee may provide secretarial or advisory services during the selection process.

(4) The selection committee shall make a recommendation, to the Board, on the suitability of a candidate after considering only-

(a) information based on valid methods, criteria or instruments for selection that are free from any bias or discrimination;

(b) the inherent requirements of the post;

(c) the entity's employment equity plan; and

(d) in respect of candidates applying for posts-

(i) the level of understanding of the entity's mandates;

(ii) the ability to identify problems and find innovative solutions; and

(iii)the ability to work in a team.

(5) A selection committee shall record the reasons for its recommendation with reference to the criteria mentioned in sub-regulation (4).

(6) If the selection committee is unable to recommend a suitable person for appointment from those who applied in terms of sub-regulation (4), the Board may, after that selection process has been completed, approve the head-hunting of one or more persons with the requisite competencies and subject such person or persons to the same selection process as those who applied.

(7) The Board, if it supports the recommendation of the selection committee, shall further recommend the appointment of the recommended candidate(s) to the Responsible Member, for approval.

(8) Before making a recommendation on the appointment or the filling of the post of the Chief Executive Officer, the Board shall-

(a) satisfy itself that the candidate qualifies in all respects for the post and that his or her claims in his or her application for the post has been verified; and

(b) record that verification in writing; and

(c) include this information in the recommendation to the Responsible Member.

(9) If the Responsible Member does not approve a recommendation of the Board, he or she shall record the reasons for his or her decision in writing.

**Resignation by Chief Executive Officer**

**5.** (1) The Chief Executive Officer may, on at least one month's written notice tender to the Board his or her resignation from the office.

(2) The Board shall stipulate in the performance agreement the manner in which the Chief Executive Officer shall submit his or her resignation.

(3) The Board shall conduct and record an exit interview with the Chief Executive Officer who has resigned and record the reasons given by

the Chief Executive Officer for his or her resignation.

(4) The Chief Executive Officer, who has submitted his or her resignation to the Board, may only withdraw his or her resignation with the written approval of the Board, which approval shall be made no later than the last working day.

(5) If notice of resignation is given in terms of sub-regulation (1), the Board shall require the Chief Executive Officer to return all official equipment and documents, vacate his or her office and leave the entity's premises on expiry of the notice period as given by the resigning CEO.

**Systems for performance management and development**

**6.**(1) The Board shall approve and implement a system for the performance management.

(2) A system contemplated in sub-regulation (1) shall provide for-

(a) dimensions of performance assessment;

(b) a weighting percentage for the key result areas and competency requirements;

(c) monitoring the Chief Executive Officer's performance at least quarterly if the Chief Executive Officer's performance is satisfactory or unsatisfactory, in writing, and

(d) a written mid-cycle performance assessment of the Chief Executive Officer's performance and a written annual performance assessment. The annual assessment shall reflect the performance of the Chief Executive Officer for the entire period of the cycle.

**Employment Agreement, Performance agreements and assessments**

**7.** (1) The appointment of the Chief Executive Officer by the Responsible Member as contemplated in section 12(1) of the Act becomes effective from the date of entering into a written employment contract with the Board, which employment contract must be for a duration of his or her term of office.

(2) The employment contract, as contemplated in sub-regulation (1)

must, as a minimum, contain the Chief Executive Officer's personal particulars, term of office, conditions of service, powers, functions, responsibilities, duties, as well as his or her remuneration, allowances and benefits.

(3) The Chief Executive Officer shall, besides the employment contract, enter into a performance agreement or an agreement of similar nature with the Board, within three calendar months of his or her date of appointment and thereafter within two months of the beginning of each financial year. This agreement may be reviewed from time to time.

(4) A performance agreement or an agreement of a similar nature shall include at least the following:

(a) a job title and a clear description of the main objectives of the Chief Executive Officer's job and the relevant outputs or key responsibility areas and competency requirements;

(b) a work plan containing the outputs, activities and resource requirements; and

(c) a personal development plan that identifies the Chief Executive Officer's competency and developmental needs in terms of the inherent requirements of the job as well as methods to improve these.

**Chief Executive Officer**

**8.** (1) The Chief Executive Officer , appointed in terms of Section 12(1) of the Act, must be a person who has appropriate qualifications, knowledge and experience regarding the business and operations of the Board, but must at least possess a relevant degree or equivalent qualification from an accredited institution of higher education.

(2) The Chief Executive Officer is the head of administration of the Board subject to the control of the Board.

(3) The Chief Executive Officer is appointed for such period and on such terms and conditions of service, as the Responsible Member

may determine, on the advice of the Board, but-

(a) may not be so appointed for a period exceeding five (5) years;

(b) upon the expiration of the term of office of the chief executive officer, he or she is eligible for reappointment for one further term of five (5) years;

(c) the Chief Executive Officer may not undertake any other remunerative work, without prior written consent of the Board, in consultation with the Responsible Member.

(4) Whenever the office of the chief executive officer is vacant or the chief executive officer is absent or incapacitated or refuses or fails to act, the powers and functions of the Chief Executive Officer may be exercised and performed by any person designated as the Acting Chief Executive Officer by the Responsible Member, on the advice of the Board, but no such person may be acting Chief Executive Officer for a period exceeding 12 months in total.

(5) The Acting Chief Executive Officer has the same powers and competencies as a Chief Executive Officer, to carry out its functions.

(6) These Regulations apply *mutatis mutandis* to the Acting Chief Executive Officer.

**Discipline and removal from office**

**9.** (1) The Responsible Member, on the advice of the Board, may subject the Chief Executive Officer to disciplinary processes as provided for in the Board's disciplinary code or Code of Conduct, or on the basis of Schedule 8 of the Labour Relations Act, 1995 (Act No 66 of 1995), as amended.

(2) The Responsible Member, on the advice of the Board, may dismiss or remove the Chief Executive Officer from the Office on account of-

(a) his or her improper conduct;

(b) incapacity due to ill-health or poor performance; and/or

(c) on the grounds that he or she is or has become subject to

disqualification envisaged in section (9) of the Act.

(3) The Responsible Member may, on the advice of the Board, in order to determine whether there exists sufficient cause for the removal of the Chief Executive Officer from office as contemplated in sub-regulation (2), initiate an investigation or disciplinary hearing for that purpose.

(4) The Responsible Member shall delegate the initiation and conducting of an investigation as contemplated in sub-regulation (3) to the Board to manage, in accordance with Labour Relations Act, 1995 (Act No 66 of 1995), as amended.

(5) Whenever any investigation or disciplinary hearing is initiated as contemplated in sub-regulation (3) above, or is being undertaken, the Responsible Member may, on the advice of the Board, with due regard to the provisions of the Labour Relations Act, 1995 (Act No 66 of 1995) as amended, suspend the Chief Executive Officer from his or her office pending the outcome of such investigation or disciplinary hearing.

**DEPARTMENT OF ECONOMIC DEVELOPMENT**

**NOTICE 556 OF 2019**

# REGULASIES: HOOFUITVOERENDEBEAMPTE

## Definisies

**1.** In hierdie Regulasies, tensy die konteks anders aandui, beteken -

**"Raad"** die Provinsiale Drankraad ingestel by artikel 6 van die Wet;

**"Hoofuitvoerendebeampte"** die Hoofuitvoerendebeampte van die Raad aangestel by artikel 12 van die Wet;

**"Verantwoordelike Lid"** die Lid van die Uitvoerende Raad van die Noord-Kaap Provinsie verantwoordelik vir drankaangeleenthede; en

**"die Wet"** die Noord-Kaapse Drankwet, 2008 (Wet No. 2 van 2008)

## Vasstelling van vereistes vir aanstelling

**2.** (1) Die Verantwoordelike Lid bepaal, formuleer en fundeer die samestellende vereistes vir die aanstelling van die Hoofuitvoerendebeampte met inagneming van die hoofoogmerke, kernfunksies en inherente vereistes van die amp.

(2) Die Verantwoordelike Lid moet –

(a) toesien dat die vereistes vir die aanstelling van die Hoofuitvoerendebeampte nie onbillik diskrimineer teen enige persoon nie; en

(b) voldoen aan alle statutêre vereistes vir die aanstelling van die Hoofuitvoerendebeampte.

## Advertensieprosedure

**3.** (1) Die Verantwoordelike Lid moet toesien dat die vakante pos van Hoofuitvoerendebeampte so doeltreffend en prakties as moontlik adverteer word binne die groepering van moontlike aansoekers, insluitende aangewese groepe.

(2) Die advertensie moet tenminste die ampstitel, salarisskaal, kernfunksies, werksplek, inherente vereistes vir die amp, asook enige ander vereistes wat in hierdie Regulasies vervat is, spesifiseer.

(3) Die Verantwoordelike Lid moet die vakante pos adverteer in –

(a) die staatsdiens se omsendskrywe vir vakante poste soos uitgereik deur die DPSA (*Department of Public Service and Administration*) op die digitale webwerf;

(b) twee plaaslike koerante;

(c) een nasionale koerant, en

(d) deur die publiek uit te nooi om binne 21 dae nominasies en aansoeke om die amp van Hoofuitvoerendebeampte te beklee, aan die Verantwoordelike Lid te verskaf.

(4)`n Advertensie vir die amp van Hoofuitvoerendebeampte moet nie onbillik diskrimineer teen of belet dat enige toepaslik gekwalifiseerde persoon aansoek mag doen nie.

(5) Die pos van Hoofuitvoerendebeampte moet binne ses maande nadat die amp vakant geraak het, adverteer word, en moet binne twaalf maande gevul word nadat die pos vakant geraak het.

## Keuringsprosedure

**4.** (1) Die Verantwoordelike Lid moet `n keuringskomitee aanwys vir die maak van `n aanbeveling rakende die vul van die amp van Hoofuitvoerendebeampte met `n geskikte en bevoegde persoon. Die keuringskomitee moet bestaan uit minstens drie persone op `n rang gelyk of of hoër as die amp van Hoofuitvoerendebeampte.

(2) Die keuringskomitee moet, waar moontlik, voldoende verteenwoordiging van persone uit die aangewese groepe bevat.

(3) Enige toepaslik gekwalifiseerde persoon of werknemer mag sekretariële- of adviesdienste tydens die keuringsproses lewer.

(4) Die keuringskomitee maak `n aanbeveling aangaande die geskiktheid van `n kandidaat slegs na oorweging van –

(a) inligting wat berus op en verkry is, vry van vooroordeel en diskriminasie, deur geldige metodes, kriteria of keuringstegnieke;

(b) inherente vereistes vir die amp;

(c) die entiteit se gelyke indiensnemingsbeleid; en

(d) met betrekking tot aansoekers vir die amp –

(i) hul begripsvlak van die entiteit se mandaat;

(ii) die vermoë ten aansien van probleem-identifikasie en innoverende oplossings daarvoor; en

(iii) die vermoë om in `n span saam te werk.

(5) Die keuringskomitee moet, met verwysing na die kriteria in sub-regulasie (4) hierbo, notule hou van die redes vir die aanbevelings.

(6) Indien die keuringskomitee geen geskikte persoon uit diegene wat die keuringsproses soos bedoel in sub-regulasie (4) hierbo, deurloop het, kan aanbeveel nie, mag die Verantwoordelike Lid na voltooiing van die keuringsproses, magtiging verleen vir spesifieke kundigheidswerwing van een of meer persone met die toepaslike vereiste bevoegdhede, met dien verstande dat sulke persone ook onderwerp word aan dieselfde keuringsproses as vorige aansoekers.

(7) Die Verantwoordelike Lid moet, ingeval van weiering om `n aanbeveling van die keuringskomitee te aanvaar, skriftelike redes laat notuleer vir die weiering.

(8) Alvorens die Verantwoordelike Lid die aanstelling van die Hoofuitvoerendebeampte goedkeur, moet die Verantwoordelike Lid –

(a) hom of haarself oortuig dat die kandidaat in alle opsigte kwalifiseer vir die amp en dat alle stawende aansprake van die kandidaat geverifieer is, en

(b) die verifikasie skriftelik laat notuleer.

## Bedanking deur Hoofuitvoerendebeampte

**5.** (1) Die Hoofuitvoerendebeampte mag by wyse van drie maande vooraf skriftelike kennisgewing teenoor die Verantwoordelike Lid sy of haar bedanking uit die amp doen.

(2) Die Verantwoordelike Lid moet ook in die prestasie-ooreenkoms die wyse van bedanking bepaal.

(3) Die Verantwoordelike Lid moet, by ontvangs van die bedankingskennisgewing, `n onderhoud met die Hoofuitvoerendebeampte hou en die redes vir die bedanking laat notuleer.

(4) Die Hoofuitvoerendebeampte mag slegs sy of haar bedanking terugtrek met skriftelike goedkeuring van die Verantwoordelike Lid, welke goedkeuring voor of op die laaste werksdag verleen moet word.

(5) Die Verantwoordelike Lid mag by ontvangs van die kennisgewing bedoel in sub-regulasie (1), vereis dat die Hoofuitvoerendebeampte alle amptelike dokumente en toerusting teruggee, sy of haar kantoor ontruim en die entiteit se perseel verlaat voor verstryking van die kennisgewingperiode op `n datum soos deur die Verantwoordelike Lid bepaal en geen verdere pligte in die kennisgewingtydperk verrig nie.

## Stelsels vir prestasiebestuur en -ontwikkeling

**6.** (1) Die Raad moet `n stelsel vir prestasiebestuur goedkeur en toepas.

(2) Die stelsel soos bedoel in sub-regulasie (1) moet voorsiening maak vir –

(a) die omvang van prestasiemeting;

(b) `n persentasie toekenning vir sleutelareas en vereiste bevoegdhede;

(c) kwartaallikse skriftelike monitering van die Hoofuitvoerendebeampte se prestasies ten aansien van bevredigend of onbevredigend, en

(d) `n skriftelike middeltermyn prestasie-evaluering van die Hoofuitvoerendebeampte en `n jaartermyn skriftelike prestasie-evaluering. Die jaarlikse prestasie-evaluering van die Hoofuitvoerendebeampte sal oor die volle jaarperiode strek.

## Diensooreenkoms, prestasie-ooreenkoms en assesserings

**7.** (1) Die aanstelling van die Hoofuitvoerendebeampte deur die Verantwoordelike Lid soos bedoel by artikel (12)(1) van die Wet, is effektief vanaf die datum van skriftelike kontraksluiting van die diensooreenkoms met die Raad en duur vir die volle termyn van sy of haar ampstydperk.

(2) Die dienskontrak soos bedoel in sub-regulasie (1) moet, tenminste, die volgende inligting bevat: persoonlike besonderhede van die Hoofuitvoerendebeampte, dienstermyn, diensvoorwaardes, magte, funksies, verantwoordelikhede, pligte, vergoeding, toelaes en voordele.

(3) Die Hoofuitvoerendebeampte moet benewens sy of haar dienskontrak ook `n prestasie-ooreenkoms of soortgelyke ooreenkoms met die Raad aangaan binne drie kalendermaande van aanstellingsdatum en daarna binne twee maande vanaf die aanvang van `n nuwe finansiële jaar. Hierdie ooreenkoms is hersienbaar van tyd tot tyd.

(4) Die prestasie-ooreenkoms of soortgelyke ooreenkoms moet ten minste die volgende bepalings bevat: -

(a) `n personeelnommer, ampstitel, posgradering, en duidelike beskrywing van die hoofdoelwitte van die Hoofuitvoerendebeampte se

dienste en die relevante uitsette of kernaspekte van verantwoordelikhede en vereiste bevoegdhede.

(b) `n werksplan, bevattende die uitsette, aktiwiteite en hulpbron vereistes; en

(c) `n persoonlike ontwikkelingsplan wat die behoeftes en bevoegdhede van die Hoofuitvoerendebeampte identifiseer asook hoe om die behoeftes aan te spreek.

## Hoofuitvoerendebeampte

**8.** (1) Die Hoofuitvoerendebeampte aangestel by artikel (12)(1) van die Wet, is `n persoon wie beskik oor toepaslike kwalifikasies, kennis of ervaring betreffende die aangeleenthede en bedryf van die Raad en moet beskik oor `n graad kwalifikasie, verwerf by `n ge-akkrediteerde instansie vir tersiêre opleiding.

(2) Die Hoofuitvoerendebeampte, onder beheer van die Raad, is ook die administratiewe en rekeningkundige hoof van die Raad.

(3) Die Hoofuitvoerendebeampte word ooreenkomstig die termyn, bepalings en voorwaardes in diskresie van die Verantwoordelike Lid aangestel met dien verstande dat –

(a) die termyn vir nie langer dan vyf (5) jaar is nie;

(b) by verstryking van daardie termyn, die Hoofuitvoerendebeampte heraangestel mag word vir `n verdere termyn van slegs vyf (5) jaar; en

(c) die Hoofuitvoerendebeampte nie binne sy termyn enige ander vergoedende dienste mag verrig nie, tensy hy of sy vooraf geskrewe toestemming van die Verantwoordelike Lid verkry het.

(4) Indien die amp van Hoofuitvoerendebeampte vakant sou raak, of die Hoofuitvoerendebeampte afwesig of onbevoeg raak, of weier of nalaat om op te tree, mag die magte en bevoegdhede van die Hoofuitvoerendebeampte opgedra word aan `n Waarnemende Hoofuitvoerendebeampte aangewys deur die Verantwoordelike Lid vir `n periode van nie langer as ses (6) maande nie.

(5) Die Waarnemende Hoofuitvoerendebeampte beskik oor dieselfde magte en bevoegdhede as Hoofuitvoerendebeampte om die amp uit te oefen.

(6) Al die bepalings in hierdie Regulasies is *mutatis mutandis* van toepassing op die Waarnemende Hoofuitvoerendebeampte.

## Verwydering van Hoofuitvoerendebeampte uit amp

**9.** (1) Die Verantwoordelike Lid mag die Hoofuitvoerendebeampte uit sy amp verwyder –

(a) omrede sy of haar onbehoorlike of wangedrag;

(b) omrede onbekaamheid om sy of haar pligte uit te voer;

(c) op grond van permanente verstandelike of liggaamlike onvermoë wat hom of haar ongeskik maak om die amp te beklee en die pligte daarvan te verrig; en

(d) op grond van die diskwalifiserende voorskrifte by artikel (9) van die Wet.

(2) Die Verantwoordelike Lid mag`n ondersoek of tugverhoor gelas ten einde te bepaal of voldoende gronde, soos by sub-regulasie (1) beoog, bestaan om die Hoofuitvoerendebeampte uit sy of haar amp te verwyder.

(3) Indien `n ondersoek of tugverhoor soos by sub-regulasie twee (2) bedoel, deur die Verantwoordelike Lid gelas word, mag die Verantwoordelike Lid met inagneming van die bepalings van die Wet op Arbeidsverhoudinge, 1995 (Wet 66 van 1995) die Hoofuitvoerendebeampte skors uit sy amp of kantoor hangende die uitslag van sodanige ondersoek of verhoor.

(4) Vir doeleindes van sub-regulasie (1)(a) word onbehoorlike of wangedrag deur die Hoofuitvoerendebeampte geag te wees soos bedoel in die bepalings van die Wet of die Wet op Openbare Finansiële Bestuur 1999 (Wet No. 1 van 1999) en die nie-nakoming van die gemelde Wette.

## DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM

## NOTICE 557 OF 2019

### AMENDMENT NOTICE

### GENERAL NOTICE IN TERMS OF SECTION 11 A (4) OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994)

Amending Notice 1592 of 2003 published in *Government Gazette* No. 25057 on 13 June 2003 in respect of the Maphelane Nature Reserve Land Claimants, under Reference No. **KRN6/2/2/E/21/0/0/27B** to:

**1. TO REPLACE**

The Maphelane Nature Reserve Land Claimants, represented by Maphelane Nature Reserve Land Claimants

**WITH**

Inkosi Mtholeni Mthiyane on behalf of the Sokhulu Claimant Community

**2. TO INCLUDE THE FOLLOWING PROPERTIES**

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT TITLE DEED NO. | CURRENT OWNER | BONDS & RESTRICTIVE CONDITIONS (INTERDICTS) |
|---|---|---|---|---|---|
| 1 | Portion 0 (remaining extent) of the farm St Lucia Lands No. 13702 | 17, 6600 ha | G47/1950 | Republic of South Africa | I-122/1998LG<br>K2593/1950RM |
| 2 | Portion of the farm Umfolozi Swamps No. 17457 | 1056, 8000 ha | **UNREGISTERED STATE LAND** | | |

**LEBJANE MAPHUTHA**
**REGIONAL LAND CLAIMS COMMISSIONER: KWAZULU NATAL**
**DATE:**

## DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM

## NOTICE 558 OF 2019

### GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994)

Notice is hereby given in terms of Section 11 (1) of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994) that a claim for the restitution of land rights on the following properties have been lodged with the Regional Land Claims Commissioner: KwaZulu-Natal and that the Commission on Restitution of Land Rights will further investigate the claim in terms of provisions of the Act in due course:

| | | |
|---|---|---|
| **Property** | : | **see attached schedule** |
| **Extent of property** | : | **see attached schedule** |
| **Magisterial District** | : | **Mount Currie** |
| **Administrative District:** | : | **KwaZulu-Natal** |
| **Current Title Deed No.** | : | **see attached schedule** |
| **Current Owner** | : | **see attached schedule** |
| **Bonds & Restrictive Conditions (Interdicts)** | : | **see attached schedule** |
| **Claimant** | : | **Simiso Raymond Mkhize on behalf of the Mkhize Family** |
| **Date claim lodged** | : | **23 October 1995** |
| **Reference number** | : | **KRN6/2/2/E/25/0/0/114** |

Any party/parties who have an interest in the above-mentioned properties is hereby invited to submit, within **30 days** from the date of publication of this notice, any representations and/ or information which shall assist the Commissioner in proving or disproving this claim.

Should no information and/ or representations from the affected party/ parties be forthcoming within the stipulated period, the affected party/parties shall be *ipso facto* barred from further doing so and the Commission shall continue with the subsequent processes towards completion of the investigation.

Any comments and information should be submitted to:

The Regional Land Claims Commissioner: KwaZulu-Natal
Private Bag X9120
Pietermaritzburg 3200

Tel: (033) 355 - 8400
Fax: (033) 342 - 3409

Submissions may also be delivered to Second Floor, African Life Building, 200 Church Street, Pietermaritzburg.

**LEBJANE MAPHUTHA**
**REGIONAL LAND CLAIMS COMMISSIONER: KWAZULU NATAL**
**DATE:**

**SCHEDULE**

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT TITLE DEED NO. | CURRENT OWNER | BONDS & RESTRICTIVE CONDITIONS (INTERDICTS) |
|---|---|---|---|---|---|
| 1 | Portion 0 of Erf 83 Umzimkhulu, previously known as Lot 16, Block 5 Umzimkhlu | 0, 3967 ha | T21791/1967 | Connel Macatsha | None |
| 2 | Portion 0 of Erf 84 Umzimkhulu, previously known as Lot 17, Block 5 Umzimkhlu | 0, 3865 ha | T23208/1994UMT | Silumko Mphumeleli Mbina | None |

**DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**

**NOTICE 559 OF 2019**

**GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994)**

Notice is hereby given that a claim for restitution of rights in land lodged in terms of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994) and published under Notice No. 938 of 2006 has been withdrawn by the Regional Land Claims Commissioner: KwaZulu-Natal in terms of a Court Order dated 23 May 2018 under Case No. LCC 24/2011 and the Thembu / Mkhuzane Community hereby abandon their claim for any form of restitution in respect of all the properties as reflected in the attached schedule:

| | | |
|---|---|---|
| **Property** | : | **see attached schedule** |
| **Extent of property** | : | **see attached schedule** |
| **Magisterial District** | : | **Richmond** |
| **Administrative District** | : | **KwaZulu-Natal** |
| **Current Title Deed No.** | : | **see attached schedule** |
| **Current Owner** | : | **see attached schedule** |
| **Bonds & Restrictive Conditions (Interdicts)** | : | **see attached schedule** |
| **Claimant** | : | **Chief Dingiswayo Sithole on behalf of the Thembu / Mkhuzane Community** |
| **Date claim lodged** | : | **22 April 1996** |
| **Reference number** | : | **KRN6/2/2/E/42/0/0/562** |

The Regional Land Claims Commissioner: KwaZulu-Natal
Private Bag X9120
Pietermaritzburg 3200

Tel: (033) 355 - 8400
Fax: (033) 342 - 3409

**HARRY LEBJANE MAPHUTHA**
**REGIONAL LAND CLAIMS COMMISSIONER: KWAZULU NATAL**
**DATE:**

## SCHEDULE

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT OWNER |
|---|---|---|---|
| 1 | The farm Valencia No. 16753 | 65, 5477 ha | Blackwood Fruit Farms (Pty) Ltd |
| 2 | The farm Harberry No. 16117 | 150, 1325 ha | Mellgem Estates (Pty) Ltd |
| 3 | Remainder of Portion 3 of the farm Deep Dene No. 13863 | 19, 5828 ha | Michael Llewellyn Kinsey and Janet Letitia Kinsey |
| 4 | Remainder of Portion 3 of the farm Berrydene No. 12857 | 47, 9071 ha | Singosi Holdings (Pty) Ltd |
| 5 | Portion 4 of the farm Berrydene No. 12857 | 63, 8762 ha | Singosi Holdings (Pty) Ltd |
| 6 | Portion 5 of the farm Berrydene No. 12857 | 79, 8453 ha | Singosi Holdings (Pty) Ltd |
| 7 | Remainder of Portion 6 of the farm Berrydene No. 12857 | 34, 0570 ha | Sunnyhill Farm cc |
| 8 | Portion 7 of the farm Berrydene No. 12857 | 91, 5180 ha | Singosi Holdings (Pty) Ltd |
| 9 | Portion 3 of the farm Lilie Fontein No. 1053 | 7, 1437 ha | Bertram Mapstone Family Trust-Trustees |
| 10 | Remainder of Portion 4 of the farm Lilie Fontein No. 1053 | 116, 5578 ha | Bruce Family Trust-Trustees |
| 11 | Portion 5 of Portion 1 of the farm Lilie Fontein No. 1053 | 218, 1345 ha | O'Neill Sugar cc |
| 12 | Remainder of Portion 6 of Portion 1 of the farm Lilie Fontein No. 1053 | 75, 0067 ha | O'Neill Sugar cc |
| 13 | A portion of the consolidated Portion 25 of the farm Lilie Fontein No. 1053, known before consolidation as the Remainder of Portion 8 of the farm Lilie Fontein No. 1053 | 38, 0554 ha | P J Family Trust-Trustees |
| 14 | Portion 10 of the farm Lilie Fontein No. 1053 | 121, 4058 ha | Blackwood Fruit Farms (Pty) Ltd |
| 15 | Portion 11 of the farm Lilie Fontein No. 1053 | 5, 9065 ha | Ian William Wadham Tyrer |
| 16 | Portion 14 of the farm Lilie Fontein No. 1053 | 8, 0521 ha | Blackwood Fruit Farms (Pty) Ltd |
| 17 | Portion 17 of the farm Lilie Fontein No. 1053 | 456, 5748 ha | Brooklyn & Alton Farms (Pty) Ltd |
| 18 | Portion 18 of the farm Lilie Fontein No. 1053 | 18, 1224 ha | Trans Modal Freight CC |
| 19 | Remainder of the farm Brasfort Park No. 1295 | 385, 4704 ha | John Mapstone Family Trust-Trustees |

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT OWNER |
|---|---|---|---|
| 20 | Remainder of Portion 6 of the farm Brasfort Park No. 1295 | 277, 7904 ha | William Mapstone |
| 21 | Portion 7 of the farm Brasfort Park No. 1295 | 91, 6878 ha | John Mapstone Family Trust-Trustees |
| 22 | Remainder of Portion 20 of the farm Brasfort Park No. 1295 | 31, 6750 ha | Three 60 Farming (Pty) Ltd |
| 23 | Remainder of Portion 24 of the farm Brasfort Park No. 1295 | 60, 6416 ha | Three 60 Farming (Pty) Ltd |
| 24 | Portion 28 of the farm Brasfort Park No. 1295 | 50, 5230 ha | Blackwood Fruit Farms (Pty) Ltd |
| 25 | Portion 43 of the farm Brasfort Park No. 1295 | 12, 5366 ha | Geoffrey Calmeyer |
| 26 | Portion 46 of the farm Brasfort Park No. 1295 | 20, 2347 ha | William Rupert Beghin |
| 27 | Portion 47 of the farm Brasfort Park No. 1295 | 32, 6718 ha | Ronald Edgar Gevers |
| 28 | Remainder of Portion 52 of the farm Brasfort Park No. 1295 | 25, 2016 ha | Evan Antel Family Trust-Trustees |
| 29 | Portion 54 of the farm Brasfort Park No. 1295 | 80, 0064 ha | William Mapstone Trust |
| 30 | Remainder of Portion 5 of the farm Kruys Fontein & Weltevreden No. 826 | 131, 3094 ha | Anthony Herbert Morris |
| 31 | Portion 15 of the farm Kruys Fontein & Weltevreden No. 826 | 275, 8947 ha | Osgodsby Trust-Trustees |
| 32 | Portion 16 of the farm Kruys Fontein & Weltevreden No. 826 | 228, 1391 ha | Osgodsby Trust-Trustees |
| 33 | Portion 17 of the farm Kruys Fontein & Weltevreden No. 826 | 342, 7033 ha | Eric's Lewis Family Trust-Trustees |
| 34 | Remainder of Portion 18 of the farm Kruys Fontein & Weltevreden No. 826 | 7, 4657 ha | Anthony Herbert Morris |
| 35 | Remainder of Portion 27 of the farm Kruys Fontein & Weltevreden No. 826 | 35, 5468 ha | Rory John Matthews |
| 36 | Remainder of Portion 32 of the farm Kruys Fontein & Weltevreden No. 826 | 46, 0767 ha | Sunnyhill Farm c |
| 37 | Portion 33 of the farm Kruys Fontein & Weltevreden No. 826 | 1, 1302 ha | Sunnyhill Farm cc |
| 38 | Portion 34 of the farm Kruys Fontein & Weltevreden No. 826 | 12, 1106 ha | Sunnyhill Farm cc |

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT OWNER |
|---|---|---|---|
| 39 | Remainder of Portion 38 of the farm Kruys Fontein & Weltevreden No. 826 | 8, 4765 ha | George Albu and Joan Valerie Albu |
| 40 | Portion 41 of the farm Kruys Fontein & Weltevreden No. 826 | 23, 0328 ha | Anthony Herbert Morris |
| 41 | Portion 42 of the farm Kruys Fontein & Weltevreden No. 826 | 9, 0831 ha | Cottonwood Family Trust-Trustees |
| 42 | Remainder of Portion 43 of the farm Kruys Fontein & Weltevreden No. 826 | 131, 0632 ha | Eric's Lewis Family Trust-Trustees |
| 43 | Remainder of Portion 54 of the farm Kruys Fontein & Weltevreden No. 826 | 99, 9203 ha | Blackwood Fruit Farms (Pty) Ltd |
| 44 | Remainder of Portion 56 of the farm Kruys Fontein & Weltevreden No. 826 | 76, 0619 ha | Blackwood Fruit Farms (Pty) Ltd |
| 45 | Remainder of Portion 60 of the farm Kruys Fontein & Weltevreden No. 826 | 31, 8179 ha | Sunnyhill Farm cc |
| 46 | Portion 62 of the farm Kruys Fontein & Weltevreden No. 826 | 46, 3414 ha | Singosi Holdings (Pty ) Ltd |
| 47 | Portion 64 of the farm Kruys Fontein & Weltevreden No. 826 | 51, 0865 ha | Corpclo 281 cc |
| 48 | Portion 69 of the farm Kruys Fontein & Weltevreden No. 826 | 38, 3773 ha | Hugh Sidney Willson and Helena Elizabeth Willson |
| 49 | Portion 71 of the farm Kruys Fontein & Weltevreden No. 826 | 18, 3908 ha | Caroline Ellen Morris |
| 50 | Portion 76 of the farm Kruys Fontein & Weltevreden No. 826 | 41, 1262 ha | Bernice Zoe Margaret Matthews |
| 51 | Portion 77 of the farm Kruys Fontein & Weltevreden No. 826 | 40, 6885 ha | Blackwood Fruit Farms (Pty) Ltd |
| 52 | Portion 79 of the farm Kruys Fontein & Weltevreden No. 826 | 64, 5449 ha | Roger Dixon Chiazzari |
| 53 | Remainder of Portion 80 of the farm Kruys Fontein & Weltevreden No. 826 | 112, 3492 ha | Eric's Lewis Family Trust-Trustees |
| 54 | Portion 81 of the farm Kruys Fontein & Weltevreden No. 826 | 216, 4646 ha | Cottonwood Family Trust-Trustees |

| NO. | PROPERTY DESCRIPTION | EXTENT | CURRENT OWNER |
|---|---|---|---|
| 55 | Remainder of Portion 82 of the farm Kruys Fontein & Weltevreden No. 826 | 100, 7852 ha | Cottonwood Family Trust-Trustees |
| 56 | Portion 85 of the farm Kruys Fontein & Weltevreden No. 826 | 34, 1474 ha | Ntingweni Trading Trust-Trustees |
| 57 | Portion 88 of the farm Kruys Fontein & Weltevreden No. 826 | 21, 1485 ha | Eric's Lewis Family Trust-Trustees |

**DEPARTMENT OF TRADE AND INDUSTRY**

**NOTICE 560 OF 2019**

**INTERNATIONAL TRADE ADMINISTRATION COMMISSION OF SOUTH AFRICA**

**GUIDELINES AND CONDITIONS PERTAINING TO IMPOSITION OF AN AGRICULTURAL SAFEGUARD MEASURE IN TERMS OF ARTICLE 35 OF THE ECONOMIC PARTNERSHIP AGREEMENT (EPA) BETWEEN THE EUROPEAN UNION AND ITS MEMBER STATES, OF THE ONE PART, AND THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC) EPA STATES, OF THE OTHER**

Emanating from the Economic Partnership Agreement (EPA) between the European Community and its Member States, of the one part, and the Southern African Development Community (SADC) EPA States, of the other, Article 35 of the EPA provides for safeguard action in defined circumstances.

The International Trade Administration Commission of South Africa (the Commission) has drafted the attached reference and procedural guide pertaining to the imposition of an agricultural safeguard measure in terms of Article 35 of the EPA.

All interested parties are invited to comment on the draft guidelines within 10 calendar days of the date of publication of this notice. The Commission will finalise the guidelines after considering all comments received.

Comments can be submitted to the Chief Commissioner, International Trade Administration Commission of South Africa, Private Bag X 753, Pretoria or delivered by hand to the DTI Campus (Block E), 77 Meintjies Street, Sunnyside, Pretoria, 0002.

Further information can be obtained from the Senior Manager: Trade Remedies I, Ms Carina Janse van Vuuren, at (012) 394 3594 or cvanvuuren@itac.org.za.

## GUIDELINES AND CONDITIONS PERTAINING TO IMPOSITION OF AN AGRICULTURAL SAFEGUARD MEASURE IN TERMS OF ARTICLE 35 OF THE ECONOMIC PARTNERSHIP AGREEMENT

## (EPA) BETWEEN THE EUROPEAN UNION AND ITS MEMBER STATES, OF THE ONE PART, AND THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC) EPA STATES, OF THE OTHER

### 1. PURPOSE

1.1 The purpose of this document is to provide a reference and procedural guide pertaining to the imposition of an agricultural safeguard measure in terms of Article 35 of the EPA.

### 2. SCOPE

2.1 The scope of this document covers the process for imposition of an agricultural safeguard measure in terms of Article 35 of the EPA which provides as follows:

***''1. Notwithstanding Article 34 of this Agreement, a safeguard measure in the form of an import duty may be applied if, during any given twelve-month period, the volume of imports into SACU of an agricultural product listed in Annex IV originating in the EU exceeds the reference quantity for the product therein indicated.***

***2. A duty which shall not exceed 25 per cent of the current WTO bound tariff or 25 percentage points, whichever is higher, may be imposed to the agricultural products referred to in paragraph 1. Such duty shall not exceed the prevailing MFN applied rate.***

***3. Safeguard measures referred to in this article shall be maintained in place for the remainder of the calendar year or five (5) months, whichever is the longer.***

***4. Safeguard measures referred to in this Article shall not be maintained or applied with respect to the same good at the same time as:***
***a) a bilateral safeguard measure in accordance with Article 34;***
***b) a measure under Article XIX of GATT 1994 and the Agreement on Safeguards; or***
***c) a special safeguard measure under Article 5 of the Agreement on Agriculture.***

***5. Safeguard measures referred to in this Article shall be implemented in a transparent manner. Within ten (10) days after applying such a measure, SACU shall notify the EU in writing and shall provide relevant data concerning the measure. On request, SACU shall consult the EU regarding the application of the measure. SACU***

***shall also notify the Trade and Development Committee within thirty (30) days after such imposition.***

***6. The implementation and operation of this Article may be the subject of discussion and review in the Trade and Development Committee. On request of either Party, the Trade and Development Committee may review the reference quantities and agricultural products as provided for in this Article.***

***7. The provisions of this Article may only be applied during the period of twelve (12) years from the date of entry into force of this Agreement.''***

## 3. PROCEDURE

3.1 The Minister of Trade, Industry and Competition will instruct the International Trade Administration Commission of South Africa (ITAC), in terms of Section 16(d)(i) of the International Trade Administration Act, 2002 (Act 71 of 2002) (ITA Act) to administer the agricultural safeguard provision provided for in Article 35 of the EPA.

3.2 Member States of SACU will submit import figures for the products listed in the attached Annexure to the SACU Secretariat by the 3rd of each month. The SACU secretariat shall collate the import figures from Member States and by the 5th of each month, provide Member States and ITAC with the collated import volumes for the products listed in the attached Annexure.

3.3 As soon as the collated import volume, or alternatively the import volume into South Africa, indicate that the trigger volume for a specific product as contained in the attached Annexure has been reached, ITAC will send a Minute to the Minister of Trade, Industry and Competition, recommending the imposition of an agricultural safeguard measure.

3.4 The recommendation to the Minister of Trade, Industry and Competition will include the amount of the duty to be imposed as well as the period

of imposition of the measure, taking the provisions as stated above into account.

3.5 On approval of ITAC's recommendation, the SACU Secretariat will be notified and a request will be sent to the Minister of Finance for implementation of the measure.

3.6 Within ten (10) days after implementation of the measure, SACU shall notify the EU in writing and shall provide relevant data concerning the measure. SACU shall also notify the Trade and Development Committee within thirty (30) days after such imposition.

## ANNEXURE

## AGRICULTURAL SAFEGUARDS

The agricultural products and respective reference quantities referred to in Article 35 are listed in the following table:

| Reference quantities (metric tons)(1) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tariff lines | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 | Year 12 |
| | Edible offals | | | | | | | | | | | | |
| 1 | 02061090 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 2 | 02062100* | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 215 | 237 | 261 | 287 |
| 3 | 02062900* | 1005 | 1106 | 1206 | 1307 | 1407 | 1508 | 1609 | 1709 | 1810 | 1910 | 2011 | 2 111 |
| 4 | 02063000 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 5 | 02064900* | 5000 | 5500 | 6000 | 6500 | 7000 | 7500 | 8000 | 8500 | 9000 | 9500 | 10000 | 10500 |

| Reference quantities (metric tons)(1) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tariff lines | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 | Year 12 |
| | Worked cereals | | | | | | | | | | | | |
| 6 | 11041910* | 150 | 165 | 182 | 200 | 220 | 242 | 266 | 293 | 322 | 354 | 390 | 429 |
| 7 | 11042910 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 8 | 11071010* | 2373 | 2613 | 2874 | 3161 | 3478 | 3825 | 4204 | 4628 | 5089 | 5595 | 6152 | 6771 |
| 9 | 11072010 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 10 | 11081110 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| | Meat preparations | | | | | | | | | | | | |
| 11 | 16021000 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 12 | 16025030 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 13 | 16025040 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 14 | 16029020 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| | Ultra high temperature (UHT) or "long-life" milk | | | | | | | | | | | | |
| 15 | 04011007 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 16 | 04012007* | 6353 | 6986 | 7701 | 8457 | 9315 | 10234 | 11256 | 12379 | 13625 | 14973 | 16485 | 18119 |
| 17 | 04014007 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |
| 18 | 04015007 | 100 | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 | 259 | 285 |

| Reference quantities (metric tons)(1) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tariff lines | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 | Year 12 |
| | Preserved cucumbers and olives | | | | | | | | | | | | |
| 19 | 20011000* | 1302 | 1432 | 1576 | 1732 | 1905 | 2096 | 2305 | 2536 | 2791 | 3069 | 3376 | 3714 |
| 20 | 20019010* | 270 | 297 | 328 | 360 | 396 | 436 | 480 | 527 | 580 | 638 | 701 | 771 |
| | Chocolate | | | | | | | | | | | | |
| 21 | 180631* | 3046 | 3350 | 3655 | 3959 | 4 264 | 4569 | 4873 | 5178 | 5482 | 5787 | 6091 | 6396 |
| 22 | 180632* | 938 | 1032 | 1126 | 1220 | 1314 | 1408 | 1501 | 1595 | 1689 | 1783 | 1877 | 1971 |
| 23 | 180690* | 7196 | 7916 | 8635 | 9355 | 10074 | 10794 | 11514 | 12233 | 12953 | 13672 | 14392 | 15112 |

**DEPARTMENT OF TRADE AND INDUSTRY**

**NOTICE 561 OF 2019**

**INTERNATIONAL TRADE ADMINISTRATION COMMISSION**

**CUSTOMS TARIFF APPLICATIONS**

**LIST 07/2019**

The International Trade Administration Commission (herein after referred to as ITAC or the Commission) has received the following application concerning the Customs Tariff. Any objection to or comments on this representation should be submitted to the Chief Commissioner, ITAC, Private Bag X753, Pretoria, 0001. Attention is drawn to the fact that the rate of duty mentioned in this application is that requested by the applicant and that the Commission may, depending on its findings, recommend a lower or higher rate of duty.

***CONFIDENTIAL INFORMATION***

*The submission of confidential information to the Commission in connection with customs tariff applications is governed by section 3 of the Tariff Investigations Regulations, which regulations can be found on ITAC's website at http://www.itac.org.za/documents/R.397.pdf.*
*These regulations require that if any information is considered to be confidential, then a non-confidential version of the information must be submitted, simultaneously with the confidential version. In submitting a non-confidential version the regulations are strictly applicable and require parties to indicate:*

- *Each instance where confidential information has been omitted and the reasons for confidentiality;*
- *A summary of the confidential information which permits other interested parties a reasonable understanding of the substance of the confidential information; and*
- *In exceptional cases, where information is not susceptible to summary, reasons must be submitted to this effect.*

*This rule applies to all parties and to all correspondence with and submissions to the Commission, which unless clearly indicated to be confidential, will be made available to other interested parties.*

*The Commission will disregard any information indicated to be confidential that is not accompanied by a proper non-confidential summary or the aforementioned reasons.*
*If a party considers that any document of another party, on which that party is submitting representations, does not comply with the above rules and that such deficiency affects that party's ability to make meaningful representations, the details of the deficiency and the reasons why that party's rights are so affected must be submitted to the commission in writing forthwith (and at the latest 14 days prior to the date on which that party's submission is due).*
*Failure to do so timeously will seriously hamper the proper administration of the investigation, and such party will not be able to subsequently claim an inability to make meaningful representations on the basis of the failure of such other party to meet the requirements.*

**REVIEW OF REBATE ITEM 316.01/8415.90/02.06:**

*Air conditioning machines, having a rated cooling capacity exceeding 3 kW, incomplete or unassembled, for the manufacture of air conditioning machines identifiable for use in heavy vehicles as defined in Note 1 to rebate item 317.07*

**APPLICANT:**

International Trade Administration Commission of South Africa (**ITAC**)
Private Bag X753
Pretoria
0001

Enquiries: ITAC Ref: **16/2019**. Ms. Lufuno Maliaga. Tel: 012 394 3835 or email:lmaliaga@itac.org.za.

**REASONS FOR THE REVIEW:**

- To assess the impact of a revised rebate provision given that the industry has evolved significantly since its implementation in 2001; and
- To align the rebate provision with the tariff structure and industry capabilities where applicable.

**PUBLICATION PERIOD:**

Representation should be made within **four (4) weeks** of the date of this notice.

**DEPARTMENT OF WATER AND SANITATION**

**NOTICE 562 OF 2019**

**NATIONAL WATER ACT, 1998**
**(ACT NO.36 OF 1998)**

**DETERMINATION OF WATER RESOURCE CLASSES AND RESOURCE QUALITY OBJECTIVES FOR MOKOLO, MATLABAS, CROCODILE (WEST) AND MARICO CATCHMENTS**

I, Gugile Nkwinti, Minister of Water and Sanitation, hereby, in terms of section 13(1) of the National Water Act, 1998 (Act No. 36 of 1998) determine the classes of water resources and the resource quality objectives, as set out in the Schedule.

**MR GUGILE NKWINTI**
**MINISTER OF WATER AND SANITATION**
**DATE:** 22/02/2019

## SCHEDULE

## DETERMINATION OF WATER RESOURCE CLASSES AND RESOURCE QUALITY OBJECTIVES FOR MOKOLO, MATLABAS, CROCODILE (WEST) AND MARICO CATCHMENTS

### 1. DEFINITIONS

In this Schedule any word to which a meaning has been assigned in the National Water Act shall bear the meaning so assigned and, unless the context otherwise indicates -

**"Class I"** means the configuration of Ecological Categories of the water resources within a catchment that results in an overall condition of that water resource which is minimally altered from its predevelopment condition;

**"Class II"** means the configuration of Ecological Categories of the water resources within a catchment that results in an overall condition of that water resource which is moderately altered from its predevelopment condition;

**"Class III"** means the configuration of Ecological Categories of the water resources within a catchment that results in an overall condition of that water resource which is significantly altered from its predevelopment condition;

**"Ecological Category"** means the ecological condition to a water resource that reflects the ecological condition of that water resource in terms of the deviation of its biophysical components from the natural reference condition;

**"Ecological Water Requirement"** means the flow patterns (the magnitude, timing and duration thereof) and the water quality needed to maintain a riverine ecosystem in a particular condition and refers to both the quantity and quality components of a riverine ecosystem;

**"Integrated Unit of Analysis"** means an integrated unit of analysis that represents a homogenous catchment area of similar impacts and a broad scale unit for assessing the socio-economic implications of different catchment configuration scenarios and to report on the ecological conditions at a sub-catchment scale;

**"National Water Act"** means the National Water Act, 1998 (Act No. 36 of 1998);

**"Percentile"** means the non-exceedance probability, that is, at the 95$^{th}$ percentile 95 percent of values must be less than the value, and at the 50$^{th}$ percentile 50 percent of values must be less than the value;

**"Present Ecological State"** means the current health or integrity of various biological attributes of the resource, compared to the natural or close to natural reference conditions;

**"Recommended Ecological Category"** means a category indicating the ecological management target for a water resource based on its ecoclassification that should be attained.

"**Resource Quality Objectives"** means the Resource Quality Objectives that are both descriptive statements and numerical values for the biological, physical and chemical attributes of the significant water resources throughout the catchments. They are narrative and qualitative statements that describe the overall objectives for the Resource unit;

**"Resource Unit"** means a stretch of a river, an individual wetland or cluster of wetlands, an estuary, or a dam that is sufficiently ecologically distinct to warrant its own specification of an ecological water requirement or resource quality objective and that its geographic boundaries are clearly delineated. A Resource Unit is the basic unit of a water resource to which Resource Quality Objectives will apply;

**"Water Resource Class"** means the representation of the attributes required of different water resources by the water resource custodian (the Department of Water and Sanitation).

## 2. DESCRIPTION OF THE WATER RESOURCE

The water resource classes and resource quality objectives are determined for all or part of every significant water resource as set out below:

| | |
|---|---|
| Water Management Area: | Limpopo North West |
| Drainage Region: | A10, A21 to A24, A31, A32, A41 and A42 Tertiary Drainage Region |
| River(s): | Mokolo, Matlabas, Crocodile (West) and Marico river systems |

| | |
|---|---|
| Water Management Area: | Vaal Water Management Area |
| Drainage Region: | D41A Quaternary Drainage Region |
| River(s): | Molopo River system |

## 3. DETERMINATION OF WATER RESOURCE CLASSES IN TERMS OF SECTION 13(1)(a) OF THE NATIONAL WATER ACT, 1998

i. The water resource classes for Mokolo, Matlabas, Crocodile (West) and Marico catchments are listed in Table 1 according to the overall class per integrated unit of analysis (IUA), indicated in Figure 1.

ii. IUAs are classified in terms of their extent of permissible utilisation and protection as either Class I: indicating high environmental protection and minimal utilisation; Class II indicating moderate protection and moderate utilisation; and Class III indicating sustainable minimal protection and high utilisation.

iii. Table 1 provides the IUA, its water resource class and its respective catchment configuration. The catchment configuration consists of a number of biophysical nodes representing river reaches or resource units (RUs). The ecological category to be maintained for each RU in the IUA is provided.

## 4. DETERMINATION OF RESOURCE QUALITY OBJECTIVES IN TERMS OF SECTION 13(1)(b) OF THE NATIONAL WATER ACT, 1998

i. Resource Quality Objectives (RQOs) are defined for each prioritised RU for every IUA in terms of water quantity, habitat and biota, and water quality.

ii. Figure 2 represents the RU boundaries of the Crocodile (West), Marico, Mokolo and Matlabas catchments.

iii. Table 2 to Table 20 provide the RQOs for RIVERS AND DAMS in priority RUs.

iv. Table 21 represents the RQOs for PRIORITY WETLAND CLUSTERS AND SYSTEMS in selected Resource Units.

v. Table 22 to Table 32 represent Regional and RU specific RQOs for GROUNDWATER in priority RUs.

vi. RQOs will apply from the date of publication of this Notice in the Government Gazette, unless otherwise specified by the Minister.

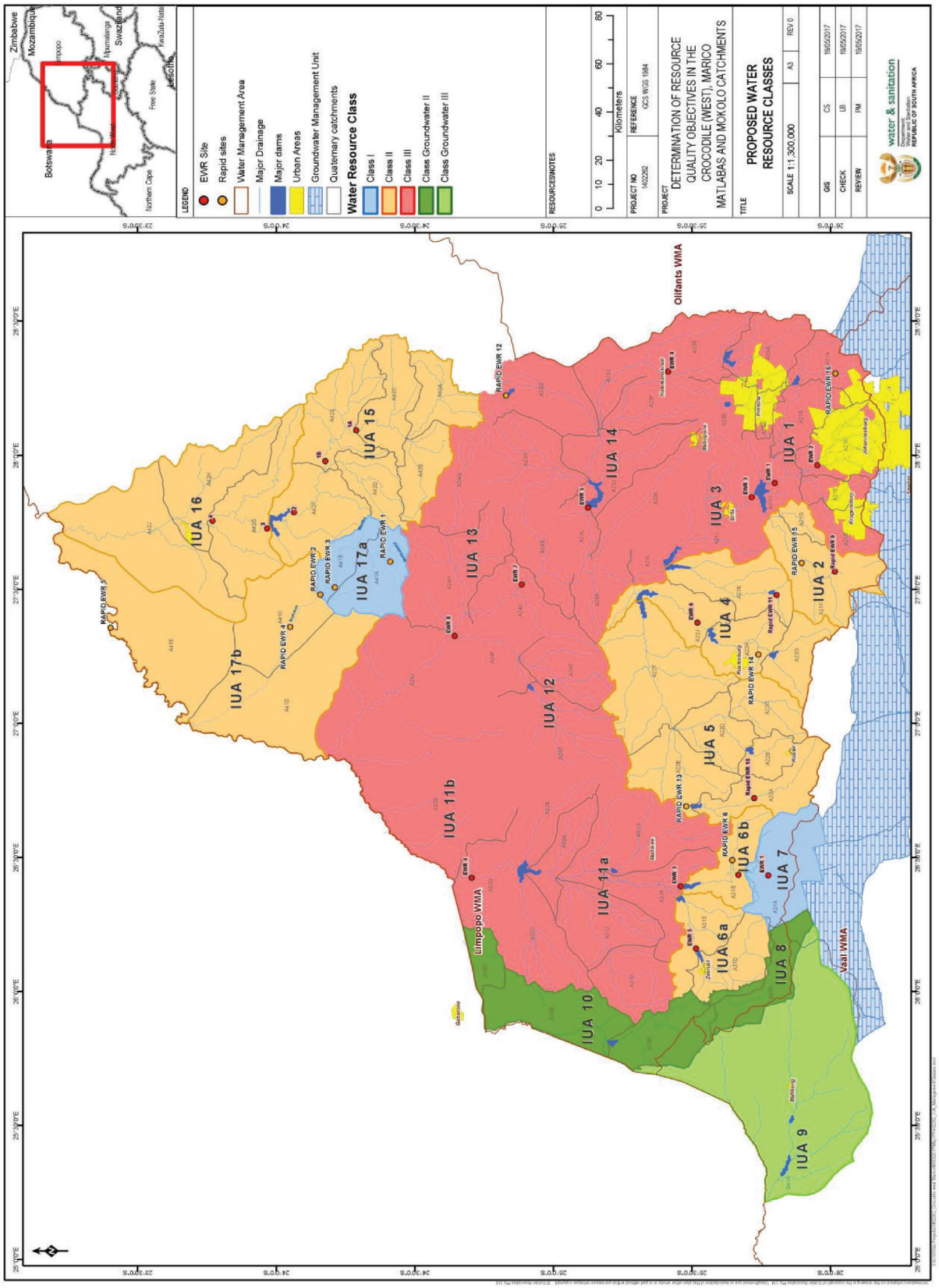



**Figure 1: Water Resource Classes for the Crocodile (West), Marico, Mokolo and Matlabas catchments**

5

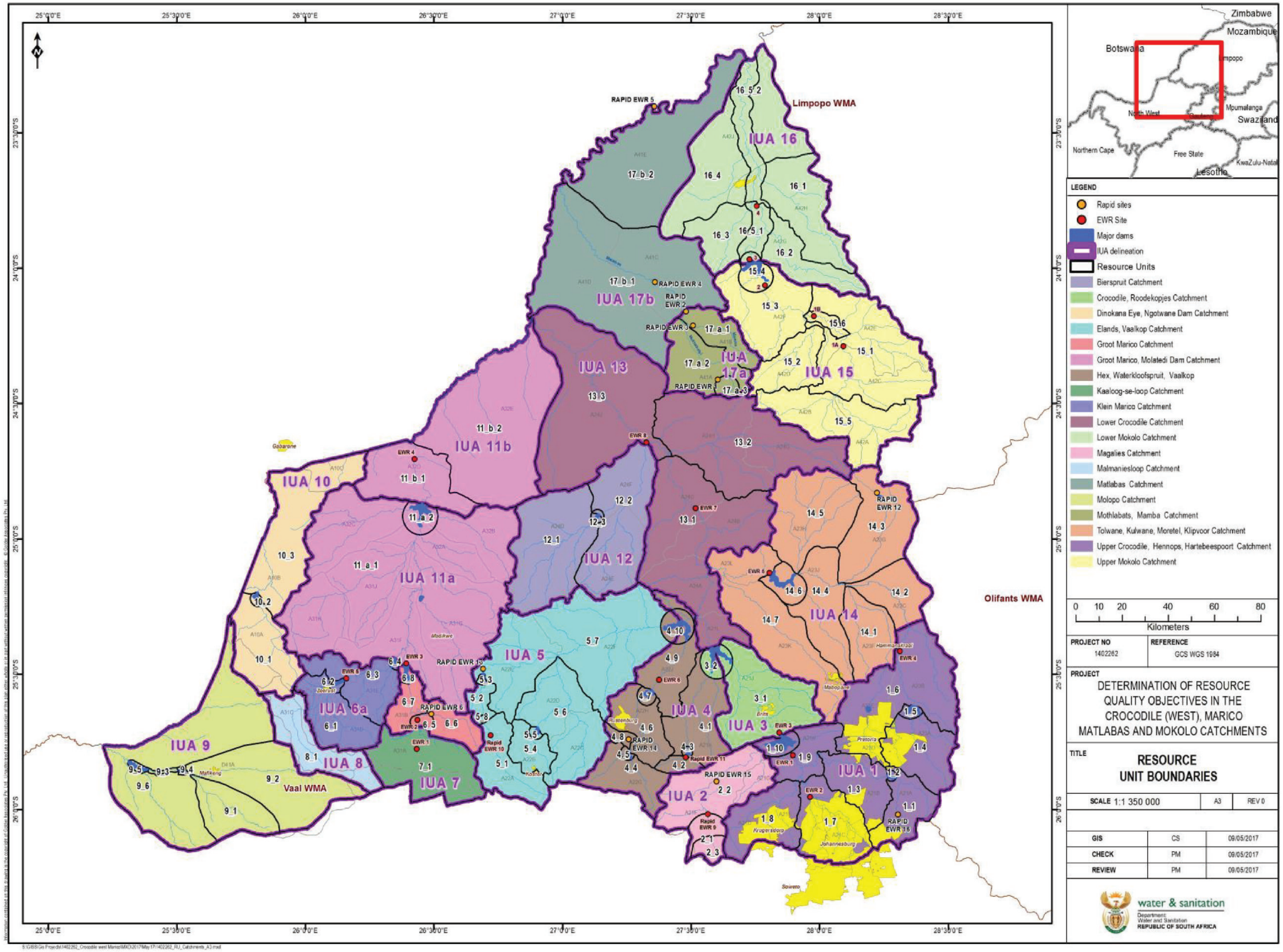


Figure 2: Resource Units of the Crocodile (West), Marico, Mokolo and Matlabas catchments

**Table 1: Summary of Water Resource Classes per Integrated Unit of Analysis and Ecological Categories – Crocodile (West), Marico, Mokolo and Matlabas catchments**

| IUA | Water Resource Class | Node Name | Quaternary Catchment | Resource Unit | River Name | Ecological Category to be maintained | Mean Annual Runoff (million $m^3$/a) | EWR as % of natural Mean annual runoff |
|---|---|---|---|---|---|---|---|---|
| 1 Upper Crocodile/ Hennops/ Hartbeespoort | III | CROC Rapid EWR_16 | A21A | 1_1 | Rietvlei (source) | C | 4.788 | 27.83 |
| | | HN1 | A21A | 1_1 | Hennops River upstream Rietvlei Dam | C | 11.66 | 27.83 |
| | | HN2 | A21B | 1_3 | Sesmylspruit with its' tributaries to confluence with Hennops | D | - | - |
| | | HN3 | A21C | 1_7 | Modderfonteinspruit to confluence with Jukskei | D | - | - |
| | | HN4 | A21C | 1_7 | Klein Jukskei at confluence with Jukskei | D | - | - |
| | | EWR site CROC_ EWR2 | A21C | 1_7 | Jukskei River | D | 139.9 | 29.19 |
| | | HN6 | A21D | 1_8 | Bloubankspruit and tributaries (outlet of quaternary/confluence with Crocodile) | D | - | - |
| | | HN8 | A21H | 1_9 | Swartspruit to Hartbeespoort Dam | D | - | - |
| | | EWR CROC_EWR1 | A21 H | 1_9 | Crocodile River from Jukskei confluence to inflow Hartbeespoort Dam | D | 231.05 | 24.07 |
| | | HN11 | A23A | 1_4 | Upper Pienaars River, Edendalespruit and Moretlele Rivers to Roodeplaat Dam | D | - | - |
| | | EWR site CROC_EWR4 | A23B | 1_6 | Pienaars from Roodeplaat Dam to outlet of quaternary catchment (outlet of IUA1) | C | 28.2 | 30.81 |
| | | HN13 | A23B | 1_6 | Boekenhoutspruit to confluence with Pienaars | C | - | - |
| | | HN14 | A23D | 1_6 | Skinnerspruit (source) to confluence with Apies | D | - | - |
| | | HN15 | A23D, E | 1_6 | Apies (source) to Bon Accord Dam, below the dam at outlet of IUA1 | D | - | - |
| 2 Magalies | II | CROC Rapid _EWR9 | A21F | 2_1 | Magalies below Maloney's Eye | B | 14.68 | 45.93 |
| | | CROC Rapid _EWR15 | A21G | 2_2 | Magalies, Klein Magalies, Bloubank | C/D | 21.89 | 21.18 |
| | | HN18 | A21G, F | 2_2 | Skeerpoort at outlet of IUA2 | C/D | - | - |
| 3 Crocodile/ Roodekopjes | III | HN19 | A21J | 3_1 | Rosespruit at confluence with Crocodile | C/D | - | - |
| | | EWR site CROC_EWR3 | A21J | 3_1 | Crocodile from Hartbeespoort Dam to upstream Roodekopjes Dam | C/D | 143.3 | 25.02 |
| 4 Hex/ Waterkloof-spruit/ Vaalkop | II | CROC Rapid_EWR11 | A21K | 4_2 | Upper reaches of Sterkstroom (source) to inflow Buffelspoort Dam | C | 13.95 | 28.21 |
| | | HN22 | A21K | 4_1 | Sterkstroom from Buffelskloof Dam to Roodekopjes Dam | C | - | - |

| IUA | Water Resource Class | Node Name | Quaternary Catchment | Resource Unit | River Name | Ecological Category to be maintained | Mean Annual Runoff (million $m^3/a$) | EWR as % of natural Mean annual runoff |
|---|---|---|---|---|---|---|---|---|
| | | HN23 | A22G | 4_4 | Upper Hex (source) to Olifantsnek Dam, Rooikloofspruit | C | - | - |
| | | CROC Rapid_EWR14 | A22H | 4_8 | Waterkloofspruit to confluence with Hex | B/C | 5.469 | 28.27 |
| | | HN25 | A22H | 4_6 | Hex from Olifantsnek Dam to Bospoort Dam, Sandspruit | D | 12.11 | 15.26 |
| | | EWR site CROC_EWR6 | A22J | 4_9 | Hex from Bospoort Dam to inflow Vaalkop Dam | D | 26.9 | 14.96 |
| 5 Elands/ Vaalkop | II | CROC Rapid_EWR10 | A22A | 5_1 | Upper reaches of Elands (source) to Swartruggens Dam | B/C | 10.1 | 30.48 |
| | | HN29 | A22A | 5_2 | Elands from Swartruggens Dam to Lindleyspoort Dam | C | 12.87 | 23.99 |
| | | HN30 | A22B | 5_4 | Upper Koster (source) to Koster Dam | C | 2.54 | 22.77 |
| | | HN31 | A22C, A22D | 5_6 | Selons River, Koedoespruit, Dwarsspruit, lower Koster River | C | - | - |
| | | CROC Rapid_EWR13 | A22E, A22F | 5_7 | Elands from Lindleyspoort Dam to Vaalkop Dam | C | 18.77 | 21.90 |
| 6b Groot Marico | II | MAR Rapid_EWR6 | A31B | 6_6 | Polkadraaispruit to confluence with Marico | B | 9.87 | 49.27 |
| | | EWR Site MAR_EWR2 | A31B | 6_5 | Groot Marico main stem upstream to Polkadraaispruit confluence | B | 42.08 | 50.26 |
| | | HN63 | A31B | 6_7 | Groot Marico from Polkadraaispruit confluence to Marico Bosveld Dam | B | 56.92 | 50.61 |
| 6a Klein Marico | II | HN64 | A31D | 6_1 | Malmaniesloop to confluence with Klein Marico | C/D | - | - |
| | | HN35 | A31D | 6_1 | Klein Marico and tributaries upstream of Zeerust | C/D | - | - |
| | | HN65 | A31E | 6_1 | Klein Marico from Zeerust to Klein Maricopoort Dam | C/D | 16.25 | 14.26 |
| | | EWR Site MAR_EWR5 | A31E | 6_3 | Klein Marico from Klein Maricopoort Dam to Kromellemboog Dam | C | 16.25 | 11.70 |
| 7 Kaaloog-se-Loop | I | EWR site MAR_EWR1 | A31A | 7_1 | Marico Eye, Kaaloog-se-Loop, Bokkraal-se-Loop, Ribbokfontein-se-Loop, Rietspruit (southern eye), Kuilsfontein, Syferfontein, Bronkhorstfontein | B | 10.539 | 76.32 |
| | | HN38 | A31A | 7_1 | Vanstraatenvlei and tributaries at confluence with Kaaloog-se-Loop, outlet of IUA7 | B | - | - |
| 8 Malmaniesloop | II* | - | A31C | 8_1 | Dolomite water area | B | - | - |
| 9 Molopo | II* | HN66 | D41A | 9_3 | Molopo River main stem only from Modimola Dam to Disaneng Dam | D | - | - |

| IUA | Water Resource Class | Node Name | Quaternary Catchment | Resource Unit | River Name | Ecological Category to be maintained | Mean Annual Runoff (million $m^3$/a) | EWR as % of natural Mean annual runoff |
|---|---|---|---|---|---|---|---|---|
| | | HN67 | D41A | 9_2 | Molopo headwaters to inflow Setumo (Modimola) dam (dolomite water area) | D | - | - |
| | | HN39 | D41A | 9_6 | Molopo at outlet of IUA9 | D | - | - |
| 10 Dinokana Eye/Ngotwane Dam | III* | HN68 | A10A | 10_1 | Ngotwane from Dinokana to Ngotwane Dam | D | - | - |
| 11a Groot Marico/ Molatedi Dam | III | EWR Site MAR_EWR3 | A31F, A31G, A32A | 11a_1 | Marico Groot Marico from outflow Marico Bosveld Dam to Molatedi Dam, all tributaries | C/D | 65.083 | 23.62 |
| 11b Groot Marico/ seasonal tributaries | III | EWR Site MAR_EWR4 | A32D, E | 11b_1 | Marico from Molatedi Dam to confluence with Limpopo, Rasweu, Maselaje rivers; outlet of IUA11b | C | 153.25 | 7.96 |
| 12 Bierspruit | III | - | A24D | 12_1 | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe | C | | |
| | | HN42 | A24E, F | 12_2 | Bierspruit to confluence with Crocodile River, Brakspruit, Phufane, Sefatlhane, Lesobeng, lower reach Bofule; outlet of IUA12. | D | - | - |
| 13 Lower Crocodile | III | HN43 | A24G, A24H | 13_2 | Sand to confluence with Crocodile | B | 26.56 | 27.04 |
| | | EWR Sites CROC_EWR7 | A21L, A24A-C, A24H | 13_1 | Crocodile River outflow Roodekopjes Dam to upstream Sand River confluence, Sleepfonteinspruit, Klipspruit tributaries | D | 463.4 | 13.9 |
| | | EWR Site CROC_EWR8 | A24J | 13_3 | Lower Crocodile from Bierspruit confluence to confluence with Limpopo, outlet of IUA13 | D | 565.16 | 7.48 |
| 14 Tolwane/ Kulwane/ Moretele/ Klipvoor | III | CROC Rapid_EWR12 | A23G | 14_3 | Plat River | C/D | 4.864 | 23.08 |
| | | - | A23F | 14_1 | Apies River, Tshwane tributary | D | | |
| | | - | A23C | 14_2 | Pienaars River from Boekenshout confluence to Apies River confluence | C | | |
| | | | A23J | 14_4 | Moretele (Pienaars) River from Plat River confluence to Klipvoor Dam, Kutswane to Klipvoor Dam | C | | |
| | | EWR Site CROC_EWR5 | A23J A23J, A23L | 14_7 | Moretele (Pienaars) to confluence with Crocodile, outlet of IUA14 | D | 113.0 | 11.82 |
| | | HN49 | A23K | 14_7 | Tolwane to confluence with Moretele | C/D | - | - |
| 15 | II | HN50 | A42A | 15_5 | Sand (source) to confluence with Grootspruit | C | - | - |

| IUA | Water Resource Class | Node Name | Quaternary Catchment | Resource Unit | River Name | Ecological Category to be maintained | Mean Annual Runoff (million $m^3/a$) | EWR as % of natural Mean annual runoff |
|---|---|---|---|---|---|---|---|---|
| Upper Mokolo | | HN51 | A42B | 15_5 | Grootspruit (source) to confluence with Sand | D | 27.8 | 21.73 |
| | | EWR Site MOK_EWR1a | A42C | 15_1 | Mokolo to confluence with Dwars | C/D | 84.84 | 16.79 |
| | | EWR Site MOK_EWR1b | A42E | 15_6 | Mokolo to confluence with Sterkstroom | B/C | 135.03 | 13.6 |
| | | HN54 | A42D | 15_2 | Sterkstroom (source) to confluence with Mokolo, | B | 43.45 | 52.63 |
| | | EWR Site MOK_EWR2 | A42F | 15_4 | Mokolo River in A42F to inflow Mokolo Dam, | B/C | 196.2 | 11.7 |
| | | EWR Site MOK_EWR3 | A42G | 15_4 | Mokolo Dam to upper portion of A42G (10km downstream of dam) | B/C | 213.99 | 8.65 |
| 16 Lower Mokolo | II | - | A42H (eastern portion | 16_1 | Tambotie River | B | | |
| | | - | A42G | 16_2 | Poer-se-Loop | B | | |
| | | - | A42J and remaining of A42H | 16_4 | Sandloop | C | | |
| | | EWR Site MOK_EWR4 | A42G | 16_5_1 | Mokolo main stem - Mokolo from below EWR3 to the Tambotie confluence | C | 253.3 | 12.3 |
| | | HN58 | A42H, A42J | 16_5_2 | Mokolo main stem - from Tambotie confluence to Limpopo | C | - | - |
| 17a Mothlabatsi/ Mamba | I | HN59 | A41A | 17a_3 | Headwaters Mothlabatsi (Matlabas-Zyn-Kloof, peatlands) | A | 5.23 | 57.07 |
| | | MAT Rapid_EWR3 | A41B | 17a_1 | Mamba to confluence with Mothlabatsi | B/C | 9.54 | 35.49 |
| | | MAT Rapid_EWR2 | A41B | 17a_2 | Matlabas/Motlhabatsi confluence (outlet of IUA) | B/C | 32.80 | 33.23 |
| 17b Matlabas | II | MAT Rapid_EWR4 | A41C | 17b_1 | Matlabas | B | 35.58 | 33.42 |
| | | HN62 | A41C, D | 17b_1 | Matlabas to confluence with Limpopo, outlet of IUA17b | B | - | - |

***Groundwater Zone***

**Table 2: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 1: UPPER CROCODILE/HENNOPS/HARTEBEESPOORT**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .1: UPPER CROCODILE/HENNOPS/HARTEBEESPOORT | III | Upper Hennops and Rietvlei Rivers (inflow into Rietvlei Dam) (A21A) | 1_1 | D | Quantity | Low flows | EWR maintenance low and drought flows:<br>Hennops River at A2H090 in A21A<br>NMAR = $11.66 \times 10^6 m^3$<br>REC=C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows - specifically required after confluence of Rietvlei and Hennops Rivers<br><br>Maintenance flows and drought flows<br><br>Monitoring of Hennops River with surveys of biota at A2H090) | | Maintenance Low flows ($m^3/s$) | Drought Low flows ($m^3/s$) |
| | | | | | | | | | Oct | 0.041 | 0.007 |
| | | | | | | | | | Nov | 0.054 | 0.007 |
| | | | | | | | | | Dec | 0.056 | 0.010 |
| | | | | | | | | | Jan | 0.078 | 0.017 |
| | | | | | | | | | Feb | 0.100 | 0.015 |
| | | | | | | | | | Mar | 0.087 | 0.017 |
| | | | | | | | | | Apr | 0.072 | 0.014 |
| | | | | | | | | | May | 0.065 | 0.013 |
| | | | | | | | | | Jun | 0.064 | 0.017 |
| | | | | | | | | | Jul | 0.059 | 0.016 |
| | | | | | | | | | Aug | 0.054 | 0.013 |
| | | | | | | | | | Sep | 0.048 | 0.007 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.<br><br>Application of the concentration limits must be undertaken in conjunction with a nutrient load balance for the catchment. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.060 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | | | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 3.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained or improved upon to support the aquatic ecosystem and the water quality requirements of the water users. | Electrical conductivity (EC) | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) Hennops above confluence with Rietvlei | | |
| | | | | | | | | | ≤ 70 milliSiemens/metre (mS/m) (95th percentile) below confluence | | |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 80 milligrams/litre (mg/l) 95th percentile) | | |
| | | | | | | | | Sodium (Na) | ≤ 70 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH must be maintained at present state. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. | | |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic | Dissolved oxygen | 6-7 milligrams/litre (mg/l) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ecosystem. | | |
| | | | | | | Toxics | The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.<br><br>(Pesticides to be confirmed) | Ammonia as N | ≤ 0.0725 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.105 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | | | | Oil and grease | 2.5 mg/l |
| | | | | | | | | Hormone driven Pharmaceuticals | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Habitat | Instream | Sufficient velocity depth for flow sensitive species must be attained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model Method and Model (RHAMM) | Instream Habitat Integrity ecological category = C ≥ 62% |
| | | | | | | Riparian habitat | Alien invasive control should be implemented. Riparian vegetation should be maintained at a C ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI ecological category = C ≥ 62%<br>Riparian IHI = C ≥ 62% |
| | | | | | Biota | Fish | Fish community should be maintained at a C ecological category. Flow velocity linked to seasonal requirements needed for *BMAR, AURA* and *CPRE* | Fish Response Assessment Index (FRAI).<br>Seasonality must be noted. | Fish ecology category = C<br>FRAI ≥ 62% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a moderately modified condition or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI C ecological category ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 4.8 |
| | | | | | | Semi-aquatic biota | The suitability of this stretch of river to serve as a habitat and migration corridor for aquatic bird | Aquatic birds/Indicator mammal species | Determine representative bird species (types and population numbers to serve as indicators). |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | and mammal populations must be maintained through proper habitat management. | | There is a need to set a numerical limits for density of animals/birds based on the available/collected data. |
| | | Rietvlei Dam (A21A) | 1_2 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained. | Minimum operating level required in dam | Operation rules as applicable.<br>Minimum level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system or better. | Orthophosphate | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total Ammonia as Nmust be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total Ammonia as N | ≤ 0.0725 mg/L N 95th percentile |
| | | | | | | | Concentration of total nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system or better. | Nitrite& Nitrate | ≤ 1.00 mg/L N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 70 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sulphate | ≤ 80 mg/ℓ<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem | Sodium | ≤ 70 mg/ℓ<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | health and the water quality requirements of the downstream users. | | |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* | ≤ 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreation use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading ≥0.4 m | Turbidity | Minimum 95th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L $O_2$<br>95th percentile |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl *a* concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | | | The river water should not be toxic to aquatic organisms or be a threat to human health. | Pesticides | Cyanide:≤ 110 µg/ℓ<br>Endosulfan:≤ 20 µg/ℓ<br>Atrazine:≤ 100 µg/ℓ<br>95th percentile |
| | | | | | | | The impoundment water should not be a threat to animal or human sustainability. | Hormone driven Pharmaceuticals | 17ß-oestradiol: ≤ 1 µg/ℓ |
| | | Hennops from outflow Rietvlei Dam to A21H Sesmylspruit, Kaalspruit and Olifantspruit (A21B) | 1_3 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category and the water quality requirements of the water users are met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.125 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 3.0 milligrams/litre (50th percentile) |
| | | | | | | Salts Pathogens | Instream salinity must be improved to meet the recommended ecological category and the water quality requirements of the water users. Land based impacts and wastewater discharges must be controlled and managed to protect the resource. | Electrical conductivity (EC) | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* | 130 counts/100 millilitres (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | pH range 7.5 (5th percentile) - 9.2 (95th percentile) |
| | | | | | | Toxics | A baseline assessment to determine the present state | Turbidity | A 10% variation from background concentration is allowed. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | instream turbidity is required. | | |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | | The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health | Ammonia as N | ≤ 0.1 milligrams/litre (mg/l) 95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.150 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.013 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0075 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a D Ecological Category or improved upon. Velocity depth for flow sensitive species (*AURA* and *CPRE)* and taxa is required. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model Method and Model (RHAMM) | Instream Habitat Integrity category ≥ D ≥ 42% |
| | | | | | | Riparian habitat | Alien invasive control required. Riparian vegetation should be improved from an E ecological category to a D category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI ecology category = D ≥ 42%<br>Riparian IHI = D ≥ 42% |
| | | | | | Biota | Fish | Fish community should be improved from the current E ecological category to a D category. Flow velocity linked to seasonal requirements needed for *BMAR* and *BMAT*. | Fish Response Assessment Index (FRAI) | FRAI should be conducted annually to monitor against the prescribed D ecological category.<br><br>FRAI ≥ 42% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 55<br>ASPT ≥ 4.2 |
| | | Upper Pienaars River, | 1_4 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.125 milligrams/litre (mg/l) (50th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Edendalespruit and Moretele Rivers to Roodeplaat (A23A) | | | | | aquatic ecosystem health and ensure the prescribed ecological category and the water quality requirements of the water users are met. Control of nutrients required to improve instream water quality status. | Dissolved Inorganic Nitrogen (DIN) as Nitrogen | ≤1.25 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained to support the aquatic ecosystem and the water quality requirements of the water users. | Electrical conductivity (EC) | ≤ 65 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 50 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Chloride (Cl) | ≤ 50 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* | 130 counts/100 millilitres (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.<br><br>(Dissolved) | Ammonia as N | ≤ 0.0725 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.007 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0075 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Fluoride (F) | ≤ 2.54 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Benzene | ≤0.01 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Toluene | ≤0.7 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Hormone driven Pharmaceuticals | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Habitat | Instream | Habitat availability for fish and macroinvertebrates must be | Index of Habitat Integrity, Rapid Habitat | Instream Habitat Integrity ecological category = D ≥ 42% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | maintained, to sustain biotope diversity. Marginal vegetation required to support *BANO.* | Assessment Method and Model Method and Model (RHAMM) | (A2HART-KAMEE and A2PIEN-BAVIA) |
| | | | | | | Riparian habitat | Alien invasive control required. Riparian vegetation should be improved from E ecological category to a D category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI ecological category = D ≥ 42%<br>Riparian IHI = D ≥ 42%<br>(A2HART-KAMEE and A2PIEN-BAVIA) |
| | | | | | Biota | Diatoms | Diatom assemblage must be maintained within a largely modified condition or improved upon. | Specific Pollution Index | Diatom ecological category = D ≥ 42%<br>(for both REMP sites A2HART-KAMEE and A2PIEN-BAVIA) |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI ecological category = D ≥ 42%<br>REMP Site At A2PIEN-BAVIA:<br>SASS ≥ 60<br>ASPT ≥ 3.8<br><br>REMP Site A2HART-KAMEE:<br>SASS ≥ 60<br>ASPT ≥ 3.8 |
| | | Roodeplaat Dam | 1_5 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic state.<br><br>Hyacinth growth must be managed. Management strategy to address load in sediments required. | Orthophosphate | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | maintained as a eutrophic system. | | |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Nitrite & Nitrate | ≤ 1.00 mg/ℓ N<br>95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sulphate | ≤ 80 mg/ℓ<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sodium | ≤ 70 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* | ≤ 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading ≥0.4 m | Turbidity | Minimum 95th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L $O_2$<br>95th percentile |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl a concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | | | The impoundment water should not be a threat to animal or human sustainability. | Hormone driven Pharmaceuticals | 17ß-oestradiol:<br>≤ 1 µg/ℓ |
| | | Upper reaches_ Apies, Skinner-spruit and Pienaars River outflow from Roodeplaat Dam (A23B, | 1_6 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Pienaars River at CROC_EWR4 in A23B<br>NMAR = 28.20x10$^6$m$^3$<br>REC=C category<br>The maintenance low flows and | Base flows Maintenance flows and drought flows.<br><br>Intermediate EWR site 4 on Pienaars River (monitoring at A2H006) | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.104 | 0.063 |
| Nov | 0.136 | 0.081 |
| Dec | 0.146 | 0.086 |
| Jan | 0.211 | 0.122 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A23D, A23E) | | | | | drought flows must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem and users. | | Feb | 0.242 | 0.140 |
| | | | | | | | | | Mar | 0.208 | 0.119 |
| | | | | | | | | | Apr | 0.174 | 0.102 |
| | | | | | | | | | May | 0.144 | 0.085 |
| | | | | | | | | | Jun | 0.133 | 0.080 |
| | | | | | | | | | Jul | 0.120 | 0.072 |
| | | | | | | | | | Aug | 0.111 | 0.067 |
| | | | | | | | | | Sep | 0.103 | 0.063 |
| | | | | | | | | | Oct | 0.104 | 0.063 |
| | | | | | | | | | Nov | 0.136 | 0.081 |
| | | | | | | High flows | EWR high flows:<br>Pienaars River at CROC_EWR4 in A23B<br>NMAR = $28.20 \times 10^{6}$ $m^3$<br>REC=C category<br><br>The high flows must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem | Floods<br><br>(See Appendix A for detail on flood requirements)<br><br>Intermediate EWR site 4 on Pienaars River (monitoring at A2H006) | | High flows ($m^3/s$) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.210 | |
| | | | | | | | | | Dec | 0.339 | |
| | | | | | | | | | Jan | 0.203 | |
| | | | | | | | | | Feb | 0.56 | |
| | | | | | | | | | Mar | 0.203 | |
| | | | | | | | | | Apr | 0 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Concentrations should not be allowed to deteriorate. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.5 milligrams/litre (mg/l) (50th percentile) Apies | | |
| | | | | | | | | | ≤ 0.09 milligrams/litre (mg/l) (50th percentile) Pienaars | | |
| | | | | | | | | | ≤ 0.05 milligrams/litre (mg/l) (50th percentile) Skinnerspruit | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 3.0 milligrams/litre (50th percentile) Skinnerspruit and Apies | | |
| | | | | | | | | | ≤ 1.0 milligrams/litre (mg/l) (50th percentile) Pienaars | | |
| | | | | | | Salts | Instream salinity must be maintained at acceptable levels to support a healthy aquatic ecosystem and the water quality requirements of water users. | Electrical conductivity (EC) | ≤ 55 milliSiemens/metre (mS/m) (95thpercentile) Pienaars River | | |
| | | | | | | | | | ≤ 70 milliSiemens/metre (mS/m) (95thpercentile) Apies River | | |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 70 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium (Na) | ≤ 50 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxins must not be at a level that is toxic to aquatic organisms and a threat to human health | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat availability for fish and macroinvertebrates must be maintained, to sustain biotope diversity, especially maintaining marginal vegetation to support fish species *MBRE* and *BANO.* | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity ecological category = C ≥ 62% |
| | | | | | | Riparian habitat | Alien invasive control required. Rparian vegetation should be maintained at an ecological category of C. | Index of Habitat Integrity, Vegetation Response Assessment Index (VEGRAI) | VEGRAI ecological category = C ≥ 62% |
| | | | | | Biota | Fish | Fish community should be improved from the current E ecological category to a D category. | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42%<br>(Apies/Skinnerspruit Rivers) |
| | | | | | | | An assessment of the fish community should be conducted annually to monitor against present state C ecological category. Maintain the species diversity present. Flow should be maintained to accommodate species *LCYL, LMOL* and *BMAR* | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br><br>(Pienaars River at REMP site A2PIEN-DINOK (d/s EWR 4) |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.4<br>(Apies and Skinner at REMP site A2APIE-BOSCH (A23D & A23E) |
| | | | | | | | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.0<br>(REMP site A2PIEN-DINOK (d/s |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Version 5 (SASS5). | EWR 4) | | |
| | | | | | | Diatoms | Pienaars downstream of Roodeplaat Dam to Boekenhoutspruit confluence (A23B):<br>Diatom assemblage must be maintained within a largely modified condition or improved upon. | Specific Pollution Index | Diatom EC = D ≥ 42% | | |
| | | Jukskei, Klein Jukskei, Modderfonteins pruit (A21C) | 1_7 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Jukskei River at CROC_EWR2 in A21C<br>PMAR = 139.9x10$^{6}$ m$^{3}$<br>REC=D category<br><br>Ecological water requirements (Reserve) must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem and users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Intermediate EWR site 2 on Jukskei River (monitoring at A2H023/ A2H044) | ——— | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.725 | 0.725 |
| | | | | | | | | | Nov | 0.775 | 0.775 |
| | | | | | | | | | Dec | 0.770 | 0.770 |
| | | | | | | | | | Jan | 0.814 | 0.814 |
| | | | | | | | | | Feb | 0.936 | 0.936 |
| | | | | | | | | | Mar | 0.845 | 0.845 |
| | | | | | | | | | Apr | 0.839 | 0.839 |
| | | | | | | | | | May | 0.795 | 0.795 |
| | | | | | | | | | Jun | 0.815 | 0.815 |
| | | | | | | | | | Jul | 0.785 | 0.785 |
| | | | | | | | | | Aug | 0.774 | 0.774 |
| | | | | | | | | | Sep | 0.762 | 0.762 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category and the water quality requirements of the water users are met. Nutrient management required to improve current state and ensure sustainability of the system. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.5 milligrams/litre (mg/l) (50$^{th}$ percentile) (interim numeric limit)<br>≤ 0.125 milligrams/litre (mg/l) (50$^{th}$ percentile) (long term numeric limit) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 4.0 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained to support the aquatic ecosystem and the water quality requirements of the water users. | Electrical conductivity (EC) | ≤ 65 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 70 milligrams/litre (mg/l) (95$^{th}$ percentile) | | |
| | | | | | | | | Sodium (Na) | ≤ 70 milligrams/litre (mg/l) (95$^{th}$ percentile) | | |
| | | | | | | | | Chloride | ≤ 60 milligrams/litre (mg/l) (95$^{th}$ percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (95$^{th}$ percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health | Ammonia as N | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤0.013 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤0.0075 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat diversity should be improved from an E ecological category to a D category. Ecological integrity of system must improve. | Index of Habitat Integrity | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained at a C ecological category. Control of alien invasive vegetation required. | Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | Fish community should be improved from the current E ecological category to a D category. Ensure presence of species *BMAR* and *BMOT* (flow dependent species). Flow depth must be present to support habitat availability for *TSPA, CGAR, BANO, BMAR* and *BMOT* | Fish Response Assessment Index (FRAI) | Fish ecology category = D FRAI ≥ 42% |
| | | | | | | Aquatic | Macroinvertebrate assemblage | Macroinvertebrate | MIRAI ecological category = D ≥ |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | macroinvertebrates | must be maintained within a D ecological category or improved upon. | Response Assessment Index and the South African Scoring System Version 5 (SASS5). | 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(EWR2, A2JUKS-DIENR) |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a D ecological category or improved upon. | Specific Pollution Index | Diatom EC ≥ 42%<br>A2JUKS-DIENR |
| | | Upper reaches of the Crocodile River and Bloubank spruit (A21D, A21E) | 1_8 | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and to ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.125 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained at present state quality. Control impacts and future development. | Electrical conductivity (EC) | Crocodile upstream Bloubankspruit confluence:<br>≤ 45 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | Salinity levels are significantly high. Instream salinity must be improved to maintain the aquatic ecosystem in a sustainable state and support the water quality requirements of the water users | | Bloubankspruit:<br>≤ 85 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate ($SO_4$) | Crocodile upstream Bloubankspruit confluence<br>≤ 40 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | | Bloubankspruit:<br>≤ 200 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health. | Cyanide | ≤ 0.110 milligrams/litre (95th percentile) |
| | | | | | | | | Uranium (U) (238) | ≤ 0.03 milligrams/litre (95th percentile |
| | | | | | | | | Arsenic (As) | ≤ 0.130 milligrams/litre (95th percentile |
| | | | | | | | | Gross α | 0.42 Bq/litres |
| | | | | | | | | Gross β | 0.42 Bq/litres |
| | | | | | | | | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Copper (Cu) hard | ≤ 0.0075 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity must be improved to maintain a D ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at D ecological category. Marginal vegetation must be improved. Alien invasive control and rehabilitation of marginal zone is required. Limited habitat is available. Rehabilitation of riparian zone required to support semi-aquatic species (birdlife). | Index of Habitat Integrity, Vegetation Response Assessment Index (VEGRAI) | VEGRAI EC = D ≥ 42% |
| | | | | | Biota | Fish | The fish community should be managed to the prescribed ecological category D ecological category or improved upon. Habitat requirements for *BMOT* (vegetation) and substrate and flow for *CPRE* must be met | Fish Response Assessment Index (FRAI) | Ecological category = D<br>FRAI ≥ 42% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI ecological category = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0<br>(A2CROC-ELAND) |
| | | Crocodile River from Jukskei confluence to Hartbeespoort Dam (A21H) | 1_9 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category and the water quality requirements of the water users are met. Nutrient management required to improve current state and ensure sustainability of the system. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.20 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 2.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained to support the aquatic ecosystem and the water quality requirements of the water users. | Electrical conductivity (EC) | ≤ 75 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sodium | ≤ 60 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Chloride | ≤ 60 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 75 milligrams/litre (mg/l) (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health. | Cyanide | ≤ 0.110 milligrams/litre (95th percentile) |
| | | | | | | | | Uranium (U) (238) | ≤ 0.03 milligrams/litre (95th percentile) |
| | | | | | | | | Gross α | 0.42 Bq/litres |
| | | | | | | | | Gross β | 0.42 Bq/litres |
| | | | | | | | | Aluminium (Al) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.013 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0075 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | No further degradation of the instream habitat should occur Habitat diversity should be improved from an E ecological category to a D category. | Index of Habitat Integrity, Geomorphic Assessment Index | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Conserve, maintain, rehabiliate and add artificial functional systems in shoreline and riparian zone. Alien invasive control required. Riparian vegetation should be maintained at an ecological category D or improved upon. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = D ≥ 42% |
| | | | | | Biota | Fish | Fish community should be maintained at a D ecological category or improved upon. Habitat and water quality | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42% |

CONTINUES ON PAGE 130 - PART 2

# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

**PART 2 OF 6**



ISSN 1682-5843

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | improvement required for *CFLA* and flow should be adequate for flow dependant spp. *BMAR, BPOL, CPRE* | | |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a largely modified condition or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(at EWR1 = A2CROC-HARTB) |
| | | | | | | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat and migration corridor for aquatic bird and mammal populations must be maintained through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely modified condition or improved upon. | Specific Pollution Index | Diatom EC = D ≥ 42%<br>(at EWR1 = A2CROC-HARTB) |
| | | Hartbeespoort Dam | 1_10 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic state. | Orthophosphate | ≤ 0.050 mg/ℓ<br>95th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total Ammonia as Nmust be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total Ammonia | ≤ 0.100 mg/L N<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Nitrite& Nitrate | ≤ 3.00 mg/L N 95th percentile |
| | | | | | | Aesthetic quality | The aesthetic quality of the dam must be managed to support recreational use and tourism | Litter, debris, algae, aquatic weeds | To be determined |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 85 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sulphate | ≤ 100 mg/L<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Chloride | ≤ 50 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreation use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity | Turbidity | ≥0.4 m<br>5th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L $O_2$<br>95th percentile |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl *a* concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | | | The impoundment water should not be toxic to aquatic organisms or be a threat to human health. | Pesticides | Cyanide: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>95th percentile |
| | | | | | | | The impoundment water should not be a threat to animal or human sustainability. | Hormone driven Pharmaceuticals | 17ß-oestradiol:<br>≤ 1 µg/ℓ |

**Table 3: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 2: MAGALIES**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2: MAGALIES | II | Maloneys Eye (A21F) | 2_1 | C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Magalies River at CROC_EWR9 in A21F<br>NMAR = 14.68x10$^{6}$m$^{3}$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>(Rapid EWR site 9 on Magalies River Monitoring at A2H010) | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.211 | 0.211 |
| | | | | | | | | | Nov | 0.216 | 0.216 |
| | | | | | | | | | Dec | 0.211 | 0.211 |
| | | | | | | | | | Jan | 0.212 | 0.212 |
| | | | | | | | | | Feb | 0.224 | 0.224 |
| | | | | | | | | | Mar | 0.206 | 0.206 |
| | | | | | | | | | Apr | 0.212 | 0.212 |
| | | | | | | | | | May | 0.208 | 0.208 |
| | | | | | | | | | Jun | 0.214 | 0.214 |
| | | | | | | | | | Jul | 0.210 | 0.210 |
| | | | | | | | | | Aug | 0.211 | 0.211 |
| | | | | | | | | | Sep | 0.217 | 0.217 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.020 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of good ecological integrity or resource. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | | | | Sulphate | ≤ 10 milligrams/litre (95$^{th}$ percentile) | | |
| | | | | | | | | Sodium | ≤ 10 milligrams/litre (95$^{th}$ percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Chloride | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | Habitat | Instream | Habitat diversity and suitability should be maintained at prescribed B ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82%<br>(Rapid EWR 9) |
| | | | | | | Riparian habitat | Riparian vegetion should be maintained at prescribed B ecological category. | Vegetation Response Assessment Index<br>Index of Habitat Integrity | VEGRAI EC = B ≥ 82%<br>(Rapid EWR 9) |
| | | | | | Biota | Fish | The fish community should be managed to the prescribed B ecological category Ensure presence of species *Yellow fish (BPOL), AURA, CPRE, BMOT* | Fish Response Assessment Index (FRAI) | Fish ecology category = B<br>FRAI ≥ 82%<br>Collect at least 10 species in 20min survey effort<br>In 20min sample effort a minimum of 50+ CPRE and 5 BMOT<br>(Rapid EWR site 9 = REMP site A2MAGA-MALON) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a largely natural condition or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System, Version 5 (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>(Rapid EWR site 9 = REMP site A2MAGA-MALON) |
| | | | | | | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | Magalies River, Klein Magalies, Bloubank, Skeerpoort Rivers (A21F) | 2_2 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Magalies River at CROC_EWR15 in A21F<br>NMAR = 21.899x10$^{6}$m$^{3}$<br>REC=C/D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>(Rapid site CROC_EWR 15 on Magalies River<br><br>Monitoring of discharge during biological surveys | |
| | | | | | | | | | Maintenance Low flows (m$^{3}$/s) / Drought flows (m$^{3}$/s) |
| | | | | | | | | | Oct: 0.042 / 0.015 |
| | | | | | | | | | Nov: 0.044 / 0.016 |
| | | | | | | | | | Dec: 0.052 / 0.019 |
| | | | | | | | | | Jan: 0.100 / 0.035 |
| | | | | | | | | | Feb: 0.163 / 0.031 |
| | | | | | | | | | Mar: 0.151 / 0.045 |
| | | | | | | | | | Apr: 0.111 / 0.039 |
| | | | | | | | | | May: 0.080 / 0.028 |
| | | | | | | | | | Jun: 0.066 / 0.023 |
| | | | | | | | | | Jul: 0.057 / 0.020 |
| | | | | | | | | | Aug: 0.051 / 0.018 |
| | | | | | | | | | Sep: 0.045 / 0.016 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.090 milligrams/litre (mg/l) (50$^{th}$ percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50$^{th}$ percentile) |
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of the water resource. | Electrical Conductivity (EC) | ≤ 40 milliSiemens/metre (mS/m) (95$^{th}$ percentile) |
| | | | | | | | | Sulphate | ≤ 15 milligrams/litre (95$^{th}$ percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Sodium | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 15 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health | Ammonia as N | ≤ 0.072 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.006 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat diversity must be maintained at the C/D ecological category. Good marginal vegetation and low silt load in riffles must be maintained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at the C/D ecological category. Alien invasive control must be undertaken and protection of riparian zone must improve. Encroachment must be managed. Exotic invasive plant species must be controlled. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58% |
| | | | | | Biota | Fish | Fish community should be maintained at the prescribed C/D ecological category. Ensure presence of indicator species. Flow should be maintained to accommodate species. | Fish Response Assessment Index (FRAI). | Fish ecology category = C/D<br>FRAI ≥ 58%<br>Collect at least 8 spp. in a 20min sample effort. Indicator species *Yellow fish (BPOL), AURA, CPRE , BMOT*<br><br>(Lower Skeerpoort site A2SKEE-R560B – proposed new;<br>Magalies Rapid EWR 15 – reach A21F-01168) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic macroinvertebrates | Upper Skeerpoort (A2SKEE-UITKO): Macroinvertebrate assemblage must be maintained within a largely natural condition or improved upon (B ecological category). Lower Skeerpoort (A2SKEE-R560B): and Magalies River (CROC_ EWR 15): Macroinvertebrate assemblage must be maintained within a moderately modified condition or improved upon (C ecological category). | Macroinvertebrate Response Assessment Index and the South African Scoring System, Version 5 (SASS5). | Upper Skeerpoort site: A2SKEE-UITKO;<br>MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>Lower Skeerpoort A2SKEE-R560B proposed new site and Magalies River Rapid EWR 15 – reach A21F-01168;<br><br>MIRAI EC = C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |
| | | | | | | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a moderately modified condition or improved upon. | Specific Pollution Index | Diatom EC = C ≥ 62% |
| | | Rietspruit catchment area<br><br>South eastern portion of A21F | 2_3 | | Quantity | Low flows | Refer to Groundwater RQOs | Base Flows | Groundwater driven system (dolomites) Steenkoppies compartment over abstraction. Stress index should not be <65% |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.010 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.05 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of resource. | Electrical Conductivity (EC) | ≤ 20 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 10 milligrams/litre (95th percentile) |

**Table 4: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 3: CROCODILE / ROODEKOPJES**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3: CROCODILE/ROODEKOPJES | III | Crocodile River from outflow Hartebeespoort Dam to inflow Roodekopjes Dam, Rosespruit, Ramogatla and Kareespruit (A21J) | 3_1 | C/D | Quantity | Low flows | EWR maintenance low and drought flows:<br>Crocodile River at CROC_EWR3 in A21J<br>NMAR = 143.3x10$^6$m$^3$<br>REC=C/D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>(Intermediate EWR site on Crocodile River Monitoring at A2H083) | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 1.425 | 1.446 |
| | | | | | | | | | Nov | 1.591 | 1.607 |
| | | | | | | | | | Dec | 1.690 | 1.703 |
| | | | | | | | | | Jan | 1.993 | 1.995 |
| | | | | | | | | | Feb | 2.276 | 2.267 |
| | | | | | | | | | Mar | 2.290 | 2.279 |
| | | | | | | | | | Apr | 2.022 | 2.024 |
| | | | | | | | | | May | 1.870 | 1.878 |
| | | | | | | | | | Jun | 1.765 | 1.776 |
| | | | | | | | | | Jul | 1.679 | 1.690 |
| | | | | | | | | | Aug | 1.564 | 1.580 |
| | | | | | | | | | Sep | 1.441 | 1.462 |
| | | | | | | High flows | EWR high flows:<br>Crocodile River at CROC_EWR3 in A21J<br>NMAR = 143.3x10$^6$m$^3$<br>REC=C/D category | Floods<br><br>High flow also specified as individual flood requirements in terms of size and duration (see Appendix A) | | High flows (m$^3$/s) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 1.717 | |
| | | | | | | | | | Dec | 2.942 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 6.191 | |
| | | | | | | | | | Mar | 1.668 | |
| | | | | | | | | | Apr | 0 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 1.729 | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50$^{th}$ percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of resource and sustainability of the resource. | Electrical Conductivity (EC) | ≤ 75 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 90 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 60 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Ammonia as N | ≤ 0.0725 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.105 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.005 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat diversity should be improved from a D ecological category to a C/D category. Flow variation concern for flow and habitat dependant biota. Flow should be adequate for flow dependent taxa. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM), Geomorphic Assessment Index | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a C/D ecological category or improved upon. Alien vegetation infestation must be controlled and developments into the riparian zone should be prohibited. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58%. Prohibit any further development into riparian zone. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | Fish community should be improved from a D ecological category to a C/D category. Regulated seasonality required to accommodate flow sensitive fish species. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br><br>Indicator species in *(Crocodile River): AJOH,* and flow dependant *BMAR, CPRE* |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0 |
| | | | | | | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Riparian zone habitat must be improved. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a D ecological category or improved upon. | Specific Pollution Index | Diatom EC = D ≥ 42% |
| | | Roodekopjes Dam (A21J) | 3_2 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphate | ≤ 0.050 mg/ℓ<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/L N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 70 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sulphate | ≤ 85 mg/L<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sodium | ≤ 70 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity | Turbidity | ≥0.4 m<br>5th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L O2<br>95th percentile |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl *a* concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |

**Table 5: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 4: HEX / WATERKLOOFSPRUIT / VAALKOP**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 4: HEX/WATERKLOOFSPRUIT/VAALKOP | II | Sterkstroom from outflow Buffelspoort Dam to inflow Roodekopjes Dam, Maretwane, Tshukutswe - Quaternary catchment A21K middle and lower catchment below dam | 4_1 | C | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity (EC) | ≤ 70 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health | Ammonia as N | ≤ 0.0725 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Chromium (IV) | ≤ 0.0675 milligrams/litre (mg/l) (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤0.005 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in an ecological category C. The integrity of the habitat, water quality and flow conditions must be maintained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM), Geomorphic Assessment Index | Instream Habitat Integrity E= C ≥ 62% |
| | | | | | | Riparian habitat | Vegetation control must be maintained in a C ecological category. Alien infestation control must be implemented. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | The fish community must be maintained in a C/D ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI). | Fish ecology category= C/D<br>FRAI ≥ 58%<br>Collect 6 species in 20min sampling effort.<br>Indicator species *BMOT*<br><br>(site A2STER-MAMOG) |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely modified condition or improved upon | Specific Pollution Index | Diatom EC = D ≥ 42% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Upper reaches of Sterkstroom to inflow Buffelspoort Dam (A21K middle and upper catchment above dam) | 4_2 | | Quantity | Low Flows | EWR maintenance low and drought flows:<br>Sterkstroom at CROC_EWR11 in A21K<br>NMAR = 14.0x10$^{6}$m$^{3}$<br>REC=C category<br><br>Adequate protection of instream flows required (must be maintained to support biota).<br>Management of land based activites required. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Rapid EWR site 11 on Sterkstroom (monitoring at A2H053) | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.078 | 0.033 |
| | | | | | | | | | Nov | 0.083 | 0.035 |
| | | | | | | | | | Dec | 0.086 | 0.036 |
| | | | | | | | | | Jan | 0.094 | 0.039 |
| | | | | | | | | | Feb | 0.113 | 0.047 |
| | | | | | | | | | Mar | 0.104 | 0.043 |
| | | | | | | | | | Apr | 0.101 | 0.042 |
| | | | | | | | | | Ma y | 0.09 | 0.038 |
| | | | | | | | | | Jun | 0.09 | 0.038 |
| | | | | | | | | | Jul | 0.085 | 0.036 |
| | | | | | | | | | Aug | 0.082 | 0.035 |
| | | | | | | | | | Sep | 0.082 | 0.035 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.010 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity (EC) | ≤ 55 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | | | | Sulphate | ≤ 70 milligrams/litre (95$^{th}$ percentile) | | |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a B/C ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B/C ≥ 78% | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a B/C ecological category. Alien infestation must be controlled and managed. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B/C ≥ 78% |
| | | | | | Biota | Fish | The fish community must be maintained in a C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Collect 6 species in 20min sampling effort Indicator species – flow sensitive species, *AURA*, *BMOT*<br>(Sterkstroom at CROC_EWR11 in A21K) |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.7<br>(Sterkstroom at CROC_EWR11 in A21K) |
| | | Buffelspoort Dam (A21K) | 4_3 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained. | Minimum operating level required in dam | Operation rules as applicable.<br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphate | ≤ 0.015 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.50 mg/L N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | Upper Hex river to Olifantsnek Dam, Rooikloofspruit (A22G) | 4_4 | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.015 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a C ecological category. Flow must be adequate to support species and taxa and habitat. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a C ecological category. Alien infestation must be controlled and managed. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | An assessment of the fish community should be conducted annually to monitor against the prescribed C ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br><br>Collect at least 20 BMOT in 20min sampling effort. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Macroinvertebrate EC= C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.8 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Olifantsnek Dam (A22G) | 4_5 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphate | ≤ 0.015 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.50 mg/L N<br>95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | Hex river from Olifantsnek Dam, to inflow Bospoort Dam, Sandspruit (A22H) | 4_6 | | Quantity | Low Flows | EWR maintenance low and drought flows:<br><br>Hex River (at new W-component) in A22H<br>NMAR = $12.11 \times 10^6 m^3$<br>REC=D category<br><br>The maintenance low flows and drought flows must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem and users. | Base flows<br><br>Maintenance flows and drought flows<br><br>(Node on Hex River downstream Olifantsnek Dam. Monitoring at new W-component of the dam | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.013 | 0.011 |
| Nov | 0.014 | 0.012 |
| Dec | 0.015 | 0.013 |
| Jan | 0.019 | 0.016 |
| Feb | 0.028 | 0.023 |
| Mar | 0.026 | 0.022 |
| Apr | 0.020 | 0.017 |
| May | 0.017 | 0.015 |
| Jun | 0.017 | 0.014 |
| Jul | 0.015 | 0.013 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Aug | 0.014 | 0.012 |
| | | | | | | | | | Sep | 0.014 | 0.012 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and the water quality requirements of the water users are met. Nutrient management required to ensure sustainability of the system. Water quality must be improved to improve present ecological state from E to D ecological category. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.125 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Salinity levels are significantly high. Instream salinity must be improved to support the aquatic ecosystem and the water quality requirements of the water users. Water quality must be improved to improve present ecological state from E to D ecological category. | Electrical Conductivity | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. | | |
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health | Ammonia as N | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Aluminium (Al) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Lead (Pb) hard | ≤0.0095 milligrams/litre (mg/l) (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Copper (Cu) hard | ≤0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | Habitat | Instream | Habitat diversity should be improved from a D ecological category to a C category to support the overall ecological integrity of the system. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a D ecological category. | Index of Habitat Integrity | VEGRAI EC = D ≥ 42% |
| | | | | | Biota | Fish | Fish community should be maintained at a D ecological category or improved upon. Flow should be adequate for flow dependant species. | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42% |
| | | | | | | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Riparian zone habitat must be improved. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br><br>(SiteA2HEX-PAARD) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Bospoort Dam (A22H) | 4_7 | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Orthophosphate | ≤ 0.5 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Nitrite& Nitrate | ≤ 1.00 mg/L N<br>95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 85 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sodium | ≤ 100 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading. | Turbidity | ≥0.4 m<br>5th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl a concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | | Periphyton/ Phytoplankton | The Chl *a* concentrations must be maintained in as eutrophic system. Aesthetic quality of the dam must be managed by control of phytoplankton/periphyton growth. | Chl *a* | 20-30µg/ℓ<br>50th percentile |
| | | Waterkloofspruit (A22H) | 4_8 | | Quantity | Low Flows | EWR maintenance low and drought flows:<br>Waterkloofspruit at CROC_EWR14 in A22H<br>NMAR = $5.469 \times 10^6 m^3$<br>REC=B/C category<br><br>The maintenance low flows and drought flows must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem and users. | Base flows<br>Maintenance flows and drought flows<br><br>Rapid EWR site 14 on Waterkloofspruit (monitoring at A2H038) | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$) |
| | | | | | | | | | Oct: 0.028 / 0.010 |
| | | | | | | | | | Nov: 0.027 / 0.010 |
| | | | | | | | | | Dec: 0.028 / 0.010 |
| | | | | | | | | | Jan: 0.035 / 0.013 |
| | | | | | | | | | Feb: 0.039 / 0.014 |
| | | | | | | | | | Mar: 0.038 / 0.014 |
| | | | | | | | | | Apr: 0.035 / 0.013 |
| | | | | | | | | | May: 0.033 / 0.012 |
| | | | | | | | | | Jun: 0.033 / 0.012 |
| | | | | | | | | | Jul: 0.031 / 0.011 |
| | | | | | | | | | Aug: 0.03 / 0.011 |
| | | | | | | | | | Sep: 0.03 / 0.010 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.25 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of good ecological integrity or resource. | Electrical Conductivity | ≤ 20 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 10 milligrams/litre (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in the B ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a B ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | Fish community should be maintained at a B/C ecological category. Area above the waterfall must be protected due to presence of *TSPA* upstream of waterfall. FRAI should be conducted to monitor against current category | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C<br>FRAI ≥ 78%<br>Sample 20 BMOT in 20min sample effort |
| | | | | | | Semi-Aquatic species | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Riparian zone habitat must be improved. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC =C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| | | | | | Quantity | Low Flows | EWR maintenance low and drought flows:<br>Hex River at CROC_EWR6 in A22J<br>NMAR = $26.9 \times 10^6 m^3$<br>REC=D category<br><br>The maintenance low flows and drought flows must be attained to support a healthy condition for the ecosystem and users. | Base flows<br><br>Maintenance flows and drought flows<br><br>Intermediate EWR site 6 on Hex River (monitoring at A2H094) | Oct | 0.024 | 0.015 |
| | | | | | | | | | Nov | 0.026 | 0.023 |
| | | | | | | | | | Dec | 0.035 | 0.022 |
| | | | | | | | | | Jan | 0.052 | 0.022 |
| | | | | | | | | | Feb | 0.093 | 0.070 |
| | | | | | | | | | Mar | 0.084 | 0.067 |
| | | | | | | | | | Apr | 0.055 | 0.054 |
| | | | | | | | | | May | 0.039 | 0.039 |
| | | | | | | | | | Jun | 0.035 | 0.035 |
| | | | | | | | | | Jul | 0.030 | 0.030 |
| | | | | | | | | | Aug | 0.028 | 0.028 |
| | | | | | | | | | Sep | 0.025 | 0.023 |
| | | Hex River outflow Bospoort Dam to inflow Vaalkop Dam (A22J) | 4_9 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and the water quality requirements of the water users are met. Nutrient management required to ensure sustainability of the system. Water quality must be improved to improve present ecological state from E to D ecological category. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 2.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Salinity levels are significantly high. Instream salinity must be improved to support the aquatic ecosystem and the water quality requirements of the water users. Water quality must be improved to improve present ecological state from E to D ecological category. | Electrical Conductivity | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Toxics | The concentrations of toxins must be maintained at levels that are not toxic to aquatic organisms and a threat to human health | Ammonia | ≤ 0.007 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a D ecological category or improved upon. Habitat diversity for flow and marginal vegetation sensitive species and taxa must be attained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a C ecological category or better condition. Habitat protection required. Developments into riparian zone must be controlled. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | An assessment of the fish community should be conducted annually to monitor against the prescribed D ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br>REMP site A2HEXR-ROOIW |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a D ecological category or improved upon | Specific Pollution Index | Diatom EC = D ≥ 42% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Vaalkop Dam<br><br>and lower reach of Elands before confluence with Crocodile (A22J) | 4_10 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphate | ≤ 0.05 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.055 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/L N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Sulphate, | ≤ 100 mg/ℓ<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Chloride | ≤ 100 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity | Turbidity | ≥0.4 m<br>5th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L O2<br>95th percentile |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominate with Chl *a* concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | Habitat | Dam Habitat | To manage the water resource for maintenance of aquatic ecosystem diversity (instream, biotic aqnd semi-aquatic species, riparian zones). Conserve, maintain, rehabilitate and establish artificial shoreline and riparian zones. The natural riparian zone should be preserved as far as possible to ensure necessary habitat. | Riparian vegetation Health | 70% riparian vegetation cover |
| | | | | | Biota | Fish | The fish diversity and quantities must be maintained. | Fish diversity and quantity | The fish population must be monitored through health assessment studies. Suitable abundances should be determined. Target fish stocks should be determined. |
| | | | | | | Periphyton/ Phytoplankton | The Chl a concentrations must be maintained in a mesotrophic state. | Chl *a* | 11-20µg/ℓ<br>50th percentile |

**Table 6: Resource Quality Objectives for RIVERS in priority Resource Units in the Integrated Unit of Analysis 5: ELANDS / VAALKOP**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| 5: ELANDS/VAALKOP | II | Upper reaches of Elands to Swartruggens Dam<br><br>A22A south eastern portion | 5_1 | C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Elands River at CROC_EWR10 in A22A<br>NMAR = $10.1 \times 10^6 m^3$<br>REC=B/C category<br><br>The maintenance low | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Rapid EWR site 10 on Elands River (monitoring during | Oct | 0.038 | 0.015 |
| | | | | | | | | | Nov | 0.045 | 0.012 |
| | | | | | | | | | Dec | 0.050 | 0.011 |
| | | | | | | | | | Jan | 0.070 | 0.026 |
| | | | | | | | | | Feb | 0.094 | 0.031 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | biological surveys) | Mar | 0.091 | 0.019 |
| | | | | | | | | | Apr | 0.073 | 0.015 |
| | | | | | | | | | May | 0.056 | 0.015 |
| | | | | | | | | | Jun | 0.051 | 0.019 |
| | | | | | | | | | Jul | 0.046 | 0.017 |
| | | | | | | | | | Aug | 0.042 | 0.016 |
| | | | | | | | | | Sep | 0.039 | 0.015 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 30 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | 6-7 milligrams/litre (mg/l) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity should be maintained for C ecological category.Habitat diversity for flow and marginal vegetation sensitive species must be maintained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a C ecological category. Protection of riparian habitat is required. Developments into riparian zone must be controlled and managed. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | The fish community must be maintained in a C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecological category = C<br>FRAI ≥ 62%<br>Sample 20 BMOT in 20min sample effort |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C category ecological condition or improved upon. | Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 155<br>ASPT ≥ 5.5 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a C ecological category or improved upon | Specific Pollution Index | Diatom EC ≥ 62% |
| | | Elands downstream Swartruggens Dam to Lindleyspoort Dam (A22A) | 5_2 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Elands River at A2H107 in A22A<br>NMAR = $12.87 \times 10^6 m^3$<br>REC=C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic | Base Flows<br><br>Maintenance flows and drought flows<br>Monitoring of Elands River at A2H107 | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.030 | 0.016 |
| Nov | 0.037 | 0.014 |
| Dec | 0.044 | 0.013 |
| Jan | 0.063 | 0.028 |
| Feb | 0.083 | 0.009 |
| Mar | 0.081 | 0.018 |
| Apr | 0.064 | 0.016 |
| May | 0.047 | 0.018 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ecosystem and the downstream users. | | Jun | 0.042 | 0.019 |
| | | | | | | | | | Jul | 0.036 | 0.018 |
| | | | | | | | | | Aug | 0.033 | 0.018 |
| | | | | | | | | | Sep | 0.030 | 0.016 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Control of wastewater treatment works discharges discharges is required. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Control of land based impacts and WWTW discharges is required. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 80 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | 6-7 milligrams/litre (mg/l) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity should be maintained for C ecological category or improved upon. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at C ecological category or better condition. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Semi aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C category ecological condition or improved upon. | Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Macroinvertebrate EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.3 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a C/D ecological category or improved upon | Specific Pollution Index | Diatom EC ≥ 58% |
| | | Lindleyspoort Dam (A22A) | 5_3 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphates, | ≤ 0.015 mg/ℓ<br>50th percentile | | |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.055 mg/ℓ<br>50th percentile | | |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/L N 95th percentile | | |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile | | |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) | | |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile | | |
| | | | | | | | Increased clarity | Turbidity | ≥0.4 m<br>5th percentile | | |
| | | Upper Koster River to Koster Dam (A22B) | 5_4 | | Quantity | Low flows | EWR maintenance low and drought flows: Koster River at A2H036 in A22B | Base Flows<br><br>Maintenance flows and drought flows | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| | | | | | | | | | Oct | 0.006 | 0.002 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | NMAR = $2.54 \times 10^6 m^3$<br>REC=C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Monitoring of Koster River at A2H036 | Nov | 0.004 | 0.002 |
| | | | | | | | | | Dec | 0.006 | 0.001 |
| | | | | | | | | | Jan | 0.009 | 0.004 |
| | | | | | | | | | Feb | 0.020 | 0.005 |
| | | | | | | | | | Mar | 0.032 | 0.006 |
| | | | | | | | | | Apr | 0.031 | 0.007 |
| | | | | | | | | | May | 0.018 | 0.006 |
| | | | | | | | | | Jun | 0.015 | 0.006 |
| | | | | | | | | | Jul | 0.012 | 0.005 |
| | | | | | | | | | Aug | 0.010 | 0.004 |
| | | | | | | | | | Sep | 0.008 | 0.003 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.05 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained at current status to ensure protection of good ecological integrity or resource. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 20 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 20 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | 6-7 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxins must not toxic to aquatic organisms and a threat to human health | Hormone driven Pharmaceuticals | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Biota | Fish | Fish community should be maintained at the prescribed C ecological category. Flow should adequate to support representative species. | Fish Response Assessment Index (FRAI). | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 20 BMOT in 20min sample effort |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C category ecological condition or improved upon. | Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | Selons River, Koedoespruit, Dwarsspruit, lower Koster River (A22C, A22D) | 5_6 | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream concentration of salinity must be maintained to preserve present state and to sustain aquatic ecosystem health in the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sodium | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Elands River outflow Lindleyspoort Dam to inflow Vaalkop Dam, Brakkloofspruit, Roosspruit, Sandspruit Mankwe. Leragane, Molapongwamongana (A22E, A22F) | 5_7 | | Quantity | | | Chloride | ≤ 20 milligrams/litre (95th percentile) | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| | | | | | | | | | | 0.038 | 0.011 |
| | | | | | | | | | Nov | 0.048 | 0.014 |
| | | | | | | | | | Dec | 0.057 | 0.016 |
| | | | | | | | | | Jan | 0.081 | 0.023 |
| | | | | | | | | | Feb | 0.107 | 0.012 |
| | | | | | | | | | Mar | 0.105 | 0.027 |
| | | | | | | | | | Apr | 0.082 | 0.023 |
| | | | | | | | | | May | 0.06 | 0.017 |
| | | | | | | | | | Jun | 0.054 | 0.016 |
| | | | | | | | | | Jul | 0.047 | 0.014 |
| | | | | | | | | | Aug | 0.042 | 0.012 |
| | | | | | | | | | Sep | 0.038 | 0.011 |
| | | | | | Quality | Nutrients | Nutrient levels are high and must be reduced to meet the requirements of the aquatic ecosystem. Concentrations must be reduced to meet the prescribed C ecological category. | Orthophosphate ($PO_4^-$) as Phosphorus | | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 2.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Salinity levels are significantly high. Instream salinity must be improved to support the aquatic ecosystem and the water quality requirements of the water users. Water quality must be improved to a C ecological category. | Electrical Conductivity | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 100 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 120 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 9.0 (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a C ecological category or better. Important to maintain marginal vegetation and in-stream substrate (flow depth classes) for fish and macroinvertebrate diversity. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model, Geomorphic Assessment Index | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained at a C ecological category. Alien vegetation control is required. Riparian zone development must be limited. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 70% |
| | | | | | Biota | Fish | The fish community must be maintained in a D ecological category or better. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI). | Fish ecology category = D<br>FRAI ≥ 42%<br>Sample minimum of 4 species per 20min sample effort |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C category ecological condition or improved upon. | Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 110<br>ASPT ≥ 4.5 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a C ecological category or improved upon. | Specific Pollution Index | Diatom EC ≥ 62% |
| | | | | | | Semi-aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |

**Table 7: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 6a: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| 6a: KLEIN MARICO/KROMELLEMBOOG | II | Upper Klein Marico to inflow, Klein Maricopoort Dam, Rhenosterspruit, Malmaniesloop, Kareespruit (A31D) | 6_1 | B/C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Klein Marico River just upstream of Klein Maricopoort Dam in A31D<br>NMAR = $16.25 \times 10^6 m^3$<br>REC=C/D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of Klein Marico River with biological surveys | Oct | 0.038 | 0.035 |
| | | | | | | | | | Nov | 0.039 | 0.036 |
| | | | | | | | | | Dec | 0.039 | 0.036 |
| | | | | | | | | | Jan | 0.041 | 0.038 |
| | | | | | | | | | Feb | 0.048 | 0.045 |
| | | | | | | | | | Mar | 0.044 | 0.040 |
| | | | | | | | | | Apr | 0.045 | 0.041 |
| | | | | | | | | | May | 0.042 | 0.039 |
| | | | | | | | | | Jun | 0.043 | 0.039 |
| | | | | | | | | | Jul | 0.041 | 0.038 |
| | | | | | | | | | Aug | 0.040 | 0.037 |
| | | | | | | | | | Sep | 0.041 | 0.037 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | the prescribed ecological category is met. | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 9.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Fluoride | ≤ 2.5 milligrams/litre (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a C/D ecological category. Maintain marginal vegetation and in-stream substrate (velocity depth classes) for fish and macroinvertebrate diversity. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a D ecological category to a C/D ecological category. Alien vegetation control must be implemented. Riparian zone development must be limited and controlled. | Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Klein Maricopoort Dam (A31D) | 6_2 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphates | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.050 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/L N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 65 mS/m<br>95th percentile |
| | | | | | | | | Chloride | ≤ 40 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | Pathogens should be maintained at levels safe for human use. | *Escherichia coli* | ≤ 10 counts/100µℓ<br>95th percentile |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading | Turbidity | ≥0.4 m<br>5th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Klein Marico downstream Klein Maricopoort Dam to Kromellenboog Dam, Wilgeboomspruit (A31E) | 6_3 | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 65 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 9.0 (95th percentile) |
| | | | | | | | Sedimentation must be controlled through management of land use practices. A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a C ecological category or better condition. Maintain marginal vegetation and in-stream substrate (velocity depth classes) for fish and macroinvertebrate diversity. | Index of Habitat Integrity | Instream Habitat Integrity EC =C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained in a C ecological category or better condition. | Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | Fish community must be maintained within a C ecological condition or improved upon. | Fish Response Assessment Index (FRAI) | Fish ecological category = C<br>FRAI ≥ 62%<br>Collect 5 species in 20min sampling effort |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological condition or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Macroinvertebrate EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.0 |

**Table 8: Resource Quality Objectives for RIVERS in priority Resource Units in the Integrated Unit of Analysis 6b: GROOT MARICO / MARICO BOSVELD DAM**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6b: GROOT MARICO/MARICO BOSVELD DAM | II | Groot Marico main stem upstream to Polkadraaispruit confluence (A31B) | 6_5 | B | Quantity | Low flows | EWR maintenance low and drought flows:<br>Groot Marico River at MAR_EWR2 in A31B<br>NMAR = 42.08x10$^{6}$ m$^{3}$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of Groot Marico River at planned new weir close to EWR2 | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.510 | 0.268 |
| | | | | | | | | | Nov | 0.540 | 0.283 |
| | | | | | | | | | Dec | 0.560 | 0.291 |
| | | | | | | | | | Jan | 0.620 | 0.319 |
| | | | | | | | | | Feb | 0.710 | 0.364 |
| | | | | | | | | | Mar | 0.637 | 0.327 |
| | | | | | | | | | Apr | 0.628 | 0.324 |
| | | | | | | | | | May | 0.584 | 0.302 |
| | | | | | | | | | Jun | 0.588 | 0.305 |
| | | | | | | | | | Jul | 0.557 | 0.290 |
| | | | | | | | | | Aug | 0.547 | 0.285 |
| | | | | | | | | | Sep | 0.546 | 0.285 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.020 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | | | | Sulphate | ≤ 10 milligrams/litre (95$^{th}$ percentile) | | |
| | | | | | | | | Chloride | ≤ 10 milligrams/litre (95$^{th}$ percentile) | | |
| | | | | | | | | Sodium | ≤ 10 milligrams/litre (95$^{th}$ percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95$^{th}$ percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.8 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 7 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0048 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity must be maintained in a B ecological category or better condition. Maintain marginal vegetation and in-stream substrate (velocity depth classes) for fish and macroinvertebrate diversity. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained in a B ecological category or better condition. | Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | The fish community must be maintained in a B ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category.Habitat and flow must be adequate for flow dependent species. | Fish Response Assessment Index (FRAI). | Fish ecology category = B<br>FRAI ≥ 82%<br>Sample 20 *BMOT*, 30 *CPRE* and 15 *AURA* in 20min sample effort. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within current state at the A/B ecological category. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.5<br>(Site EWR 2 = A3GMAR-KOEDO) |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely natural to natural condition. | Specific Pollution Index | Diatom EC ≥ 88% |
| | | Polkadraaispruit (A31B) | 6_6 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Polkadraaispruit at MAR_EWR6 in A31B<br>NMAR = $9.866 \times 10^{6}$ $m^3$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of discharge of the Polkadraaispruit during biological surveys | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$) |
| | | | | | | | | | Oct: 0.088 / 0.000 |
| | | | | | | | | | Nov: 0.099 / 0.003 |
| | | | | | | | | | Dec: 0.113 / 0.003 |
| | | | | | | | | | Jan: 0.138 / 0.024 |
| | | | | | | | | | Feb: 0.157 / 0.010 |
| | | | | | | | | | Mar: 0.130 / 0.007 |
| | | | | | | | | | Apr: 0.118 / 0.005 |
| | | | | | | | | | May: 0.104 / 0.003 |
| | | | | | | | | | Jun: 0.105 / 0.002 |
| | | | | | | | | | Jul: 0.098 / 0.000 |
| | | | | | | | | | Aug: 0.095 / 0.000 |
| | | | | | | | | | Sep: 0.095 / 0.000 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.020 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 10 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 10 milligrams/litre (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.8 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 7 milligrams/litre (mg/l) |
| | | | | | Habitat | Instream | Habitat diversity must be improved from a B/C ecological category to a B category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a B/C ecological category to a B ecological category. Protection of riparian habitat is required. | Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | The fish community must be maintained in a B/C ecological category or better condition. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C<br>FRAI ≥ 78% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within current state at the B/C ecological category. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 155<br>ASPT ≥ 6.0 |
| | | Groot Marico from Polkadraaispruit confluence to N4 bridge (A31B) | 6_7 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Groot Marico River at N4 road bridge in A31B<br>NMAR = $56.92 \times 10^6 m^3$<br>REC=B category | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Groot | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.649 | 0.345 |
| Nov | 0.704 | 0.372 |
| Dec | 0.762 | 0.398 |
| Jan | 0.890 | 0.458 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Marico River during biological surveys | Feb | 1.030 | 0.513 |
| | | | | | | | | | Mar | 0.908 | 0.466 |
| | | | | | | | | | Apr | 0.864 | 0.447 |
| | | | | | | | | | May | 0.783 | 0.408 |
| | | | | | | | | | Jun | 0.779 | 0.407 |
| | | | | | | | | | Jul | 0.730 | 0.383 |
| | | | | | | | | | Aug | 0.709 | 0.373 |
| | | | | | | | | | Sep | 0.701 | 0.370 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be improved to sustain aquatic ecosystem health in the prescribed ecological category and to support downstream users. Wastewater discharges must be controlled to protect the ecological integrity of the system. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as must be improved to sustain aquatic ecosystem health in the prescribed ecological category and to support downstream users. Wastewater discharges and land use impacts must be controlled to protect the ecological integrity of the system. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 50 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 50 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | | | Dissolved oxygen levels must be improved to support the aquatic ecosystem. | Dissolved oxygen | ≥ 7 milligrams/litre (mg/l) | | |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0048 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be improved improved from a D ecological category to a C ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a D ecological category to a C ecological category. | Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | The fish community must be maintained in a C/D ecological category or better condition. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br>Indicator species *certain BMOT, AURA, CPRE, AMOS* |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within current state at a B ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 210<br>ASPT ≥ 6.2<br><br>(Site A3GMAR-WONDE) |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a natural to largely natural condition. | Specific Pollution Index | Diatom EC = A/B ≥ 88%<br><br>(Site A3GMAR-WONDE) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Marico Bosveld Dam (A31B) | 6_8 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphates | ≤ 0.015 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/ℓ N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 35 mS/m<br>95th percentile |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>($95^{th}$ percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |

**Table 9: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 7: KAALOOG-SE-LOOP**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7: KAALOOG-SE-LOOP | I | Marico Eye,<br>Kaaloog-se-Loop,<br>Bokkraal se Loop<br>Rietspruit<br>Ribbokfontein-se-Loop<br>Rietfontein<br>Bronkhorstfontein<br>Zyferfontein (Kuilfontein) Syferfontein<br>(A31A) | 7_1 | B | Quantity | Low flows | EWR maintenance low and drought flows:<br>Kaaloog-se-Loop at MAR_EWR1 in A31A<br>NMAR = 10.539x10$^{6}$ m$^{3}$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge at EWR site during biological surveys and downstream at the new planned weir. | | Maintenance Low flows (m$^{3}$/s) | Drought flows (m$^{3}$/s) |
| | | | | | | | | | Oct | 0.244 | 0.159 |
| | | | | | | | | | Nov | 0.252 | 0.164 |
| | | | | | | | | | Dec | 0.245 | 0.160 |
| | | | | | | | | | Jan | 0.250 | 0.162 |
| | | | | | | | | | Feb | 0.280 | 0.182 |
| | | | | | | | | | Mar | 0.254 | 0.165 |
| | | | | | | | | | Apr | 0.262 | 0.170 |
| | | | | | | | | | May | 0.253 | 0.164 |
| | | | | | | | | | Jun | 0.261 | 0.170 |
| | | | | | | | | | Jul | 0.252 | 0.164 |
| | | | | | | | | | Aug | 0.252 | 0.163 |
| | | | | | | | | | Sep | 0.257 | 0.167 |
| | | | | | Quality | Salts | Pristine water quality status must be maintained. No deterioration in water quality should be permitted.<br>Instream salinity must be maintained to ensure the ecological integrity of the resource unit remains intact. | Electrical Conductivity | ≤ 50 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a B ecological category or better condition. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model | Instream Habitat Integrity EC = B ≥ 25% | | |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a B ecological category or better condition. | Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | The fish community must be maintained in a B ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI). | Fish ecology category = B<br>FRAI ≥ 82% |
| | | | | | | Aquatic invertebrates | Macroinvertebrate assemblage must be maintained within the current state at a A/B ecological category. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.4<br><br>(Site A3KAAL-RIETS) |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely natural to natural condition. | Specific Pollution Index | Diatom EC ≥ 88% |

**Table 10: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 8: MALMANIESLOOP**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 8: MALMANIESLOOP | III | Malmanies-loop (A31C) | 8_1 | - | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and to maintain the water quality present ecological state. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained to support the aquatic ecosystem and maintain the water quality present ecological state. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem nd use requirements of water users. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | Habitat | Wetland Vegetation | Refer to wetland RQOs, habitat is part of the wetland system. | | |
| | | | | | Biota | Fish | The fish community must be maintained in a C ecological category or better condition. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Control and remove alien invasive fish species MSAL. Prevent spreading of the alien species. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 10 *BMOT* in 20min sample effort |

**Table 11: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 9: MOLOPO**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 9: MOLOPO | II | Bodibe eye<br><br>D41A (Polfonteinspruit and Lotlhakane tributary catchment area) | 9_1 | C | Refer to Groundwater RQOs | | | | |
| | | Molopo Eye, Grootfontein Eye, Molopo headwaters to inflow Setumo/Modimola Dam<br><br>D41A | 9_2 | | Quantity | Flows | Groundwater related ( Molopo and Grootfontein Eye) | | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and to support downstream users. Improvement in salinity concentrations is required. | Electrical Conductivity | ≤ 75 milliSiemens/metre (mS/m)<br>(95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem nd use requirements of water users. | pH range | 6.5 (5th percentile) and 8.8 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | determined. |
| | | | | | Habitat | Instream | Refer to wetland RQOs, habitat is part of the wetland system. | | |
| | | | | | | Wetland Vegetation | | | |
| | | | | | Biota | Fish | Fish community should be improved from an E ecological category to a D category. | Fish Response Assessment Index (FRAI). | Fish ecology category = D<br>FRAI ≥ 42%<br>Sample 3 species, including *BBRI* in 20min survey.<br>Sample 15 *PPHI* in 20min |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category (largely modified condition) or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 4.0 |
| | | Molopo River main stem from Modimola Dam to Disaneng Dam D41A (main stem) | 9_3 | | Habitat | Instream | Habitat diversity must be improved from an E ecological category to a D category. Improve runoff water into the system to improve to D ecological category. Control siltation and organic material. | Index of Habitat Integrity | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Riparian vegetation must be improved from an E ecological category to a D category. Alien invasive species must be controlled. Riparian zone must be rehabilitated. | Vegetation Response Assessment Index | VEGRAI EC = D ≥ 42% |
| | | Modimola (Setumo) Dam (D41A) | 9_4 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained. | Minimum operating level required in dam | Operation rules as applicable.<br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. Improvement required from hypertrophic state. | Orthophosphates | ≤ 0.050 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total phosphorous | ≤ 0.055 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a | Nitrite& Nitrate | ≤ 0.70 mg/ℓ N 95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | eutrophic system. | | |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 85 mS/m<br>95th percentile |
| | | | | | | | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Chloride | ≤ 100 mg/ℓ<br>95th percentile |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading ≥0.4 m | Turbidity | Minimum 95th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/L $O_2$<br>95th percentile |
| | | | | | | Toxics | The dam must be managed within a eutrophic state to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominance with Chl a concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | Disaneng Dam (D41A) | 9_5 | | Quantity | Dam levels | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphates | ≤ 0.010 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/ℓ N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water | Electrical Conductivity | ≤ 75 mS/m<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | quality requirements of the downstream users. | | |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |

**Table 12: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 11a: GROOT MARICO / MOLATEDI DAM**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11a: GROOT MARICO / MOLATEDI DAM | III | Groot Marico from outflow Marico Bosveld Dam to Molatedi Dam, All tributaries (A31G, A31H, A31F, A31J, A32A, A32B, A32C) | 11a_1 | C/D | Quantity | Low flows | EWR maintenance low and drought flows:<br>Groot Marico River at MAR_EWR3 in A31F<br>NMAR = 65.0839x10$^6$m$^3$<br>REC=C/D category<br><br>The maintenance low flows and drought flows must be attained to support the ecological requirement and downstream users. | Base Flows Maintenance flows and drought flows.<br><br>Monitoring of Groot Marico River at A3H029 | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.248 | 0.196 |
| | | | | | | | | | Nov | 0.262 | 0.206 |
| | | | | | | | | | Dec | 0.266 | 0.209 |
| | | | | | | | | | Jan | 0.284 | 0.223 |
| | | | | | | | | | Feb | 0.318 | 0.250 |
| | | | | | | | | | Mar | 0.281 | 0.221 |
| | | | | | | | | | Apr | 0.278 | 0.219 |
| | | | | | | | | | May | 0.262 | 0.207 |
| | | | | | | | | | Jun | 0.268 | 0.211 |
| | | | | | | | | | Jul | 0.258 | 0.203 |
| | | | | | | | | | Aug | 0.256 | 0.202 |
| | | | | | | | | | Sep | 0.260 | 0.205 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.090 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 50 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 50 milligrams/litre (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.8 (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a C/D ecological category. Runoff resulting in organic pollution and bacterial pollution of the resource must be managed. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained in a C/D ecological category. Alien invasive vegetation must be controlled and development into the riparian zone must be limited. | Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58% |
| | | | | | Biota | Fish | The fish community must be maintained in a D ecological category or improved upon. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42%<br>Collect 10+ species in 20min sampling effort |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a natural to largely natural condition. | Specific Pollution Index | Diatom EC = A/B ≥ 88% |
| | | | | | | Semi-Aquatic Biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Riparian zone habitat must be improved. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Molatedi Dam (A32A, A32B, A32C) | 11a_2 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained. Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Orthophosphates | ≤ 0.015 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Total phosphorous | ≤ 0.055 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system. | Nitrite& Nitrate | ≤ 0.70 mg/ℓ N 95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 55 mS/m<br>95th percentile |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/ℓ O2<br>95th percentile |

**Table 13: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 11b: GROOT MARICO / SEASONAL TRIBUTARIES**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11b: GROOT MARICO / SEASONAL TRIBUTARIES | III | Groot Marico, Rasweu, Maselaje (A32D) | 11b_1 | C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Groot Marico River at MAR_EWR4 in A32D<br>NMAR = 153.25x10$^6$m$^3$<br>REC=C category<br><br>The maintenance low flows and drought flows must be attained so that the environmental flows requirements are met to support a healthy condition for the ecosystem and users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of Groor Marico River at A3H007 | | Maintenance High flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.214 | 0.173 |
| | | | | | | | | | Nov | 0.230 | 0.185 |
| | | | | | | | | | Dec | 0.239 | 0.191 |
| | | | | | | | | | Jan | 0.264 | 0.209 |
| | | | | | | | | | Feb | 0.306 | 0.242 |
| | | | | | | | | | Mar | 0.267 | 0.211 |
| | | | | | | | | | Apr | 0.258 | 0.206 |
| | | | | | | | | | May | 0.234 | 0.187 |
| | | | | | | | | | Jun | 0.236 | 0.189 |
| | | | | | | | | | Jul | 0.227 | 0.182 |
| | | | | | | | | | Aug | 0.224 | 0.180 |
| | | | | | | | | | Sep | 0.226 | 0.182 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.090 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a C ecological category. A natural flow pattern must be maintained. Improve instream habitat and velocity/depth for aquatic biota diversity. Connectivity to downstream to (11b_2) must be achieved, | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a C ecological category. Impacts including grazing/trampling of riparian zone must be controlled. Management of siltation required. | Index of Habitat Integrity | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | The fish community must be maintained in a C/D ecological category or better. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Fishways must be built for migratory species as currently there is no connectivity over numerous weirs. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br><br>Sample 8+ species per sample survey<br><br>Indicator species: *BMAR, LMOL, SZAM* |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 4.8 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a moderately modified condition or improved upon. | Specific Pollution Index | Diatom EC ≥ 62% |
| | | Elandslaagtespruit, Lengope la Kgamanyane, Lenkwane (A32E) | 11b_2 | | Wetland RQOs applicable | | | | |

**Table 14: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 12: BIERSPRUIT**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 12: BIERSPRUIT | III | | 12_1 | D | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.090 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe (A24D) | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 40 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.105 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity should be improved from a D ecological category to a C ecological category. Maintain natural flow regime. Improve instream habitat and velocity/depth for fish diversity. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a D ecological category to a C ecological category. Improve riparian zone. Remove alien vegetation. | Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | Fish community should be improved from a D ecological category to a C/D category. Maintain natural flow regime. Improve instream habitat and velocity/depth for fish diversity. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D FRAI ≥ 58%<br>Sample at least 10+ species in 20min effort<br>Indicator species: *AJOH, LCYL, BMAR, MBRE* |
| | | Bierspruit outflow Bierspruit Dam to confluence with the Crocodile River, Brakspruit, Phufane, Sefatlhane, Lesobeng (A24E, A24F) | 12_2 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Concentrations should not be allowed to deteriorate. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.125 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained at acceptable levels to support a healthy aquatic ecosystem and the water quality requirements of water users. Concentrations should not be allowed to deteriorate. | Electrical conductivity (EC) | ≤ 85 milliSiemens/metre (mS/m) (95thpercentile) |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 100 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium (Na) | ≤ 100 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride (Cl) | ≤ 100 milligrams/litre (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.0 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose a low risk to human health. | *Escherichia coli* (*E. coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a D ecological category. Maintain natural flow regime. Improve instream habitat and velocity/depth for fish and macroinvertebrate diversity. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = D ≥ 42% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a D ecological category. Development into the riparian zone must be controlled and limited. Siltation impacts must be managed. | Vegetation Response Assessment Index | VEGRAI EC = D ≥ 42% |
| | | | | | Biota | Fish | Fish community should be maintained within a D ecological category or improved upon. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42%<br>Collect 4+ species in 20min sampling effort. |

**Table 15: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 13: LOWER CROCODILE**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13: LOWER CROCODILE | III | Crocodile outflow Roodekopjes Dam to Sand river confluence, Sleepfontein-spruit, Klipspruit tributaries (A21L, A24A, A24B, A24C) | 13_1 | C/D | Quantity | Low flows | EWR maintenance low and drought flows:<br>Crocodile River at CROC_EWR7 in A24C<br>NMAR = 463.4x10$^6$m$^3$<br>REC=D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br>Maintenance flows and drought flows.<br><br>Monitoring of Crocodile River at A2H132 | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 1.134 | 1.134 |
| | | | | | | | | | Nov | 1.362 | 1.362 |
| | | | | | | | | | Dec | 1.481 | 1.481 |
| | | | | | | | | | Jan | 1.938 | 1.938 |
| | | | | | | | | | Feb | 2.638 | 2.488 |
| | | | | | | | | | Mar | 2.481 | 2.481 |
| | | | | | | | | | Apr | 2.118 | 2.118 |
| | | | | | | | | | May | 1.745 | 1.745 |
| | | | | | | | | | Jun | 1.574 | 1.574 |
| | | | | | | | | | Jul | 1.389 | 1.389 |
| | | | | | | | | | Aug | 1.262 | 1.262 |
| | | | | | | | | | Sep | 1.172 | 1.172 |
| | | | | | | High flows | EWR high flows:<br>Crocodile River at CROC_EWR7 in A24C<br>NMAR = 463.4x10$^6$m$^3$<br>REC=D category<br><br>High flows must be attained as specified to support aquatic ecostem requirements. | Floods<br><br>High flow also specified as individual flood requirements in terms of size and duration (See Appendix A)<br><br>Monitoring of Crocodile River at A2H132 | | High flows (m$^3$/s) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.790 | |
| | | | | | | | | | Dec | 1.529 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 1.270 | |
| | | | | | | | | | Mar | 0 | |
| | | | | | | | | | Apr | 0.790 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Concentrations should not be allowed to deteriorate. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.060 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity must be maintained at the levels specified to support a healthy aquatic ecosystem and the water quality requirements of water users. Concentrations should not be allowed to deteriorate. | Electrical conductivity (EC) | ≤ 85 milliSiemens/metre (mS/m) (95thpercentile) |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 100 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium (Na) | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride (Cl) | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic | Atrazine | ≤0.078 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | organisms and to human health. | Metolachlor | ≤0.30 milligrams/litre (mg/l) |
| | | | | | | | | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.3 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0073 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Aluminium (Al) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a D ecological category or better condition. Maintain good low flows to sustain habitat for substrate and habitat sensitive species and taxa. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = D ≥ 42% |
| | | | | | | Riparian habitat | Rehabilitation/remediation required. Indigenous vegetation must be protected (unique *Acacia galpinii* (Monkey thorn). Riparian vegetation should be maintained within a D ecological category or better condition. Maintain riparian zone in cultivated areas. Control development. | Vegetation Response Assessment Index | VEGRAI EC = D ≥ 42% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | Fish community should be maintained within a D ecological category or better condition. Flow velocity/depth must be adequate for flow sensitive species *CPRE* and *LMOL* and habitat sensitive species – *AJOH.* | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42%<br>Sample 6+ species per sample effort<br>Indicator species *Sensitive fish species. Course substrate, CPRE, LMOL* |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5) | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.5<br>(Site A2CROC-KOEDO) |
| | | Sand River to confluence with Crocodile River (A24G, A24H) | 13_2 | | Quantity | Lows flows | EWR maintenance low and drought flows:<br>Sand River upstream of Sondags River confluence at S24.6289, E27.6223 in A24H<br>NMAR = 26.56x10$^6$m$^3$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base flows<br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of the Sand River during biological surveys | |
| | | | | | | High flows | EWR high flows:<br>Sand River Monitoring of discharge of the Sand River during biological surveys<br>at S24.6289, E27.6223 in A24H<br>NMAR = 26.56x10$^6$m$^3$<br>REC=B category<br><br>High flows must be attained to ensure freshets for fish communities. | Freshets for fish<br><br>High flow also specified as individual flood requirements in terms of size and duration (see Appendix A) | |

| | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
|---|---|---|
| Oct | 0.085 | 0.042 |
| Nov | 0.104 | 0.024 |
| Dec | 0.120 | 0.021 |
| Jan | 0.196 | 0.063 |
| Feb | 0.263 | 0.105 |
| Mar | 0.199 | 0.055 |
| Apr | 0.158 | 0.071 |
| May | 0.127 | 0.059 |
| Jun | 0.119 | 0.056 |
| Jul | 0.108 | 0.051 |
| Aug | 0.098 | 0.047 |
| Sep | 0.089 | 0.044 |

| | High flows (m$^3$/s) |
|---|---|
| Oct | 0.009 |
| Nov | 0.056 |
| Dec | 0.090 |
| Jan | 0.181 |
| Feb | 0.500 |
| Mar | 0.181 |
| Apr | 0.093 |
| May | 0 |
| Jun | 0 |
| Jul | 0 |
| Aug | 0 |
| Sep | 0 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Quality | Nutrients Salts | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.020 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | | | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a B ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a B ecological category or better condition. | Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | The fish community must be maintained in a B ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category.Habitat and flow must be adequate for *seasonal* flow dependent species, *CPAR.* | Fish Response Assessment Index (FRAI) | Fish ecology category = B<br>FRAI ≥ 82% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.5<br>(Site A2SUND-WATER) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lower Crocodile from Bierspruit to the Botswana border (Limpopo River) (A24J) | 13_3 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Crocodile River at A2H128 in A24J<br>NMAR = $565.16x10^6m^3$<br>REC=C/D category<br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br>Maintenance flows and drought flows.<br>Monitoring of Crocodile River at A2H128 | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| | | | | | | | | | Oct | 1.246 | 1.057 |
| | | | | | | | | | Nov | 1.454 | 1.228 |
| | | | | | | | | | Dec | 1.536 | 1.294 |
| | | | | | | | | | Jan | 1.932 | 1.616 |
| | | | | | | | | | Feb | 2.488 | 2.074 |
| | | | | | | | | | Mar | 2.128 | 1.776 |
| | | | | | | | | | Apr | 1.791 | 1.503 |
| | | | | | | | | | May | 1.548 | 1.303 |
| | | | | | | | | | Jun | 1.524 | 1.285 |
| | | | | | | | | | Jul | 1.425 | 1.203 |
| | | | | | | | | | Aug | 1.345 | 1.138 |
| | | | | | | | | | Sep | 1.287 | 1.091 |
| | | | | | | High flows | EWR high flows:<br>Crocodile River at A2H128 in A24J<br>NMAR = $565.16x10^6m^3$<br>REC=C/D category<br>High flows must be attained to ensure flood requirements for fish communities. | Floods<br>High flow also specified as individual flood requirements in terms of size and duration (see Appendix A).<br>Monitoring of Crocodile River at A2H128 | | High flows ($m^3/s$) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.395 | |
| | | | | | | | | | Dec | 2.829 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 0.423 | |
| | | | | | | | | | Mar | 0 | |
| | | | | | | | | | Apr | 0 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Concentrations should not be allowed to deteriorate. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.06 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained at the levels specified to support a healthy aquatic ecosystem and the water quality requirements of water users. Concentrations should not be allowed to deteriorate. | Electrical conductivity (EC) | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 100 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium (Na) | ≤ 80 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride (Cl) | ≤ 100 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | Habitat | Instream | Habitat diversity should be improved from D ecological category to C/D ecological category. Maintain good low flows to sustain habitat for substrate and habitat sensitive species and taxa. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Indigenous vegetation must be protected (unique *Acacia galpinii* (Monkey thorn). Riparian vegetation should be improved from D ecological category to C/D ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58% |
| | | | | | Biota | Fish | Fish community should be maintained within a D ecological category. Flow velocity/depth must be maintained for *CPAR, MACU* and *LMOL*, and habitat sensitive species – *MMAC, BANN.* | Fish Response Assessment Index (FRAI) | Fish ecology category = D<br>FRAI ≥ 42%<br>Sample 6+ species per sample effort |
| | | | | | | Semi-aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Maintain good riparian cover for otters. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic invertebrates | Macroinvertebrate assemblage must be maintained within a C/D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C/D ≥ 58%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely modified condition or improved upon. | Specific Pollution Index | Diatom EC ≥ 42% |

**Table 16: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | III | Apies River, Tshwane tributary (A23F) | 14_1 | D | Quantity | Flows | A management strategy to manage the excesss water present (return flows) in the system must be developed. Suitable management options must be assessed. The benefits of reducing the flow must be determined. | Low flows | To be determined once the management strategy is developed |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.5 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 3.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical conductivity (EC) | ≤ 80 milliSiemens/metre (mS/m) (95thpercentile) |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride (Cl) | ≤ 75 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium (Na) | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) |
| | | | | | | | | Glyphosate | 0.7 milligrams/litre (mg/l) |
| | | | | | | | | Endosulfan | 0.13 micrograms/litre (ug/l) |
| | | | | | | | | Chromium (VI) | ≤ 0.2 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0013 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Cb) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be improved to a D ecological category. Maintain good low flows to sustain habitat for substrate sensitive species (*BMAR, BUNI)* and taxa. | Index of Habitat Integrity | Instream Habitat Integrity EC = D ≥ 42% (site below confluence of Apies and Tshwane) |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a D ecological category or better condition. Maintain riparian zone in cultivated (subsistence) areas. | Vegetation Response Assessment Index | VEGRAI EC = D ≥ 42% |
| | | Pienaars River from Boekenshout confluence to Apies River confluence (A23C) | 14_2 | | Quantity | Flows | A management strategy to manage the excess water present (return flows) in the system must be developed. Suitable management options must be assessed. The benefits of reducing the flow must be determined. | Low flows | To be determined once the management strategy is developed |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.090 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 50 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride | ≤ 50 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.00735 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a C ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a C ecological category. Remediation of riparian zone along Boekenshout required. Sand mining must be controlled. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | The fish community must be maintained in a C ecological category or better. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Flow velocity/depth must be maintained for fish species – *CPAR* and *LMOL* and habitat sensitive species – *AKAT* that are likely to be present in the wetlands. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 10 *CPAR* and 10 *LMOL* in 20min effort |
| | | | | | | Semi-Aquatic Biota | Habitat in Moretele Floodplain must be maintained. The stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management. Maintain good riparian cover for otters. Maintain riparian zone as important bird habitat. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | Plat River (A23G) | 14_3 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Plat River at A2H064 in A23G<br>NMAR = $9.64 \times 10^6 m^3$<br>REC=C/D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of Plat River at A2H064 | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$)<br>Oct 0.021 / 0.012<br>Nov 0.023 / 0.012<br>Dec 0.023 / 0.013<br>Jan 0.025 / 0.014<br>Feb 0.030 / 0.016<br>Mar 0.027 / 0.015<br>Apr 0.027 / 0.014<br>May 0.025 / 0.013<br>Jun 0.025 / 0.014<br>Jul 0.024 / 0.013<br>Aug 0.024 / 0.013<br>Sep 0.023 / 0.012 |
| | | | | | Habitat | Instream | Habitat diversity should be improved from a D ecological category to a C/D category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a D ecological category to a C/D category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C/D ≥ 58% |
| | | | | | Biota | Fish | Fish community should be improved from a D ecological category to a C/D category. Maintain flow velocity/depth for fish species *LCYL* and *LMOL* and habitat sensitive species, *MBRE* and *BBR*. Isolated populations of *CTHE* in upper reaches of river must also be maintained. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br>Sample 2 or 3 *CTHE* and 10 *LMOL* in 20min effort<br><br>(Site A2PLAT-KOMAN) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br><br>(Site A2PLAT-KOMAN) |
| | | Moretele (Pienaars) River from Plat River confluence to Klipvoor Dam, Kutswane to Klipvoor Dam (A23J) | 14_4 | | Quantity | Flows | A management strategy to manage the excesss water present (return flows) in the system must be developed. Suitable management options must be assessed. The benefits of reducing the flow must be determined. | Low flows | To be determined once the management strategy is developed |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.5 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 3.0 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 85 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate ($SO_4$) | ≤ 70 milligrams/litre (95th percentile) |
| | | | | | | | | Chloride (Cl) | ≤ 75 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium (Na) | ≤ 80 milligrams/litre (95th percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | Klipvoor Dam (A23J) | 14_6 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Orthophosphate | ≤ 0.05 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total phosphorous | ≤ 0.130 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total Ammonia as Nmust be improved to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a eutrophic system. | Total Ammonia | ≤ 0.072 mg/ℓ N<br>95th percentile |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 75 mS/m<br>95th percentile |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity | Turbidity | ≥0.4 m<br>5th percentile |
| | | | | | | | Moderate change | Temperature | No more than 2 °C increasing change in both minimum and maximum |
| | | | | | | | The oxygen levels in the system must maintain the ecological system. | Dissolved Oxygen | ≥ 7.0 mg/ℓ $O_2$<br>95th percentile |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | Toxics | The dam must be managed to minimize the development of toxic cyanobacterial blooms | Cyanobacteria | Cyanobacterial dominate with Chl *a* concentration higher than 30µg/ℓ must be kept at less than 20% of the time. |
| | | | | | | | The river water should not be toxic to aquatic organisms or be a threat to human health. | Pesticides | Cyanide: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| | | | | | Quantity | Low Flows | EWR maintenance low and drought flows: Moretele/ Pienaars River at CROC_EWR5 in A23J<br>NMAR = $113.0 \times 10^6 m^3$<br>REC=D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base flows<br><br>Maintenance flows and drought flows<br><br>Monitoring of Pienaars River at A2H106 | Oct | 0.162 | 0.159 |
| | | | | | | | | | Nov | 0.210 | 0.206 |
| | | | | | | | | | Dec | 0.230 | 0.226 |
| | | | | | | | | | Jan | 0.303 | 0.298 |
| | | | | | | | | | Feb | 0.356 | 0.351 |
| | | | | | | | | | Mar | 0.309 | 0.304 |
| | | | | | | | | | Apr | 0.260 | 0.256 |
| | | | | | | | | | May | 0.220 | 0.216 |
| | | | | | | | | | Jun | 0.208 | 0.205 |
| | | | | | | | | | Jul | 0.188 | 0.185 |
| | | | | | | | | | Aug | 0.174 | 0.171 |
| | | | | | | | | | Sep | 0.160 | 0.158 |
| | | Moretele River from Klipvoor Dam to Crocodile River , Tolwane (A23K, A23L) | 14_7 | | Quality | Nutrients | Instream concentration of nutrients must be improved to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Nutrient concentrations must be reduced. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.060 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 1.0 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity must be maintained to support the aquatic ecosystem and sustain present ecological state. No further deterioration should occur. Land based activities and WWTW discharges must be controlled. | Electrical Conductivity | ≤ 75 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 60 milligrams/litre (95th percentile) | | |
| | | | | | | | | Chloride | ≤ 70 milligrams/litre (95th percentile) | | |
| | | | | | | | | Sodium | ≤ 100 milligrams/litre (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. Microbial pollution must be minimised. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. | | |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) | | |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) | | |
| | | | | | | | | Metolachlor | ≤0.30 milligrams/litre (mg/l) | | |
| | | | | | | | | Mancozeb | 0.009 milligrams/litre (mg/l) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity should be improved from a D ecological category to a C category. Maintain good low flows to sustain habitat for substrate and habitat sensitive species and taxa. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from a D ecological category to a C category. Sand mining in riparian zone must be limited. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | The fish community must be maintained in a C/D ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Maintain flow velocity/depth species *LMOL LCYL* and *CPAR* and habitat sensitive species, *MBRE*. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br>Sample 10+ species per sample effort Sample 20 *BMAR* in 20min effort |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D ecological category or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.0<br><br>(REMP site A2PIEN – BUFFE or EWR5) |
| | | | | | | Semi aquatic biota | The river reach to serve as a habitat for aquatic bird populations must be maintained through proper habitat management. Maintain the riparian zone to provide suitable habitats. | Aquatic birds Indicator species | A baseline assessment should be conducted to determine the aquatic bird species along the river reach. There is a need to set a numerical RQO for density of birds based on the available/collected data. |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely modified condition or improved upon. | Specific Pollution Index | Diatom EC = D ≥ 42% |

**Table 17: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 15: UPPER MOKOLO**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| 15: UPPER MOKOLO | II | Moloko River, Klein Sand, Sondagsloop, Heuningspruit, Dwars, Jim se loop tributaries (A42C, A42E) | 15_1 | B/C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mokolo River at MOK_EWR1a in A42C<br>NMAR = $84.84 \times 10^6 m^3$<br>PES=C/D category<br><br>The maintenance low flows and | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of Mokolo River at A4H002 | Oct | 0.110 | 0.005 |
| | | | | | | | | | Nov | 0.120 | 0.005 |
| | | | | | | | | | Dec | 0.200 | 0.020 |
| | | | | | | | | | Jan | 0.550 | 0.040 |
| | | | | | | | | | Feb | 0.850 | 0.060 |
| | | | | | | | | | Mar | 0.700 | 0.050 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | drought flows must be attained to support the aquatic ecosystem and the downstream users. | | Apr | 0.500 | 0.040 |
| | | | | | | | | | May | 0.350 | 0.030 |
| | | | | | | | | | Jun | 0.270 | 0.020 |
| | | | | | | | | | Jul | 0.230 | 0.015 |
| | | | | | | | | | Aug | 0.180 | 0.010 |
| | | | | | | | | | Sep | 0.100 | 0.005 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50th percentile) Monitoring data – regional | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.0 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) | | |
| | | | | | | | | | | | |
| | | | | | | | | Bromoxynil | ≤0.010 milligrams/litre (mg/l) | | |
| | | | | | Habitat | Instream | Habitat condition should be improved from a C/D ecological to a B/C category. Good low flows must be maintained to sustain habitat for substrate and habitat sensitive species. Return flows and abstraction in resource unit must be monitored and controlled to protect the instream habitat. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B/C ≥ 78% | | |
| | | | | | | Riparian habitat | Riparian vegetation must be improved from C/D to a C | Index of Habitat Integrity, Vegetation Response | VEGRAI EC = C ≥ 62% | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | category. Riparian zones must remain in cultivated areas. Cultivation must be managed to prevent loss of riparian zone. | Assessment Index | |
| | | | | | Biota | Fish | Fish community should be improved from a C/D ecological category to a C category. Flow velocity/depth must be maintained for species, *LMOL, BMAR* and *CPRE* and habitat sensitive species, *BRAD, BVIV*. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 15+ species per sample effort<br>Sample 25 *CPRE* and 15 *AURA* in 20min effort<br><br>(Site EWR1a Dwars) |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macromacroinvertebrates assemblage must be maintained within a C ecological category condition or improved upon. | Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Sites:<br>EWR 1a = A4MOKO-VAALW<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5<br>A4SAND-TOPBR:<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br>Site DWARS 1a = Rapid EWR site:<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5 |
| | | | | | | Diatoms | Diatom assemblage must be maintained within B ecological category or better condition. | Specific Pollution Index | Diatom EC ≥ 82% |
| | | Sterkstroom, Frikkie se Loop (A42D) | 15_2 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Sterkstroom in A42D<br>NMAR = $43.43 \times 10^6 m^3$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows.<br>Monitoring of Sterkstroom at A4H008 | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.382 | 0.060 |
| Nov | 0.517 | 0.110 |
| Dec | 0.972 | 0.130 |
| Jan | 1.778 | 0.210 |
| Feb | 2.842 | 0.070 |
| Mar | 2.996 | 0.110 |
| Apr | 2.529 | 0.020 |
| May | 1.908 | 0.020 |
| Jun | 1.390 | 0.050 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Jul | 1.090 | 0.110 |
| | | | | | | | | | Aug | 0.758 | 0.080 |
| | | | | | | | | | Sep | 0.426 | 0.060 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified maintained to protect the aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.015 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be maintained to protect the aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 20 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.0 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a B/C ecological category. Maintain low flows to sustain habitat for substrate and habitat sensitive species and taxa. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC B/C ≥ 78% | | |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a B/C ecological category or better condition. | Vegetation Response Assessment Index | VEGRAI EC = B/C ≥ 78% | | |
| | | | | | Biota | Fish | The fish community must be maintained in a B/C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category.<br>Maintain flow velocity/depth for species, *LMOL, BMAR, AURA* and *CPRE* and habitat sensitive species – *CTHE*. Presence of new species: *B. waterbergensis* must be confirmed. | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C<br>FRAI ≥ 78%<br>Sample 9+ species per sample effort<br>Sample 10 *AJOH* and 2 *CTHE* in 20min effort | | |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a B ecological category or improved upon. . | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | Macroinvertebrates EC ≥ 82% (Site A4STER-WELGE) |
| | | Mokolo River A42F, inflow Mokolo Dam, Taaibosspruit, Malmanies and Bulspruit (A42F) | 15_3 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mokolo River at MOK_EWR2 in A42F<br>NMAR = 195.69x10$^6$m$^3$<br>PES=B/C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of Mokolo River at A4H005 | |
| | | | | | | | | | Maintenance Low flows (m$^3$/s) / Drought flows (m$^3$/s) |
| | | | | | | | | | Oct: 0.230 / 0.008 |
| | | | | | | | | | Nov: 0.240 / 0.110 |
| | | | | | | | | | Dec: 0.370 / 0.146 |
| | | | | | | | | | Jan: 0.602 / 0.201 |
| | | | | | | | | | Feb: 1.064 / 0.318 |
| | | | | | | | | | Mar: 0.953 / 0.285 |
| | | | | | | | | | Apr: 0.808 / 0.252 |
| | | | | | | | | | May: 0.627 / 0.207 |
| | | | | | | | | | Jun: 0.512 / 0.181 |
| | | | | | | | | | Jul: 0.400 / 0.120 |
| | | | | | | | | | Aug: 0.320 / 0.008 |
| | | | | | | | | | Sep: 0.230 / 0.005 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.025 milligrams/litre (mg/l) (50$^{th}$ percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50$^{th}$ percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95$^{th}$ percentile) |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95$^{th}$ percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5$^{th}$ percentile) and 8.0 (95$^{th}$ percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic | Metolachlor | ≤0.30 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | organisms and to human health. | | |
| | | | | | Habitat | Instream | Habitat diversity should be improved from B/C ecological category to a B category. Return flows into habitat must be controlled. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be improved from B/C ecological category to a B category Maintain riparian zone in cultivated areas, and control cultivation onto riparian zone. | Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | The fish community must be maintained in a C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Maintain flow velocity/depth species *CPRE* and habitat sensitive species, *MMAC* and *AJOH*. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 10+ species per sample effort<br>Sample 10 *AJOH* in 20min effort |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0<br><br>(Site MOK_EWR2) |
| | | | | | | Diatoms | Diatom assemblage must be maintained within a largely natural condition or improved upon. | Specific Pollution Index | Diatom EC ≥ 82% |
| | | Mokolo Dam to upper portion of A42G (10km downstream of dam) | 15_4 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mokolo River at MOK_EWR3 in A42G<br>NMAR = 215.995x10$^6$m$^3$<br>PES=B/C category | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of Mokolo River at A4H010 | |

| | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
|---|---|---|
| Oct | 0.383 | 0.005 |
| Nov | 0.399 | 0.005 |
| Dec | 0.406 | 0.005 |
| Jan | 0.444 | 0.015 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | | Feb | 0.559 | 0.020 |
| | | | | | | | | | Mar | 0.504 | 0.018 |
| | | | | | | | | | Apr | 0.493 | 0.015 |
| | | | | | | | | | May | 0.450 | 0.010 |
| | | | | | | | | | Jun | 0.441 | 0.008 |
| | | | | | | | | | Jul | 0.413 | 0.006 |
| | | | | | | | | | Aug | 0.399 | 0.005 |
| | | | | | | | | | Sep | 0.396 | 0.005 |
| | | | | | | High flows | EWR maintenance high flows: Mokolo River at MOK_EWR3 in A42G<br>NMAR = 215.995x$10^6$m$^3$<br>PES=B/C category<br><br>High flows must be attained as specified to support aquatic ecostem requirements. | Floods<br><br>High flow also specified as individual flood requirements in terms of size and duration.<br><br>Monitoring of Mokolo River at A4H010 | As per operating rule in Reserve template, section 3. | | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.010 milligrams/litre (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50$^{th}$ percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95$^{th}$ percentile) | | |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml) (95$^{th}$ percentile) | | |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5$^{th}$ percentile) and 8.0 (95$^{th}$ percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. | | |
| | | | | | Habitat | Instream | Habitat diversity should be improved from a B/C ecological category to a B category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% | | |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within the B/C | Index of Habitat Integrity, Vegetation Response | VEGRAI EC = B/C ≥ 78% | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ecological category. Maintain riparian zone with regard to *Syzygium cordatum* | Assessment Index. | |
| | | | | | Biota | Fish | Fish community should be maintained within the B/C ecological category. Maintain flow velocity/depth for species *CPRE*. | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C<br>FRAI ≥ 78% |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0 |
| | | Mokolo Dam | 15_4 | | Quantity | Dam level | The dam must be managed to protect ecosystem function as well as downstream users. Develop and update operational rules for the dam to sustain optimum dam levels in order to ensure that aquatic ecosystem diversity is maintained.<br>Dam releases are required to meet downstream flows for ecological flow requirements. | Minimum operating level required in dam | Operation rules as applicable.<br><br>Minimal level to sustain aquatic ecosystem (15-18%). |
| | | | | | Quality | Nutrients | Concentration of orthophosphate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as an oligotrophic system. | Orthophosphates | ≤ 0.010 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of total phosphorous must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as an oligotrophic system. | Total phosphorous | ≤ 0.025 mg/ℓ<br>50th percentile |
| | | | | | | | Concentration of nitrate & nitrite must be maintained to sustain ecosystem health and the water quality requirements of water | Nitrite& Nitrate | ≤ 0.50 mg/ℓ N 95th percentile |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | users. The dam must be maintained as an oligotrophic system. | | |
| | | | | | | Salts | The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. | Electrical Conductivity | ≤ 20 mS/m<br>95th percentile |
| | | | | | | Pathogens | The presence of pathogens should pose no risk to human health. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitres (ml)<br>(95th percentile) |
| | | | | | | System Variables | The water must be acceptable for recreational use. | pH | 6.5 – 9.0<br>95th percentile |
| | | | | | | | Increased clarity with reading | Turbidity | ≥0.4 m<br>5th percentile |
| | | Grootspruit and Sandspruit tributaries (Mokolo headwater catchment) (A42A, A42B) | 15_5 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Grootspruit in A42B<br>NMAR = 27.8 x$10^6$m$^3$<br>REC= D category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users | Baseflows<br><br>Maintenance flows and drought flows.<br>Monitoring of discharge during biological surveys. | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$) |
| | | | | | | | | | Oct: 0.271 / 0.136 |
| | | | | | | | | | Nov: 0.269 / 0.135 |
| | | | | | | | | | Dec: 0.291 / 0.148 |
| | | | | | | | | | Jan: 0.345 / 0.180 |
| | | | | | | | | | Feb: 0.401 / 0.213 |
| | | | | | | | | | Mar: 0.384 / 0.203 |
| | | | | | | | | | Apr: 0.338 / 0.160 |
| | | | | | | | | | May: 0.320 / 0.120 |
| | | | | | | | | | Jun: 0.311 / 0.160 |
| | | | | | | | | | Jul: 0.304 / 0.156 |
| | | | | | | | | | Aug: 0.299 / 0.152 |
| | | | | | | | | | Sep: 0.286 / 0.145 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.05 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.7 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m)<br>(95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | the impacts of slate mining on the resource. | | |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | Habitat | Instream | Habitat diversity should be maintained within a C ecological category. Connectivity for migratory species must be maintained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C ≥ 62% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained in a C ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = C ≥ 70% |
| | | | | | Biota | Fish | Fish community should be maintained within the C ecological category. Maintain flow velocity/depth for species *CPRE, AURA, LCYL* and habitat sensitive species *MMAC* and *AJOH*. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 10+ species per sample effort |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat and migration corridor for aquatic bird populations through proper habitat management. Manage riparian zone – remove alien vegetation, rehabilitate with indigenous species. | Aquatic birds species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a D category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 5.5<br><br>(site A4GROO-GROOT) |
| | | Mokolo River from Dwars River to confluence with Sterkstroom, Klein Vaalwaterspruit (A42E) | 15_6 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mokolo River at MOK_EWR1b in A42E<br>NMAR = 135.03x10$^6$m$^3$<br>PES=B/C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Mokolo River during biological surveys | |

| | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
|---|---|---|
| Oct | 0.120 | 0.005 |
| Nov | 0.120 | 0.005 |
| Dec | 0.320 | 0.020 |
| Jan | 0.700 | 0.050 |
| Feb | 1.400 | 0.080 |
| Mar | 1.150 | 0.065 |
| Apr | 0.850 | 0.050 |
| May | 0.600 | 0.040 |
| Jun | 0.450 | 0.020 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Jul 0.320 0.015<br>Aug 0.250 0.010 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified must maintained to protect the aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.020 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.5 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream concentration of salinity must be maintained to protect present ecological state and the aquatic ecosystem health. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.0 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | Habitat | Instream | Habitat diversity should improve from a B/C ecological category to a B category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within a B/C ecological category or better condition. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B/C ≥ 78% |
| | | | | | Biota | Fish | Fish community should be maintained within a B/C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C<br>FRAI ≥ 78% |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within B/C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System 5 (SASS5) | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 140<br>ASPT ≥ 6.0<br><br>(MOK_EWR1b in A42E) |

**Table 18: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 16: LOWER MOKOLO**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| 16: LOWER MOKOLO | II | Tambotie River A42H (major portion-eastern) | 16_1 | B/C | Habitat | Instream | Habitat diversity should be maintained in a B ecological category. | Index of Habitat Integrity | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within B ecological category. Maintain state of riparian zone. | Index of Habitat Integrity | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | Fish community should be maintained within a B ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Maintain flow velocity/depth for species *CPRE, CPAR, LCYL, LRUD* and habitat sensitive species *MMAC* and *AJOH*. | Fish Response Assessment Index (FRAI) | Fish ecology category = B<br>FRAI ≥ 82%<br>Sample 20+ species per sample effort<br>Sample 5 *BBRI* and 3 *PCAT* in 20min effort |
| | | Poer-se-Loop (upper catchment) (A42G) | 16_2 | | Habitat | Instream | Habitat diversity must be maintained in a B ecological category. Monitor abstraction and flow regime. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained within B ecological category. Maintain state of riparian zone. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Biota | Fish | Fish community should be maintained within a B ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Maintain flow velocity/depth for flow dependent and habitat sensitive species. (upper catchment) | Fish Response Assessment Index (FRAI) | Fish ecology category B<br>FRAI ≥ 82%<br>Sample 25+ species per sample effort<br>Sample 5 *BBRI* and 3 *PCAT* in 20min effort |
| | | Sandloop A42J and remaining portion of A42H | 16_4 | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.05 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.1 milligrams/litre (50th percentile |
| | | | | | | Salts | Instream concentration of salinity must be maintained to protect present ecological state and the aquatic ecosystem health. | Electrical Conductivity | ≤ 55 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. Limits must be defined to control the impacts of slate mining on the resource. | Turbidity | A 10% variation from background concentration is allowed. Limits must be determined. |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |
| | | | | | | | | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0048 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | Habitat | Instream | Habitat diversity should be maintained in a B ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% | | |
| | | | | | | Riparian habitat | Riparian vegetation should be maintained within B ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% | | |
| | | Mokolo main stem to Tambotie confluence below (bedrock reach (sand deposit to, wider portion of river)<br><br>A42G along main stem river | 16_5_1 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mokolo River at MOK_EWR4 in A42G<br>NMAR = 253.5x10$^6$m$^3$<br>PES=C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | Base Flows Maintenance flows and drought flows.<br><br>Monitoring of Mokolo River at A4H013 | | Maintenance Low flows (m$^3$/s) | Drought flows (m$^3$/s) |
| | | | | | | | | | Oct | 0.489 | 0 |
| | | | | | | | | | Nov | 0.508 | 0 |
| | | | | | | | | | Dec | 0.508 | 0 |
| | | | | | | | | | Jan | 0.540 | 0 |
| | | | | | | | | | Feb | 0.657 | 0 |
| | | | | | | | | | Mar | 0.595 | 0 |
| | | | | | | | | | Apr | 0.589 | 0 |
| | | | | | | | | | May | 0.547 | 0 |
| | | | | | | | | | Jun | 0.543 | 0 |
| | | | | | | | | | Jul | 0.512 | 0 |
| | | | | | | | | | Aug | 0.500 | 0 |
| | | | | | | | | | Sep | 0.504 | 0 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | High flows | EWR high flows:<br>Mokolo River at MOK_EWR4 in A42G<br>NMAR = $253.5 \times 10^6 m^3$<br>REC=C category<br><br>High flows must be met as specified to support aquatic ecosystem requirements. | Floods<br><br>Monitoring of Mokolo River at A4H013 | |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health, and maintain ecological status. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.02 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.05 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream concentration of salinity must be maintained to protect present ecological state and the aquatic ecosystem health. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Atrazine | ≤0.078 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity must be improved from a B/C ecological category to a B category. Monitor abstraction and flow regime. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation must be improved from a C ecological category to a B/C category. Ensure undergrowth maintained to allow for recruitment of *Xanthocercis zambesiaca* during VEGRAI assessments. Maintain riparian zone | Index of Habitat Integrity, Vegetation Response Assessment Index. | VEGRAI EC = B/C ≥ 80% |
| | | | | | Biota | Fish | Fish community must be improved from a C ecological category to a B category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. Maintain flow velocity/depth for flow dependent and habitat sensitive species. | Fish Response Assessment Index (FRAI) | Fish ecology category = B/C FRAI ≥ 78%<br><br>Sample 25+ species per sample effort Sample 5 *BBRI* and 3 *PCAT* in 20min effort |
| | | | | | | Semi-Aquatic biota | The suitability of this stretch of river to serve as a habitat for aquatic bird and mammal populations must be maintained through proper habitat management | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | MIRAI macroinvertebrates EC = C ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 5.2 |
| | | | | | Quantity | Low flows | Maintain flows in river to support wetland requirements at in A42J | Base Flows | Wetland requirements for the flood plain – Monitor flows at new weir (was A4H014) |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.01 milligrams/litre (mg/l) (50th percentile) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | Mokolo main stem from Tambotie confluence to Limpopo A42H, A42J along main stem river | 16_5_2 | | | | aquatic ecosystem health, and maintain ecological status. | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.05 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream concentration of salinity must be maintained to protect present ecological state and the aquatic ecosystem health. | Electrical Conductivity | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | | | Sodium | ≤ 20 milligrams/litre (95th percentile) |
| | | | | | | System Variables | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) |
| | | | | | | Toxics | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0048 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Atrazine | ≤0.078 milligrams/litre (mg/l) |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Habitat | Instream | Habitat diversity must be improved from a D ecological category to a C/D category. Monitor abstraction and flow regime Maintain good connectivity to upstream areas (16_5_1). | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = C/D ≥ 58% |
| | | | | | | Riparian habitat | Riparian vegetation must be improved from a D ecological category to a C/D category. Ensure undergrowth maintained to allow for recruitment of *Xanthocercis zambesiaca* during VEGRAI assessment. | Index of Habitat Integrity, Vegetation Response Assessment Index. | VEGRAI EC = C/D ≥ 58% |
| | | | | | Biota | Fish | Fish community must be improved from a D ecological category to a C/D category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = C/D<br>FRAI ≥ 58%<br>Sample 12+ species per sample effort |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. Maintain riparian zone. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |

**Table 19: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 17a: MOTHLABATSI / MAMBA**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| 17a: MOTHLABATSI / MAMBA | I | Mamba River (A41B) | 17a_1 | B/C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Mamba River at MAT_EWR3 in A41B<br>NMAR = $9.54 \times 10^6 m^3$<br>REC=B/C category | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Mamba River during | Oct | 0.034 | 0.004 |
| | | | | | | | | | Nov | 0.047 | 0.007 |
| | | | | | | | | | Dec | 0.072 | 0.014 |
| | | | | | | | | | Jan | 0.104 | 0.021 |
| | | | | | | | | | Feb | 0.149 | 0.016 |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | The maintenance low flows and drought flows must be attained to support the aquatic ecosystem and the downstream users. | biological surveys | Mar | 0.129 | 0.011 |
| | | | | | | | | | Apr | 0.090 | 0.011 |
| | | | | | | | | | May | 0.058 | 0.004 |
| | | | | | | | | | Jun | 0.045 | 0.011 |
| | | | | | | | | | Jul | 0.039 | 0.011 |
| | | | | | | | | | Aug | 0.035 | 0.011 |
| | | | | | | | | | Sep | 0.030 | 0.007 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified maintained to protect the aquatic ecosystem health and the ecological integrity of the system. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.015 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.25 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream salinity levels as specified must be maintained to protect the aquatic ecosystem health and ecological integrity of the system. | Electrical Conductivity | ≤ 20 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | Habitat | Instream | Habitat diversity must be maintained in a B/C ecological category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model Method and Model (RHAMM) | Instream Habitat Integrity EC= B/C ≥ 78% | | |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained in a B/C ecological category. Ensure no development into riparian zone. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B/C ≥ 78% | | |
| | | | | | Biota | Fish | Fish community must be maintained within a C ecological category. Maintain low flow regime to accommodate flow velocity and depth classes for flow dependent species. | Fish Response Assessment Index (FRAI). | Fish ecology category = C<br>FRAI ≥ 62%<br>Sample 7+ species per sample effort.<br>Sample 8 *AURA* and 2 *CTHE* during sampling effort | | |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat and migration corridor for aquatic bird populations through proper habitat management. Protected riparian zone – no encroachment into riparian. | Aquatic birds species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. | | |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or | Macroinvertebrate Response Assessment Index and the South African Scoring System | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.5 | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | improved upon. | Version 5 (SASS5) | |
| | | Mothlabatsi/ Matlabas River (A41A, A41B) | 17a_2 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Matlabas at MAT_EWR2 in A41C<br>NMAR = $32.80 \times 10^6 m^3$<br>REC=B/C category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem. | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Matlabas River at A4H004 | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$) |
| | | | | | | | | | Oct: 0.153 / 0.007 |
| | | | | | | | | | Nov: 0.178 / 0.012 |
| | | | | | | | | | Dec: 0.220 / 0.080 |
| | | | | | | | | | Jan: 0.280 / 0.101 |
| | | | | | | | | | Feb: 0.373 / 0.095 |
| | | | | | | | | | Mar: 0.330 / 0.116 |
| | | | | | | | | | Apr: 0.265 / 0.077 |
| | | | | | | | | | May: 0.208 / 0.071 |
| | | | | | | | | | Jun: 0.193 / 0.070 |
| | | | | | | | | | Jul: 0.179 / 0.065 |
| | | | | | | | | | Aug: 0.168 / 0.034 |
| | | | | | | | | | Sep: 0.154 / 0.008 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients as specified maintained to protect the aquatic ecosystem health and the ecological integrity of the system. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.015 milligrams/litre (mg/l) (50th percentile) |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.25 milligrams/litre (50th percentile) |
| | | | | | | Salts | Instream salinity levels as specified must be maintained to protect the aquatic ecosystem health and ecological integrity of the system. | Electrical Conductivity | ≤ 20 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity must be improved from a C ecological category to a B/C category. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B/C ≥ 78% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained in a C ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index. | VEGRAI EC = C ≥ 62% |
| | | | | | Biota | Fish | Fish community must be maintained within a C ecological category. An assessment of the fish community should be conducted annually to monitor against the prescribed ecological category. | Fish Response Assessment Index (FRAI) | Fish ecology category = C<br>FRAI ≥ 62% |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | through proper habitat management. Maintain riparian zone. | | reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.5 |
| | | Headwaters Mothlabatsi (Matlabas-Zyn-Kloof, peatlands) (A41A) | 17a_3 | | Quantity | Low flows | EWR maintenance low and drought flows:<br>Matlabas Zyn Kloof at MAT_EWR1 in A41A<br>NMAR = $5.23 \times 10^6 m^3$<br>REC=A category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Matlabas Zyn Kloof during biological surveys | |
| | | | | | | | | | Maintenance Low flows ($m^3/s$) / Drought flows ($m^3/s$) |
| | | | | | | | | | Oct: 0.053 / 0.022 |
| | | | | | | | | | Nov: 0.057 / 0.027 |
| | | | | | | | | | Dec: 0.063 / 0.030 |
| | | | | | | | | | Jan: 0.075 / 0.037 |
| | | | | | | | | | Feb: 0.094 / 0.041 |
| | | | | | | | | | Mar: 0.086 / 0.037 |
| | | | | | | | | | Apr: 0.076 / 0.031 |
| | | | | | | | | | May: 0.065 / 0.030 |
| | | | | | | | | | Jun: 0.065 / 0.033 |
| | | | | | | | | | Jul: 0.061 / 0.032 |
| | | | | | | | | | Aug: 0.060 / 0.031 |
| | | | | | | | | | Sep: 0.056 / 0.030 |
| | | | | | Habitat | Instream | Habitat diversity must be improved from a B ecological category to an A category. | Index of Habitat Integrity | Instream Habitat Integrity EC = A ≥ 90% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained in a B ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index. | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | Fish community must be maintained within a B ecological category.<br>Maintain low flow regime to accommodate flow velocity and depth classes for flow dependent species. | Fish Response Assessment Index (FRAI). | Fish ecology category = B<br>FRAI ≥ 82%<br><br>Sample 5+ species per sample effort.<br>Sample 8 *AURA* during sampling effort |

**Table 20: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 17b: MATLABAS / LIMPOPO**

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Maintenance Low flows ($m^3/s$) | Drought flows ($m^3/s$) |
| 17b: MATLABAS | II | Matlabas (A41D, A41C) | 17b_1 | B/C | Quantity | Low flows | EWR maintenance low and drought flows:<br>Matlabas at MAT_EWR4 in A41C<br>NMAR = $35.58 \times 10^6 m^3$<br>REC=B category<br><br>The maintenance low flows and drought flows must be attained to support the aquatic ecosystem | Base Flows<br><br>Maintenance flows and drought flows.<br><br>Monitoring of discharge of Matlabas River during biological surveys | Oct | 0.151 | 0.007 |
| | | | | | | | | | Nov | 0.178 | 0.016 |
| | | | | | | | | | Dec | 0.225 | 0.072 |
| | | | | | | | | | Jan | 0.285 | 0.092 |
| | | | | | | | | | Feb | 0.398 | 0.100 |
| | | | | | | | | | Mar | 0.339 | 0.110 |
| | | | | | | | | | Apr | 0.266 | 0.077 |
| | | | | | | | | | May | 0.208 | 0.066 |
| | | | | | | | | | Jun | 0.192 | 0.061 |
| | | | | | | | | | Jul | 0.178 | 0.056 |
| | | | | | | | | | Aug | 0.166 | 0.034 |
| | | | | | | | | | Sep | 0.151 | 0.008 |
| | | | | | Quality | Nutrients | Instream concentration of nutrients must be maintained to sustain aquatic ecosystem health, and maintain ecological status. | Orthophosphate ($PO_4^-$) as Phosphorus | ≤ 0.050 milligrams/litre (mg/l) (50th percentile) | | |
| | | | | | | | | Nitrate ($NO_3^-$) & Nitrite ($NO_2^-$) as Nitrogen | ≤ 0.07 milligrams/litre (50th percentile) | | |
| | | | | | | Salts | Instream concentration of salinity must be maintained to protect present ecological state and the aquatic ecosystem health. | Electrical Conductivity | ≤ 40 milliSiemens/metre (mS/m) (95th percentile) | | |
| | | | | | | | | Sulphate | ≤ 20 milligrams/litre (50th percentile) | | |
| | | | | | | System Variables Toxics | pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements. | pH range | 6.5 (5th percentile) and 8.5 (95th percentile) | | |
| | | | | | | | A baseline assessment to determine the present state instream turbidity is required. | Turbidity | A 10% variation from background concentration is allowed. | | |
| | | | | | | | Dissolved oxygen levels must be attained to support the aquatic ecosystem. | Dissolved oxygen | ≥ 6 milligrams/litre (mg/l) | | |
| | | | | | | | The concentrations of toxicants must pose no risk to aquatic organisms and to human health. | Aluminium (Al) | ≤ 0.062 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Manganese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) | | |
| | | | | | | | | Iron (Fe) | ≤ 0.1 milligrams/litre (mg/l) (95th percentile) | | |

| IUA | Class | River | Resource Unit | Ecological Category | Component | Sub-component | Narrative RQO | Indicator | Numerical Limit RQO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Copper (Cu) hard | ≤ 0.0048 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Nickel (Ni) | ≤ 0.07 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 milligrams/litre (mg/l) (95th percentile) |
| | | | | | Habitat | Instream | Habitat diversity must be maintained in a B ecological category. Protect instream integrity by controlling land based impacts. Connectivity to Limpopo River must be maintained. | Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Riparian habitat | Riparian vegetation must be maintained in a B ecological category. | Index of Habitat Integrity, Vegetation Response Assessment Index | VEGRAI EC = B ≥ 82% |
| | | | | | Biota | Fish | Fish community must be maintained within a B ecological category. Maintain flow velocity and depth class protection for sensitive species (flow sensitive: *LMOL*, *BIMB* and habitat sensitive: *PCAT*) | Fish Response Assessment Index (FRAI) | Fish ecology category = B<br>FRAI ≥ 82%<br>Sample 13+ species during sample effort |
| | | | | | | Semi-aquatic biota | This river reach must be maintained to serve as a habitat for aquatic bird and mammal populations through proper habitat management. Maintain riparian zone. | Aquatic birds/Indicator mammal species | A baseline assessment should be conducted to determine the aquatic bird community and representative mammal species along the river reach. There is a need to set a numerical RQO for density of animals/birds based on the available/collected data. |
| | | | | | | Aquatic macroinvertebrates | Macroinvertebrate assemblage must be maintained within a C ecological category or improved upon. | Macroinvertebrate Response Assessment Index and the South African Scoring System Version 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |

**Table 21: Resource Quality Objectives for PRIORITY WETLAND CLUSTERS AND SYSTEMS in selected Resource Units in the Mokolo, Matlabas, Crocodile (West) and Marico WMA**

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 1: UPPER CROCODILE / HENNOPS / HARTEBEESPOORT | 1_1 | Bronkhorstfontein Pan Complex (Depression/Pan) | Quantity | Pan wetted perimeter as measured from desktop mapping in relation to antecedent rainfall. | Water quantity impacts must be managed so as not to undermine the ecological value of these pan systems. In particular, abstraction or artificial water inputs should be limited in the pans so that the depth and duration of inundation is maintained within the normal range for high, average and low rainfall years. | Compile an accurate desktop basemap for the systems prior to the start of monitoring using the most recent available remote imagery and determine the wetted perimeter in relation to antecedent rainfall for selected pans.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there have been any measurable changes in the relationship between wetted perimeter and antecedent rainfall in the pans selected. |
| | | | Quality | pH, Electrical Conductivity, TDS, Total Alkalinity as $CaCO_3$, Sodium, Calcium, Magnesium, Sulphate, Iron, Chloride, Potassium, Magnesium, Manganese, Aluminium, Phosphorous, Silica, Fluoride, Ammonia and Nitrate. | Water quality impacts to the pan systems must be restricted to ensure that the water and sediment chemistry remain within the baseline range (anion and cation concentration to pan volume relationship) for this particular water chemistry pan type. | For selected pans, sample every 3 to 5 years. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all the pans units in the wetland complex | Area based weighted Average PES category of C/D must be maintained. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 1_1<br>1_2 | Rietvlei Wetland Complex<br><br>Channelled and Unchannelled valley bottom (peatland | Quantity | Permanent saturation. | Permanent saturation is required to maintain the peat. The flows should also be such that they do not pose a threat to the unchannelled structure/geomorphology of the wetland system. | During the habitat assessment determine whether the system is saturated and peat is still present. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative score for the wetland.<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland. | Wetland vegetation and geomorphology must be maintained to protect the unchannelled character of the system. Viable populations of peat forming plant species must be maintained. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | | | Area based weighted Average PES category of B although the likely best attainable state Category is B/C.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 1_3 | Glen Austin Pan<br><br>(Depression / Pan) | Quantity | Pan wetted perimeter as measured from desktop mapping in relation to antecedent rainfall. | Water quantity impacts must be managed so as not to undermine the ecological value of the pan. In particular, abstraction or artificial water inputs should be limited in the pans so that the depth and duration of inundation is maintained within the normal range for high, average and low rainfall years. | Compile an accurate desktop basemap for the pan prior to the start of monitoring using the most recent available remote imagery and determine the wetted perimeter in relation to antecedent rainfall for the pan.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there have been any measurable changes in the relationship between wetted perimeter and antecedent rainfall in the pan. |
| | | | Quality | pH, Electrical Conductivity, TDS, Total Alkalinity as $CaCO_3$, Sodium, Calcium, Magnesium, Sulphate, Iron, Chloride, Potassium, Magnesium, Manganese, Aluminium, Phosphorous, Silica, Fluoride Ammonia, Nitrate and Fluoride. | Water quality impacts to the pan systems must be restricted to ensure that the water and sediment chemistry remain within an acceptable normal range (anion and cation concentration to pan volume relationship) for this particular water chemistry pan type. | Sample every 3 to 5 years. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the pan – see the method of Kotze, 2016a and 2016b). | Area based weighted Average PES category of C/D although the likely BAS Category is D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Breeding population of Giant Bullfrogs. | Maintain a viable breeding population of Giant Bullfrogs in the pan. | Verify from monitoring records and recorded sightings adult bullfrogs and recorded breeding events. Report on this every 3 to 5 years. |
| | 1_4 | Colbyn Valley Wetland<br><br>Channelled and Unchannelled valley bottom (peatland) | Quantity | Permanent saturation. | Permanent saturation is required to maintain the peat. The flows should also be such that they do not pose a threat to the unchannelled structure/geomorphology of sections of the wetland system. | Determine whether the system is saturated and peat is still present. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | Habitat | Desktop PES Category (based on a semi-quantitative score for the wetland) .<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland. | Wetland vegetation and geomorphology must be maintained to protect the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of B/C although the likely BAS Category is C.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 4: HEX / WATERKLOOFSPRUIT / VAALKOP | 4_6 | Waterkloofspruit Wetland<br><br>Unchannelled valley bottom | Quantity | Permanent saturation. | Permanent saturation is required to maintain the peat. The flows should also be such that they do not pose a threat to the unchannelled structure/geomorphology of the wetland system. | During the habitat assessment determine whether the system is saturated and peat is still present. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative score for the wetland.<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland. | Wetland vegetation and geomorphology must be maintained to protect the unchannelled character of the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of A although the likely BAS Category is A/B.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 5: ELANDS / VAALKOP | 5_1 | Koster Pan Complex<br><br>Depressions / Pans | Quantity | Pan wetted perimeter as measured from desktop mapping in relation to antecedent rainfall. | Water quantity impacts must be managed so as not to undermine the ecological value of these pan systems. In particular, abstraction or artificial water inputs should be limited in the pans so that the | Compile an accurate desktop basemap for the systems prior to the start of monitoring using the most recent available remote imagery and determine the wetted perimeter in relation to antecedent rainfall for selected pans. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | | | depth and duration of inundation is maintained within the normal range for high, average and low rainfall years. | Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there have been any measurable changes in the relationship between wetted perimeter and antecedent rainfall in the pans selected. |
| | | | Quality | pH, Electrical Conductivity, TDS, Total Alkalinity as $CaCO_3$, Sodium, Calcium, Magnesium, Sulphate, Iron, Chloride, Potassium, Magnesium, Manganese, Aluminium, Phosphorous, Silica, Fluoride Ammonia, Nitrate and Fluoride. | Water quality impacts to the pan systems must be restricted to ensure that the water and sediment chemistry remain within an acceptable normal range (anion and cation concentration to pan volume relationship) for this particular water chemistry pan type. | For selected pans, sample every 3 to 5 years. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all the pans units in the wetland complex). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 6a: KLEIN MARICO / KROMELLEMBOOG<br>8: MALMANIESLOOP | 6_1<br>8_1 | Buffelshoek Wetland Complex<br><br>Channelled and Unchannelled valley bottom | Quantity | Groundwater indicators apply (see groundwater indicators RU 6_1 and 8_1)).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply (see groundwater numerical limits).<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQO's. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply (see river and groundwater numerical limits). Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C although the likely BAS Category is C/D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| | 6_1<br>8_1 | Paardenvallei Wetland Complex (Malmaniesloop) | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be | A constant baseflow must be maintained to ensure that the system remains perennial. | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | Channelled and Unchannelled valley bottom | | determined. | Groundwater RQO's apply (see groundwater RQO's). | wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply (see river and groundwater numerical limits). Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C/D although the likely BAS Category is D. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply (see groundwater numerical limits). |
| 7: KAALOOG-SE-LOOP | 7_1 | Marico Eye Wetland (Kaaloog se Loop)<br><br>Unchannelled valley bottom (peatland) | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained that ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply (see groundwater numerical limits).<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQO's. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply (see river and groundwater numerical limits). Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland – see the method of Kotze, 2016a and 2016b). | Area based weighted Average PES category of A/B although the likely BAS Category is B. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| | 7_1 | Rietspruit Wetland<br><br>Channelled and Unchannelled valley bottom | Quantity | Groundwater indicators apply (see groundwater indicators). | A constant baseflow must be maintained to ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES Category of C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| | 7_1 | Tufa Waterfall<br><br>(Tufa) | Quantity | Groundwater indicators apply (see groundwater indicators). | A constant baseflow must be maintained that ensure that the system remains perennial and the waterfall has a constant water supply.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| | | | Quality | pH, Electrical Conductivity, TDS, Total Alkalinity as $CaCO_3$, Sodium, Calcium, Magnesium, Sulphate, Iron, Chloride, Potassium, Magnesium, Manganese, Aluminium, Phosphorous, Silica, Fluoride Ammonia, Nitrate and Fluoride. | Salinity levels should not increase.<br><br>Concentrations must be maintained at levels to secure an Ideal/Good water quality status rich in calcium carbonate. | Electrical Conductivity: ≤ 50 mS/m<br>Annual long-term trend should not approach the 95$^{th}$ percentile (55 mS/m).<br><br>Bi-annual monitoring of major constituents (macro elements). |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 8: MALMANIESLOOP | 8_1 | Malmanieloop Wetland Complex<br><br>Channelled and Unchannelled valley bottom (peatland) | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial and that most of the marginal and instream vegetation remains inundated throughout the summer growing season and that the rooting zone is saturated throughout the year. This is a requirement for enabling perennial obligate hydrophytes to complete their life cycle and reproduce and in order to maintain the peat in the system.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits. Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex_.<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland d. | Wetland vegetation and geomorphology must be maintained to protect the unchannelled character of the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of B although the likely BAS Category is C.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species. Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 8: MALMANIESLOOP<br>9: MOLOPO | 8_1<br>9_2 | Upper Molopo River Wetland Complex<br><br>Channelled and Unchannelled valley bottom (peatland | Quantity | Groundwater indicators apply.<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial and that most of the marginal and instream vegetation remains inundated throughout the summer growing season and that the rooting zone is saturated throughout the year. This is a requirement for enabling perennial obligate hydrophytes to complete their life cycle and reproduce and in order to maintain the peat in the system. | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply. Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex).<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland. | Wetland vegetation and geomorphology must be maintained to protect the unchannelled character of the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of B although the likely BAS Category is C/D.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species. Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| 8: MALMANIESLOOP | 8_1 | Vergenoegd Wetland<br><br>Channelled and Unchannelled valley bottom | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply. Update these based on the findings of the water quality component of the preliminary wetland Reserve. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply. |
| 9: MOLOPO | 9_2 | Middle Molopo River Wetland Complex<br><br>Channelled valley bottom | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve linked to the one for Upper Molopo River Wetland and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply (see river and groundwater numerical limits). Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland – see the method of Kotze, 2016a and 2016b).<br><br>The extent and distribution of peat and populations of peat forming plants species in the wetland. | Wetland vegetation and geomorphology must be maintained to protect the unchannelled character of the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of C/D although the likely BAS Category is D.<br><br>Peat distribution and extent should remain at least unchanged/stable or be increasing. | Compile an accurate desktop basemap for the system prior to the start of monitoring using the most recent available remote imagery and determine/estimate and map the extent of peat and peat forming plant species in the system.<br><br>Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>During the habitat assessment determine/estimate whether the extent of peat in the system has changed. Estimate the extent of peat forming plant species.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 9_3<br>9_5 | Lower Molopo River Wetland Complex<br><br>Channelled valley bottom | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 10: DINOKANA EYE / NGOTWANE DAM | 10_1 | Dinokana Wetland<br><br>Unchannelled and Channelled valley bottom and Hillslope seepage wetlands | Quantity | Groundwater indicators apply (see groundwater indicators).<br><br>Surface flow indicators need to be determined. | A constant baseflow must be maintained to ensure that the system remains perennial.<br><br>Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply.<br><br>Undertake a preliminary wetland Reserve for the system and determine the ecological flow requirements of the wetland. Use these to set the numerical criteria for the water quantity component of the RQOs. |
| | | | Quality | River and groundwater indicators apply (see river and groundwater indicators). | River and groundwater RQO's apply (see river and groundwater RQO's). | River and groundwater numerical limits apply. Update these based on the findings of the water quality component of the preliminary wetland Reserve. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Protection zone | Groundwater indicators apply (see groundwater indicators). | Groundwater RQO's apply (see groundwater RQO's). | Groundwater numerical limits apply (see groundwater numerical limits). |
| | 10_1 | Ngotwane Wetland<br><br>Unchannelled valley bottom | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland complex). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 11b: GROOT MARICO / SEASONAL TRIBUTARIES | 11_b_2 | Lower Lenkwane River Wetland<br><br>Unchannelled valley bottom linked to Floodplain | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 12: BIERSPRUIT | 12_1 | Kolobeng Wetland Complex<br><br>Channelled valley bottom and floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | • Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of inundation/flooding in relation to rainfall for the wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | | | | Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 13: LOWER CROCODILE<br>17b: MATLABAS / LIMPOPO | 13_3<br>17_b_1 | Lower Crocodile River<br>Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | Quality | River indicators apply (see river indicators). | River RQO's apply (see river RQO's). | River numerical limits apply (see river numerical limits). |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Maintenance of a structurally and species diverse riparian zone. | The overall structural and species diversity of the riparian zone must be maintained. | Using a rapid field-based assessment monitor the structure and species diversity of the riparian zone at selected sites along the floodplain. Take fixed point photographs of key features. Report on this every 3 to 5 years. |
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | 14_1 | Apies River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | Quality | River indicators apply | River RQO's apply | River numerical limits apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 14_1<br>14_2 | Moretele River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the | Floods are necessary to inundate the floodplain thereby providing | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | 14_3<br>14_4 | | | catchment. | the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | Quality | River indicators apply. | | |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Reporting rates for aquatic/wetland dependent bird species. | Overall diversity and populations of aquatic/wetland dependent bird species must be maintained. | Verify from monitoring records and recorded sightings from available avifaunal reporting data.<br><br>Report on this every 3 to 5 years. |
| | 14_3 | Plat River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | Quality | River indicators apply. | River RQO's apply. | River numerical limits apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Reporting rates for aquatic/wetland dependent bird species. | Overall diversity and populations of aquatic/wetland dependent bird species must be maintained. | Verify from monitoring records and recorded sightings from available avifaunal reporting data.<br><br>Report on this every 3 to 5 years. |
| | 14_4 | Tswaing Crator Pan<br><br>Depression / Pan | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of A although the likely BAS Category is B. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland. Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |

| ntegrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 15. UPPER MOKOLO | 15_1 | Upper Mokolo River Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C although the likely BAS Category is C/D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | The continued presence of Blue Cranes within the pentads (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentads must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad (2425_2800 and 2425_2805). |
| | 15_1 | Klein Sand River Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | The continued presence of Blue Cranes within the pentad (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentad must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad (2425_2805). |
| | 15_2 | Frikkiesloon River Wetland Complex<br><br>Channelled and Unchannelled valley bottom | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 15_2 | Grootfonteinspruit Wetland Complex Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | The continued presence of Blue Cranes within the pentad (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentad must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | 15_5 | Grootspruit Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | The continued presence of Blue Cranes within the pentad (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentad must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad (2425_2800). |
| | 15_5 | Sandspruit Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C/D although the likely BAS Category is D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | The continued presence of Blue Cranes within the pentad (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentad must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad (2430_2800). |
| | 15_5 | Sand River Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C/D although the likely BAS Category is D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system.<br><br>Verify by undertaking a rapid field-based PES assessment of the wetland and take fixed point photographs of key features. |
| | | | Biota | The continued presence of Blue Cranes within the pentads (5x5 minute squares - the mapping unit used in SABAP2) covering the wetlands. | The continued presence of Blue Cranes must be maintained. | Using the data generated by the South African Bird Atlas Project 2 (SABAP2), the continued presence of Blue Cranes within the pentads must be confirmed by ensuring that a reporting rate higher than 5 % is maintained for the affected pentad (2425_2800 and 2425_2805). |
| | 15_5 | Sand River Tributary Wetland Complex<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for all wetland units in the wetland complex). | Area based weighted Average PES category of C although the likely BAS Category is C/D. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| 16: LOWER MOKOLO | 16_1<br>16_5_2 | Tambotie River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the wetland.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | | River indicators for RU 16_5_2 and groundwater indicators as per the floodplain alluvial aquifer for RU 16_4 also apply. | River RQO's for RU 16_5_2 and groundwater RQO's as per the floodplain alluvial aquifer for RU 16_4 also apply. | River numerical limits for RU 16_5_2 and groundwater numerical limits as per the floodplain alluvial aquifer for RU 16_4 also apply. |
| | | | Quality | River indicators for RU 16_5_2 and groundwater indicators as per the floodplain alluvial aquifer for RU 16_4 apply. | River RQO's for RU 16_5_2 and groundwater RQO's as per the floodplain alluvial aquifer for RU 16_4 apply. | River numerical limits for RU 16_5_2 and groundwater numerical limits as per the floodplain alluvial aquifer for RU 16_4 apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of A/B although the likely BAS Category is B/C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Reporting rates (RR) for aquatic/wetland dependent Red Data bird species.<br><br>Maintenance of a structurally and species diverse riparian zone. | Overall biodiversity and populations of floodplain dependent Red Data bird species must be maintained.<br><br>The overall structural and species diversity of the riparian zone must be maintained. | Verify from monitoring records and recorded sightings from available avifaunal reporting rate data.<br><br>Using a rapid field-based assessment monitor the structure and species diversity of the riparian zone at selected sites along the floodplain. Take fixed point photographs of key features.<br><br>Report on the above every 3 to 5 years. |
| | 16_3 | Rietspruit Wetland 2<br><br>Channelled and Unchannelled valley bottom | Quantity | River indicators apply. | River RQO's apply. | River numerical limits apply. |
| | | | Quality | River indicators apply. | River RQO's apply. | River numerical limits apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland complex). | Area based weighted Average PES category of C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br><br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | 16_5_2 | Mokolo River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the | Floods are necessary to inundate the floodplain thereby providing | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | Floodplain, Depressions, backwaters and Seepage wetlands | | catchment. | the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. Flooding together with water in the alluvial aquifer also supports the riparian trees along edges of the floodplain. | floodplain.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding extent and rainfall events. |
| | | | | River indicators for RU 16_5_2 and groundwater indicators as per the floodplain alluvial aquifer for RU 16_4 also apply. | River RQO's for RU 16_5_2 and groundwater RQO's as per the floodplain alluvial aquifer for RU 16_4 also apply. | River numerical limits for RU 16_5_2 and groundwater numerical limits as per the floodplain alluvial aquifer for RU 16_4 also apply. |
| | | | Quality | River indicators for RU 16_5_2 and groundwater indicators as per the floodplain alluvial aquifer for RU 16_4 apply. | River RQO's for RU 16_5_2 and groundwater RQO's as per the floodplain alluvial aquifer for RU 16_4 apply. | River numerical limits for RU 16_5_2 and groundwater numerical limits as per the floodplain alluvial aquifer for RU 16_4 apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of B/C although the likely BAS Category is C. | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland complex. Verify by undertaking a rapid field-based PES assessment of selected pans and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Reporting rates (RR) for aquatic/wetland dependent Red Data bird species.<br><br>Maintenance of a structurally and species diverse riparian zone. | Overall biodiversity and populations of floodplain dependent Red Data bird species must be maintained.<br><br>The overall structural and species diversity of the riparian zone must be maintained. | Verify from monitoring records and recorded sightings from available avifaunal reporting rate data.<br><br>Using a rapid field-based assessment monitor the structure and species diversity of the riparian zone at selected sites along the floodplain. Take fixed point photographs of key features.<br><br>Report on the above every 3 to 5 years. |
| | | | Protection zone | Groundwater indicators as per the floodplain alluvial aquifer for RU 16_4 apply. | Groundwater RQO's as per the floodplain alluvial aquifer for RU 16_4 apply. | Groundwater numerical limits as per the floodplain alluvial aquifer for RU 16_4 apply. |
| 17a: MOTHLABATSI / MAMBA | 17_a_2 | Matlabas Wetland (Peatland)<br><br>Channelled and Unchannelled valley bottom and Hillslope seepage wetlands | Quantity | Permanent saturation. | Permanent saturation is required to maintain the peat. The flows should also be such that they do not pose a threat to the unchannelled structure/geomorphology of the wetland system. | During the habitat assessment determine whether the system is saturated and peat is still present. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative score for the wetland). | Wetland vegetation and geomorphology must be maintained to protect the | Undertake a desktop PES assessment and determine the area based weighted average score for the wetland. Verify by undertaking a rapid field-based PES |

| Integrated Units of Analysis | RU | Wetland/Site | Component prioritised | Indicator | Narrative RQO | Numerical Criteria |
|---|---|---|---|---|---|---|
| | | | | | unchannelled character of the system and overall biodiversity must be maintained including viable populations of peat forming plant species.<br><br>Area based weighted Average PES category of A although the likely BAS Category is A/B. | assessment of the wetland.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| 17b: MATLABAS / LIMPOPO | 17_b_1 | Lower Matlabas River Floodplain | Quantity | Extent and frequency of flooding in relation to rainfall in the catchment. | Floods are necessary to inundate the floodplain thereby providing the wetting regime required for supporting the floodplain vegetation, particularly the facultative hydrophytic grasses, sedges and forbs that are dependent on flooding for their life cycles. | Using available remote imagery, estimate the extent and frequency of flooding in relation to rainfall for the floodplain.<br><br>Repeat the above every 3 to 5 years and assess and report on this with a view to assess if there are any measurable changes in the relationship between flooding and rainfall events. |
| | | | Quality | River indicators apply. | River RQO's apply. | River numerical limits apply. |
| | | | Habitat | Desktop PES Category (based on a semi-quantitative area based weighted average score for the wetland). | Area based weighted Average PES category of A/B although the likely BAS Category is B. | Undertake a desktop PES assessment and determine the area based weighted average score for the floodplain. Verify by undertaking a rapid field-based PES assessment of the system and take fixed point photographs of key features.<br>Repeat every 3 to 5 years and assess and report on this with a view to assess if there have been any changes in the state of the system. |
| | | | Biota | Maintenance of a structurally and species diverse riparian zone. | The overall structural and species diversity of the riparian zone must be maintained. | Using a rapid field-based assessment monitor the structure and species diversity of the riparian zone at selected sites along the floodplain. Take fixed point photographs of key features. Report on this every 3 to 5 years. |

**Table 22: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 1: UPPER CROCODILE / HENNOPS / HARTEBEESPOORT**

| IUA | Groundwater unit | RU | Sub-component | Resource Quality Objective | Indicator/ Measure | Numerical Limit |
|---|---|---|---|---|---|---|
| **IUA1: Upper Crocodile/H** | **RU - G1** | **1_1, 1_2, 1_3, 1_8 and 1_9.** | **Quantity** | Groundwater flow patterns based on piezometric elevations in aquifer units should not be reversed from its natural flow directions toward the local drainages (Hennops, Rietvlei and Bloubankspruit systems). | Groundwater level depths (piezometric levels to show flow regime wrt surface water sources).<br><br>Time series water level monitoring (Monthly) vs abstractions and rainfall | Dolomite aquifer systems: Saturation levels should not be lowered **>6 m** below an average water level depth of **~**22 m (1_1 – 1_2), ~20 m (1_3), ~15 m (1_9), and ~34 m (1_8) in the dolomite aquifer area. |

| IUA | Groundwater unit | RU | Sub-component | Resource Quality Objective | Indicator/ Measure | Numerical Limit |
|---|---|---|---|---|---|---|
| | | | | | input<br><br>Abstraction of groundwater within prescribed zones from the river course/wetland/eye) | Water level recession rate must be less than 0.75 m/a.<br><br>Abstraction zoning: should be regulated within a 1000 m radius from flowing eye's. |
| | | | | Sustainable abstractions at Grootfontein-Rietvlei and Pretoria Eyes.<br>Groundwater balance (aquifer recharge and abstraction) needs to be assessed for wet and dry cycles (to secure groundwater yields during dry periods). | Calculation of Stress Indexes (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%); |
| | | | Quality | Aquifer water quality maintained to support ideal/good quality domestic water supply. | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual monitoring of major constituents (macro elements). | Nitrate: Less than 1.0 mg/l.<br>Annual long-term trend should not approach the 50th percentile (*i.e.* 0.9 $NO^3$–N mg/l). |
| | | | | | Salts - Electrical Conductivity (TDS), mg/l).<br>Bi-annual monitoring of major constituents (macro elements). | Electrical Conductivity ≤30 mS/m;<br>Annual long-term trend should not approach the 95th percentile (*i.e.* 60 mS/m). |
| | | | | Background water quality status in dolomite aquifer system downstream from Tweelopies Spruit and Bloubank Spruit must be maintained. (Currently impacted EC=220 mS/m, $SO_4$=965 mg/l, and $NO_3$–N=3.3 mg/l, median values). | EC, Sulphates and nitrates (origin AMD) in head water area (Tweelopies Spruit)<br>Monthly water quality monitoring at source (TCTA WTW discharges). | Tweelopiespruit (RU 1_8):<br>Limit long-term water quality indicators:<br>EC level = 220 mS/m;<br>$SO_4$ concentration = 200 mg/l; and<br>$NO_3$–N concentration = 3.3 mg/l. |
| | | | | Maintain good water quality status at Grootfontein-Rietvlei and Pretoria Dolomite Eye's. | EC, pH, $SO_4$ and $NO_3$–N to be used was quality indicators. | Limit long-term–Annual long-term:<br>EC: 25 mS/m–27 mS/m (95th percentile);<br>$SO_4$: <4.5 mg/l–6.4 mg/l $SO_4$ (95th percentile);<br>$NO_3$–N: 0.9 mg/l–1.0 mg/l (95th percentile). |
| | | | Protection Zone | Specifically dolomite aquifer systems (Hennops and Bloubankspruit, Rietvlei wet lands, Grootfontein-Rietvlei and Pretoria Eyes):<br>Specific water resource protection requirements should become audit conditions in WUL. | Limit radius of influence (r) due to abstractions | Water level drawdown limited to dolomite sub-compartment unit. |
| | | | | | Distance from river (L) | Activity should be >500 m. |
| | | | | | Distance from wetland (L) | Activity should be >1000 m. |
| | | | | | Distance from Dolomite Eye (L) | Activity should be >1000 m. |
| | | | | | Ground stability (draw down limit, L, to protect buildings/roads /infrastructures) | Limited to 6 m in sub-compartment unit, unless specifically authorised. |

**Table 23: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 2: MAGALIES**

| IUA | Groundwater unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| MALONEY'S EYE | RU - G2 | 2_1; 2_3 | Quantity | Maloney's Eye – Continuous flow at eye discharge (head waters of the Magalies River System). | Groundwater Levels (boreholes) in the eye's catchment, i.e. depth to groundwater level from ground elevation;<br><br>Flow volumes at Maloney's Eye (compared with rainfall input, water level trends and abstractions in catchment of the eye (i.e. Steenkoppies Compartment);<br><br>Abstraction of groundwater within prescribed protection zones at the Maloney's Eye (pool and downstream course as per monitor programme). | Dolomite aquifer saturation levels should not be lowered more than 6 m below an average water level depth of **~65** m in the Maloney's Eye catchment area;<br><br>Flow volume at Maloney's Eye must not be lower than ~4 $Mm^3/a$ (i.e. the pre 1974 long-term yield since 1908 – 1973).<br><br>Abstraction zoning: to be regulated with the flow at the eye in a radius of 1000 m from the eye pool area. |
| | | | | Groundwater balance (aquifer recharge and irrigation abstraction) | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. Only 65% of recharge value should be abstracted. | Limitation of SI value (</=65%); and Flow stage heights at discharge area (eye): <-0.50 m/a) between annual recharge events. |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users. | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring. | Nitrate: Less than 0.5 mg/l.<br>Annual long-term trend should not approach the 95th Percentile (0.5 mg/l) |
| | | | | Remain Ideal Water Quality status at Maloney's Eye and lower Magalies River. | Sulphates (origin AMD) in head water area in the Randfontein Spruit and Bloubank Spruit with possible link across A21D and A21F boundary (fractured Tarlton dyke) | $SO_4$: Less than 5 mg/l.<br>Annual long-term trend should not approach the 95th percentile (7.5 mg/l) |
| | | | | Salinity levels should not increase.<br>Concentrations must be maintained at levels to secure an Ideal/Good water quality status. | Salinity - Electrical Conductivity (TDS), mg/l).<br>Bi-annual monitoring of major constituents (macro elements). | Electrical Conductivity ≤26 mS/m;<br>Annual long-term trend should not approach the 95th percentile (30 mS/m). |
| | | | Protection Zone | Demarcated protection zones to be introduced, i.e. distances between activity and eye/pool. Specifically for dolomite aquifer systems (Maloney's Eye and Magalies River downstream). | Stream Depletion Factor | Limit to </=5% of wetland/surface water resource |
| | | | | | Distance from river (L). | Activity regulated if <500 m from downstream drainage |
| | | | | | Distance from Dolomite Eye (L). | Activity regulated if <1000 m from downstream drainage. |
| | | | | | Distance from wetland (L). | Activity regulated if <1000 m from downstream drainage. |
| | | | | | Ground stability (DCU drawdown limit, L) (Buildings/roads/infrastructures). | Limited to 6 m sub-compartment unit, unless specifically authorised. |

**Table 24: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 3: CROCODILE / ROODEKOPJES**

| IUA | Groundwater unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| IUA3: (Upper) Crocodile River (Alluvial Aquifers) | RU – G3 Alluvial River Section | 3_1 and 3_2 | Quantity | Time series water level monitoring (L) across local intergranular and fractured aquifer to establish aquifer-river water interaction;<br>Water level observations (local piezometric status). | Water Level - Depth to groundwater level on alluvial aquifer system.<br>Groundwater level trends; and<br>Gwater level gradient in drainage valley. | Reverse groundwater gradient in a 500 m zone along main stem not allowed.<br><br>Water level recession rate must be less than 1.0 m/a. |
| | | | | Water balance (interception of Swater). | Positive/Negative water balance estimations, Volume (Q);<br>Flow depletion at downstream gauging weirs. | Swater losses at gauging stations must equal authorised abstractions from river. |
| | | | | Groundwater balance status in intergranular and fractured aquifer system | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | Limitation of SI value (</=65%). |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users. | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring. | Nitrate: less than 6.0 mg/l;<br>Annual long-term trend should not approach the 95th percentile. |
| | | | | Manage irrigation return flows from alluvial aquifer system.<br>Salinity levels should not increase.<br>Concentrations must be maintained at levels to secure an Ideal - Good water quality status. | Salts - Electrical Conductivity<br>Monthly monitoring<br>To monitor quality of return flows from alluvial area.<br><br>SAR for alluvial aquifer water | Electrical Conductivity ≤75 mS/m;<br>(95th percentile) |
| | | | Protection Zone | Protect Intergranular (alluvial) and fractured aquifer system along central Crocodile and Rose Spruit segments in terms of Sw-Gw Interaction | Stream Depletion Factor (manage distance between surface water source and well fields). | Limit impact to <5% of abstraction yield supported by surface water sources. |
| | | | | Land use activities that may impact on the intergranular aquifer. | Specify all land use activities on floodplain area and intergranular aquifer system. | Limit activities according to 50 day (microbial) and 365 (dilution) day water quality protection zoning (L). |

**Table 25: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 6a: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Groundwater unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| 6a: Klein Marico Eyes | RU – G6 | 6_1, | Quantity | Groundwater flow patterns based on piezometric elevations in aquifer units should not be reversed from its natural flow directions toward the local drainages (Upper Klein Marico River, Rhenosterfontein Spruit, and Lower Malmani Loop). | Water Levels - Depth to groundwater level from ground elevation.<br><br>Time series water level monitoring (Monthly) vs abstractions and rainfall input | Dolomite aquifer systems: Saturation levels should not be lowered >6 metres below an average water level depth of ~21 m in the dolomite aquifer area.<br><br>Water level recession rate must be less than 0.75 m/a. |
| | | | | Groundwater balance (aquifer recharge and irrigation abstraction) needs to be assessed for wet and dry cycles (to secure groundwater yields during dry periods). | Calculation of Stress Index (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%); |
| | | | Quality | Nitrate values must be maintained to support domestic water users (Ideal –Good water quality). | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring. | Nitrate: ~0.3 mg/l<br>Long-term trend should not approach 95th percentile (1.2 mg/l) |
| | | | | Flouride – impact on users – elevated fluoride levels | Fluoride (F, mg/l) | Fluoride: ~0.2 mg/l.<br>Annual long-term trend should not approach the 50th percentile (0.2 mg/l). |
| | | | | Salinity levels should not increase. Concentrations must be maintained at levels to secure an Ideal-Good water quality status. | Salts - Electrical Conductivity (TDS), mg/l).<br>Bi-annual monitoring of major constituents (macro elements). | Electrical Conductivity: ≤ 50 mS/m<br>Annual long-term trend should not approach the 95th percentile (60 mS/m) |
| | | | | | Na-Cl concentrations from mining activities in local eye catchments | |
| | | | Protection Zone | Specifically dolomite aquifer systems ( Irrigation area);<br><br>Specific water resource protection requirements should become audit conditions in WUL; | Map catchment (hectares) of the Eye and include a bulk water supply abstraction limitation. | Restriction of abstraction based on application of the Stress Index approach. |
| | | | | | Waterlevel drawdown limit in dolomite compartment unit. | Maximum 6 m (unless specifically authorised) |
| | | | | | Limitation of irrigation area on property size (ha's). | Limit to 9% of deed area (ha's) |
| | | | | | Distance from local river system | Activity should be >500 m. |
| | | | | | Distance from Dolomite Eye (L) | Activity should be >1000 m, unless specifically authorised. |
| | | | | | Ground stability (DCU drawdown limit, L) (buildings/roads/infrastructures). | Limited to 6 m sub-compartment unit. |

**Table 26: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 7: KAALOOG-SE-LOOP**

| IUA | Groundwater unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| MARICO EYE (ref. Kaaloog Se Loop, Rietspruit and Bokkraal Eyes) | RU – G6 | 7_1, | Quantity | Continuous Flow measurement at selected dolomite eyes, i.e. Bokkraal Nr. 1 via the Vanstratensvlei River (only flow data from 1907 to 1943!).<br><br>(Other important eye discharging into the upper Groot Marico River is Rietspruit (via the Vanstratensvlei River));<br><br>(Note: there are several other dolomite eyes in the area, but no information are available, except Rhenosterfontein, which falls in the A31D QC). | Demarcation of eye catchment area (southern boundary not clear);<br><br>Water Levels - Depth to groundwater level from ground elevation;<br><br>Time series water level monitoring (Monthly) vs abstractions and rainfall input; and<br><br>Abstraction of groundwater within prescribed zones from the river course/wetland/eye-spring) | Dolomite aquifer systems: Saturation levels should not be lowered >6 metres below an average water level depth of ~21 m in the eye catchment area.<br><br>Water level recession rate must be less than 0.75 m/a.<br><br>Abstraction zoning: should be regulated with flow of the eye in a radius of 1000 m from the Bokkraal and Rietspruit Eye pool areas. |
| | | | | Groundwater balance (aquifer recharge and irrigation abstraction) needs to be assessed for wet and dry cycles (to secure groundwater yields during dry periods). | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%); |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users. | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual monitoring. | Nitrate: ≤ 0.5 mg/l;<br>Annual long-term trend should not approach the 75th percentile (0.5 mg/l) |
| | | | | Flouride – impact on users – elevated fluoride levels | Fluoride (F, mg/l)<br>Bi-annual monitoring. | Fluoride: ~0.1 mg/l<br>Annual long-term trend should not approach the 95th percentile (1.0 mg/l). |
| | | | | Salinity levels should not increase. Concentrations must be maintained at levels to secure an Ideal/Good water quality status. | Salts - Electrical Conductivity (TDS), mg/l).<br>Bi-annual monitoring of major constituents (macro elements). | Electrical Conductivity: ≤ 50 mS/m<br>Annual long-term trend should not approach the 95th percentile (55 mS/m) |
| | | | Protection Zone | Demarcated protection zones to be introduced, i.e. distances between activity and eye/pool.<br>Specifically for dolomite aquifer systems (Marico Eye's and Klein Marico River downstream). | Map catchment (hectares) of the Eye and include a bulk water supply abstraction limitation. | Restriction of abstraction based on application of the Stress Index approach. |
| | | | | | Limitation of irrigation area on property size (ha's). | Limit to 9% of deed area (ha's) |
| | | | | | Distance from local river system | Activity regulated if <500 m from downstream drainage |
| | | | | | Distance from Dolomite Eye (L) | Activity regulated if <1000 m from downstream drainage. |
| | | | | | Distance from wetland (L). | Activity regulated if <1000 m from downstream drainage. |
| | | | | | Waterlevel drawdown limit in dolomite compartment unit. | Limited to 6 m sub-compartment unit. |

**Table 27: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 8: MALMANIESLOOP**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| 8: Malmanie Se Loop | RU – G8 | 8_1 | Quantity | Groundwater flow patterns based on piezometric elevations in aquifer units should not be reversed from its natural flow directions toward the local drainages (Malmani Eye Se Loop).<br><br>Discharge areas (i.e. Malmani Eye, Malmani-Noupoort, Doornplaat Eye, Rietpoort Eye and Doornfontein Eye) should be protected against total depletion of water table). | Water Levels - Depth to groundwater level from ground elevation.<br><br>Time series water level monitoring (Monthly) vs abstractions and rainfall input<br><br>Abstraction of groundwater within prescribed zones from the river course/wetland/eye-spring); | Dolomite aquifer systems: Saturation levels should not be lowered >6 metres below an average water level depth of ~**21** m in the dolomite aquifer area.<br><br>Water level recession rate must be less than 0.75 m/a.<br><br>Abstraction zoning: should be regulated (1000 m for eye pools). |
| | | | | Groundwater balance (aquifer recharge and irrigation abstraction) needs to be assessed for wet and dry cycles (to secure groundwater yields during dry periods).<br><br>Proper irrigation schedules need to be developed and applied at all times (100% compliance). | Abstraction - Volume (Q).Time series of abstraction-rainfall-water level of aquifer system.<br>Annual groundwater balance (aquifer recharge and irrigation abstraction) needs to be for wet and dry cycles. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%); |
| | | | | Water balance Status | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users (95th percentile = 18 mg/l). | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring. | Nitrate: Less than 1.0 mg/l;<br>Annual long-term trend should not approach the 75th percentile (i.e. 3.5 mg/l) |
| | | | | Salinity levels should not increase. Concentrations must be maintained at levels to secure a healthy water quality status. | Salts - Electrical Conductivity<br>Monthly monitoring at discharge | Electrical Conductivity: ≤ 50 mS/m;<br>Annual long-term trend should not approach the 95th percentile (i.e. 85 mS/m) |
| | | | | Flouride – impact on users – elevated fluoride levels | Fluoride (F, mg/l)<br>Bi-annual monitoring. | Fluoride ~0.1 mg/l;<br>Annual long-term trend should not approach the 95th percentile (1.0 mg/l). |
| | | | Protection Zone | Specifically dolomite aquifer systems (i.e. Malmani Eye, Malmani-Noupoort, Doornplaat Eye, Rietpoort Eye and Doornfontein Eye);<br><br>Specific water resource protection requirements should become audit conditions in WUL; | Waterlevel drawdown limit in dolomite compartment unit. | Maximum 6 m (unless specifically authorised) |
| | | | | | Stream Depletion Factor | Limit to </=5% of wetland/surface water resource |
| | | | | | Limitation of irrigation area on property size (ha's). | Limit to 9% of deed area (ha's) |
| | | | | | Distance from Dolomite Eye and wetland zone (L) | Should be >1000 m, unless specifically authorised for bulk water supplies. |

**Table 28: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 9: MOLOPO**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| 9: Upper Molopo River | RU – G9 | 9_1 and 9_2 | Quantity | Groundwater flow patterns based on piezometric elevations in aquifer units should not be reversed from its natural flow directions toward the local drainages<br><br>Discharge areas (i.e. Malapo Eye) should be protected against total depletion of water table (i.e. as the case is for Grootfontein Eye and Bodibe Eye. | Water Levels - Depth to groundwater level from ground elevation.<br><br>Time series water level monitoring (Monthly) vs abstractions and rainfall input<br>Abstraction of groundwater within prescribed zones from the river course/wetland/eye-spring) | Dolomite aquifer systems: Saturation levels should not be lowered >6 metres below an average water level depth of ~**19** m in the dolomite water area.<br><br>Water level recession rate must be less than 0.75 m/a.<br><br>Abstraction zoning: should be regulated (1000 m for karst aquifer systems. |
| | | | | Groundwater balance (aquifer recharge and irrigation abstraction) needs to be assessed for wet and dry cycles (to secure groundwater yields during dry periods).<br>Proper irrigation schedules need to be developed and applied at all times (100% compliance). | Abstraction - Volume (Q).Time series of abstraction-rainfall-water level of aquifer system.<br><br>Annual groundwater balance (aquifer recharge and irrigation abstraction) needs to be for wet and dry cycles. | Annual abstraction should not be larger than 65% of average annual recharge (*i.e.* SI of 65%); |
| | | | | Water balance Status | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users.<br>(Agricultural sources for nitrate) | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring<br>Monthly monitoring at DWS gauging stations. | Nitrate: Less than 1.0 mg/l;<br>Annual long-term trend should not approach the 95th percentile (3.0 mg/l). |
| | | | | Salinity levels should not increase. Concentrations must be maintained at levels to secure a healthy water quality status. | Salts - Electrical Conductivity.<br>Monthly monitoring at DWS gauging stations. | Electrical Conductivity: ≤ 50 mS/m;<br>Annual long-term trend should not approach the 95th percentile (80 mS/m). |
| | | | | Industrial/agricultural pollutants for Molopo, Grootfontein, Itsoseng (Bodibe) Eyes. | Sulphates $SO_4$ concentrations)<br>Monthly water quality monitoring at source areas (eye's and well fields) | $SO_4$: Less than 5.0 mg/l;<br>Annual long-term trend should not approach the 95th percentile (30 mg/l). |
| | | | Protection Zone | Protection of Intergranular and Fractured Aquifers: Protect lower sections of Madibe, Polfontein Spruit and Molopo River against industrial/agricultural/microbial pollution. | Distance from drainage valley: based on 50 Day travel time (microbial) and 365 day dilution period (inorganic constituents) | <1000 m Protection zoning (DLMT aquifers)<br><500 m Protection zoning (hard rock aquifers). |
| | | | | | Distance from discharge area of dolomite eyes: based on 50 Day travel time (microbial) and 365 day dilution period (inorganic constituents) | <1000 m Protection zoning (hard rock aquifers) |

**Table 29: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 10: DINOKANA EYE / NGOTWANE DAM**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| IUA10: Dinokana Eye | RU – G10 | 10_1 | Quantity | Discharge areas (i.e. Eyes/springs) should be protected against total depletion of water table) | Water levels: Time series water level monitoring (Monthly) vs abstractions and rainfall input. | Dolomite aquifer systems: Saturation levels should not be lowered >6 metres below an average water level depth of ~**24** m in the dolomite aquifer area.<br><br>Water level recession rate must be less than 0.75 m/a.<br><br>Abstraction zoning: should be regulated (1000 m radius from eye pool) |
| | | | | | | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%). |
| | | | | Water balance Status (Water use regulation in recharge area) | Flow gauging at Eye discharge.<br><br>Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users. | Nutrients - Nitrate ($NO^3$–N, mg/l).<br>Bi-annual Monitoring. | Nitrate: ~1.0 mg/l;<br>Annual long-term trend should not approach the 95th percentile (1.1 mg/l). |
| | | | | Flouride – impact on users – elevated fluoride levels | Fluoride (F, mg/l)<br>Bi-annual monitoring. | Fluoride ~0.15 mg/l;<br>Annual long-term trend should not approach the 95th percentile (0.5 mg/l). |
| | | | | Salts:<br>Concentrations must be maintained at levels to secure a healthy water quality status. | Salinity - Electrical Conductivity<br>Monthly monitoring at discharge area. | Electrical Conductivity: ≤ 45 mS/m;<br>Annual long-term trend should not approach the 95th percentile (55 mS/m). |
| | | | Protection Zone | Specifically dolomite aquifer systems ; Specific water resource protection requirements should become audit conditions in WUL. | Map catchment (hectares) of the eye and include a bulk water supply abstraction limitation. | Restriction of abstraction based on application of the Stress Index approach. |
| | | | | | Waterlevel drawdown limit in dolomite compartment unit. | Maximum 6 m (unless specifically authorised). |
| | | | | Additional wellfields in the catchment area of the DMLT Eyes. | Limitation of irrigation area on property size (ha's). | Limit to 9% of deed area (ha's). |
| | | | | | Distance from Dolomite Eye (L). | Should be >1000 m, unless specifically authorised for bulk water supplies. |

**Table 30: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 13: LOWER CROCODILE**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| 13: Lower Crocodile River | RU – G13 Alluvial River Section | 13_1 and 13_3 | Quantity | Limit capturing of surface water when abstracting water via boreholes in the flood plain alluvial aquifer systems (there should be a distance limit). | Groundwater level gradient across intergranular aquifer system; and<br><br>Groundwater level trends on intergranular aquifer systems. | Reverse groundwater gradient (river towards borehole/well field in a 500 m zone along main stem not allowed.<br><br>Water level recession rate must be less than 1.0 m/a. |
| | | | | | Stream/river flow gauging: Positive/Negative water balance estimations: Volume (Q);<br><br>Flow depletion at downstream gauging weirs. | Surface water losses must be equal to authorised abstractions from river (incl. evapotranspiration losses). |
| | | | | Groundwater balance status in intergranular and fractured aquifer system | Calculation of Stress Indexes (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%). |
| | | | Quality | Nitrate values in the recharge area must be maintained to support domestic water users. | Nutrients - Nitrate ($NO^3$–N, mg/l). Bi-annual Monitoring. | Nitrate: ≤ 1.0 mg/l (95th percentile) |
| | | | | Dissolved salts in groundwater resource: Manage irrigation return flow quality from intergranular (alluvial) aquifer system.<br><br>Concentrations must be maintained at levels to secure an Ideal - Good water quality status. | Salinity - Electrical Conductivity Weekly/Monthly monitoring.<br><br>Quality of intergranular (alluvial) aquifer system.<br><br>SAR for alluvial aquifer water | Electrical Conductivity: ≤ 85 mS/m (95th percentile)<br><br>SAR: Within appropriate limit for irrigation water. |
| | | | Protection Zone | Minimum distance from surface water resource where groundwater may be abstracted (based on the hydraulic characteristics of the intergranular (alluvial) aquifer system. | Stream Depletion Factor. | Limit borehole/well field abstraction yield to less than 5% of flow in surface water resources (at specific abstraction point). |
| | | | | Land use activities that may impact on the alluvial aquifer.<br><br>Specify protection zoning (i.e. distance from surface water resources) on intergranular (alluvial) aquifer system in terms of microbial and industrial/agricultural pollution migration. | Water quality measure (microbial migration towards surface water source);<br><br>Water quantity measure (impact on surface water whilst abstracting from intergranular (alluvial) aquifer system. | Water quality limit (1): A 50 day (microbial) zoning, distance between activity and surface water source.<br><br>Water quantity limit (2): A 365 (dilution) day water quality protection zoning (L). |

**Table 31: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 16: LOWER MOKOLO**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| 16: Sandloop & Mokolo | RU – G16_4 | 16_4 | Quantity | Limit depletion (lowering) of aquifer saturations levels (water levels). | Time series aquifer water level in a surrounding **Reference Area** which represent a background zone around a particular development, i.e. mining area, industrial area and agricultural development). | Water level recession rate must be less than 0.5 m/a in reference area of specific activity. |
| | | | | Groundwater balance status in aquifer system (Inflow vs outflow). | Stress Index (Aquifer Unit Use/ Aquifer Unit Recharge), outside Area of Activity | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%) in Reference Area. |
| | | | Quality (Note that elevated background values for critical hydro-chemical elements may be a natural phenomenon and should be acknowledged, i.e. EC, $NO_3$-N, Cl, $SO_4$ and F). | Acidity of groundwater with regard to acid rock drainage potential (high in areas of coal mining and UCG's) | pH-value of groundwater in specified Reference Area. | pH value between 6.1 and 8.2 in Reference Area. |
| | | | | Nutrition's in groundwater impacting on consumer's health. | Nitrate ($NO_3$-N) concentration in groundwater in specified Reference Area (T3) | Nitrate: ≤35 mg/l in Reference Area<br>Annual long-term trend should not approach the 50th percentile + 10% (~40 mS/m) – Based on local studies. |
| | | | | Dissolved salts in groundwater resources -<br>Monitoring Medupi/ Grootegeluk and other impact related monitoring networks. | Salinity: Electrical Conductivity (EC) of groundwater in specified Reference Area (T3). | Electrical Conductivity ≤200 mS/m in Reference Area.<br>Annual long-term trend should not approach the 50th percentile + 10% (~220 mS/m) – Based on local studies. |
| | | | | Macro chemical element of concern dissolved in groundwater. | Chloride (Cl) concentration in groundwater in specified Reference Area (T3). | Chloride: ≤300 mg/l in Reference Area.<br>Annual long-term trend should not approach the 50th percentile + 10% (~330mS/m) – Based on local studies. |
| | | | | Acid Mine Water (or ARD) and decanting into surface water resources. | Sulphates ($SO_4$) concentration in groundwater in specified Reference Area. (T3) | $SO_4^{-}$ ≤200mg/l in Reference Area.<br>Annual long-term trend should not approach the 50th percentile + 10% (~220 mg/l) – Based on local studies. |
| | | | | Fluoride concentrations in groundwater supplied to domestic users. | Fluoride (F) concentration in groundwater in specified Reference Area. (T3) | Fluoride: ≤2.5 mg/l in Reference Area.<br>Annual long-term trend should not approach the 50th percentile + 10% (~2.7 mg/l) – Based on local studies. |
| | | | Protection Zone | Aquifer saturation levels | Water level set for a three (3) tier zoning area. | T1–Area of activity: Water level depletion required for activity.<br>T2–Buffer Area: Water level recession rate must be less than 1.0 m/a.<br>T3–Background or Reference Area: Water level recession rate must be less than 0.5 m/a. |

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | As per water quality specifications. | Water quality parameters set for a three (3) tier zoning area. | T1–Area of activity, concentration levels due to impact (95th Percentile of water quality in quaternary catchment):<br>pH: 4.5 to 9.5;<br>$NO_3$–N: 60 mg/l;<br>Salinity EC: 780 mS/m;<br>Chloride: 1500 mg/l;<br>Sulphates: 1500 mg/l; and<br>Fluoride: 6.4 mg/l.<br>T2–Buffer Area: Allow up to 75th Percentile supported by a buffer area background study – actual values in observed in quaternary catchment A42J:<br>pH: 6.5 to 8.5;<br>$NO_3$–N: 35 mg/l;<br>Salinity EC: 370 mg/l;<br>Chloride: 650 mg/l;<br>Sulphates: 600 mg/l; and<br>Fluoride: 2.5 mg/l.<br>T3–Background or Reference Area: Allow up to 50th Percentile + 10% in key constituents as indicated above (Quality). |
| 16: Mokolo Mainstem | RU – G16 | 16_5_2 | Quantity | Limit capturing of surface water when abstracting water via boreholes in the flood plain alluvial aquifer systems (there should be a distance limit). | Water levels in aquifer: Groundwater level gradient across intergranular aquifer system; and<br><br>Groundwater level trends on intergranular aquifer systems. | Reverse groundwater gradient in a 500 m zone along main stem not allowed.<br><br>Water level trends not <-1.0 m/a |
| | | | | Interaction status between Swater and Gwater resources. | Positive/Negative water balance estimations: Volume (Q);<br><br>Flow depletion at downstream gauging weirs. | Surface water losses must be equal to authorised abstractions from river (incl. evapotranspiration losses). |
| | | | | Groundwater balance status in intergranular and fractured aquifer system | Calculation of Stress Index (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%). |

CONTINUES ON PAGE 258 - PART 3

# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

**PART 3 OF 6**

N.B. The Government Printing Works will not be held responsible for the quality of "Hard Copies" or "Electronic Files" submitted for publication purposes

ISSN 1682-5843

9 771682 584003 42775

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| | | | Quality (Note that elevated background values for critical hydro-chemical elements may be a natural phenomenon and should be acknowledged, i.e. EC, $NO_3$-N, Cl, $SO_4$, and F). | Nutrients - Nitrate | Monthly monitoring at DWS gauging stations.<br><br>Establish background "natural" nitrate concentration in water resource. | Nitrate: ≤ 0.5 mg/l<br>(95th percentile) |
| | | | | Dissolved salts in groundwater resources - | Salinity - Electrical Conductivity<br><br>Establish background "natural" salinity concentration in water resource. | Electrical Conductivity: ≤ 55 mS/m<br>(95th percentile) |
| | | | | Acid Mine Water (or AMD) of nearby potential acidic underground rock types | Sulphates ($SO_4$) concentration levels in groundwater.<br><br>Establish background "natural" sulphate concentration in water resource. | $SO_4^-$: ≤ 80 mg/l.<br>(95th percentile) |
| | | | Protection Zone | Limit capturing of surface water when abstracting water via boreholes in the flood plain alluvial aquifer systems (there should be a distance limit). | Stream Depletion Factor for Mokolo alluvial aquifer system, (L). | Limit borehole/well field abstraction yield to less than 5% of flow in surface water resources (at specific abstraction point). |
| | | | | Land use activities that may impact on the intergranular (alluvial) aquifer system. | Water quality measure (microbial migration towards surface water source);<br><br>Water quantity measure (impact on surface water whilst abstracting from intergranular (alluvial) aquifer system. | Water quality limit (1):<br>A 50 day (microbial) zoning, distance between activity and surface water source.<br><br>Water quantity limit (2):<br>A 365 (dilution) day water quality protection zoning (L). |

**Table 32: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Resource Units in the Integrated Unit of Analysis 17b: MATLABAS / LIMPOPO**

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| IUA 17: MATALBAS | RU – G17_b_2 | 17_b_2 | Quantity | Limit depletion (lowering) of aquifer saturations levels (water levels). | Water levels in aquifer system;<br>Groundwater level trends. | Water level recession rate must be less than 0.5 m/a. |
| | | | | Groundwater balance status in aquifer system;<br>Calculation of Stress Index (Aquifer Unit Use/ Aquifer Unit Recharge) as percentages. | A Positive/Negative water balance. | Annual abstraction should not be larger than 65% of average annual recharge (i.e. SI of 65%). |
| | | | Quality (Note that elevated background values for critical hydro-chemical elements may be a natural phenomenon and should be acknowledged, i.e. EC, $NO_3$-N, Cl, $SO_4$, and F). | Nutrition's in groundwater impacting on consumer's health. | Nitrate ($NO_3$-N) concentration in groundwater in specified reference area. | Nitrate: ≤3.0 mg/l;<br>Annual long-term trend should not approach the 75th percentile (~3.3 mg/l). |
| | | | | Dissolved salts in groundwater resources - | Salinity: Electrical Conductivity (EC) of groundwater. | Electrical Conductivity ≤140 mS/m<br>Annual long-term trend should not approach the 75th percentile +10% (~155 mS/m). |
| | | | | Macro chemical element of concern dissolved in groundwater. | Chloride (Cl) concentration in groundwater in specified reference area. | Chloride: ≤145 mg/l in Reference Area.<br>Annual long-term trend should not approach the 75th percentile +10% (~160 mg/l). |
| | | | | Generation of acid mine water from underlying potential acidic rocks; and Prevent future decanting of underground mine water into surface water resources. | Sulphates ($SO_4$) concentration in groundwater in specified reference area. | $SO_4^{-}$ ≤85 mg/l.<br>Annual long-term trend should not approach the 75h percentile +10% (~94 mg/l). |
| | | | | Fluoride concentrations in groundwater supplied to domestic users. | Fluoride (F) concentration in groundwater in specified reference area. | Fluoride: ≤1.3 mg/l;<br>Annual long-term trend should not approach the 75th percentile +10% (~1.4 mg/l). |
| | | | | Aquifer saturation levels | Water level set for a three (3) tier zoning area. | T1–Area of activity: Water level depletion required for activity.<br>T2–Buffer Area: Water level recession rate must be less than 1.0 m/a.<br>T3–Background or Reference Area: Water level recession rate must be less than 0.5 m/a. |
| | | | Protection zoning | As per water quality specifications. | Water quality parameters set for a three (3) tier zoning area. | T1–Area of activity, maximum concentration levels due to impact (based on dataset in impacted area):<br>pH: 4.5 to 9.5; |

| IUA | Ground-water unit | RU | Sub-component | Narrative RQO | Indicator/ Measure | Numerical Limit RQO |
|---|---|---|---|---|---|---|
| | | | | | | $NO_3$–N: 60 mg/l;<br>Salinity EC: 780 mS/m;<br>Chloride: 1500 mg/l;<br>Sulphates: 1500 mg/l; and<br>Fluoride: 6.4 mg/l.<br>T2–Buffer Area: Allow up to 75th Percentile of actual background values in quaternary catchment A41E:<br>pH: 6.0 – 8.5;<br>$NO_3$–N: 35.0 mg/l;<br>Salinity EC: 370 mg/l;<br>Chloride: 650 mg/l;<br>Sulphates: 600 mg/l; and<br>Fluoride: 2.5 mg/l.<br>T3–Background or Reference Area: Allow up to 50th Percentile + 10% in key constituents as indicated above (see Quality above). |

# KITSISOKAKARETSO

## MOLAO WA BOSETŠHABA WA METSI, 1998
## (MOLAO 36 WA 1998)

## TLHOMAMISO YA DITLHOPA TSA MOTSWEDI WA METSI LE MAIKAELELO A BOLENG JWA MOTSWEDI WA MADUTISO A MOKOLO, MATLABAS, CROCODILE (WEST) LE MARICO

Nna ke le, Gugile Nkwinti, Tona ya Metsi le Kgelelolesweo, go ya ka karolo 13(1) ya Molao wa Bosetšhaba wa Metsi, 1998 (Molao 36 wa 1998) ke tlhomamisa fano, kitsiso ya ditlhopa tsa metswedi ya metsi le maikaelelo a boleng jwa motswedi a madutiso a Mokolo, Matlabas, Crocodile (West) le Marico.

**RRE GUGILE NKWINTI**
**TONA YA KGORO YA METSI LE KGELELOLESWE**
**LETLHA:** 22/02/2019

## THULAGANYO

## TLHOMAMISO YA DITLHOPA TSA MOTSWEDI WA METSI LE MAIKAELELO A BOLENG JWA MOTSWEDI WA MADUTISO A MOKOLO, MATLABAS, CROCODILE (WEST) LE MARICO

### 1. DITLHALOSO

Mo thulaganyong e, lefoko lengwe le lengwe go sa kgathalasege gore lefe, le bokao jwa lona bo supilweng mo go tsa Molao wa Bosetshaba wa Metsi le tla raya bokao joo jaaka go kailwe, ntle le fa e le gore tlhaloso ya lone ke e sele -

**"Setlhopa I"** se tlhalosa tlhamalalo ya tsa kamano ya ditlhopa tsa ditshedi tsa metsi mo teng ga bolekanyo jwa lefelo, go isa seemo sa tsa metsi mo teng ga bolekanyo jwa lefelo mo seemo se fetogileng go le go nyenyane fa go tshwantshiwa le seemo sa pele ga kwa tshimologong;

**"Setlhopa II"** se tlhalosa tlhamalalo ya tsa kamano ya ditlhopa tsa ditshedi tsa metsi mo teng ga bolekanyo jwa lefelo go isa seemo sa tsa metsi mo teng ga bolekanyo jwa lefelo mo seemo se fetogileng ka selekanyo fa go tshwantshiwa le seemo sa pele ga kwa tshimologong;

**"Setlhopa III"** se tlhalosa tlhamalalo ya tsa kamano ya ditlhopa tsa ditshedi tsa metsi mo teng ga bolekanyo jwa lefelo go isa seemo sa tsa metsi mo teng ga bolekanyo jwa lefelo mo seemo se fetogileng thata fa go tshwantshiwa le seemo sa pele ga kwa tshimologong;

**"Setlhopa sa kamano gareng ga ditshedi le tikologo"** se tlhalosa maemo a tsa kamano ya ditshedi mo metsing tseo di supang boitekanelo jwa metsi ao go ya ka phetogo ya dikarolwana tsa mebele ya tsone fa go bapiswa le maemo a tsone a tlholego;

**"Tlhokego ya metsi a maemo a botsalano gareng ga ditshedi le tikologo"** e tlhalosa tsela ya kelelo ya metsi (bogolo, nako le lobaka) le boleng e e tlhokagalang go tshegatsa maemo a tikologo ya molapo ka tsela e e riling, mme e akaretsa seelo le boleng jwa botsalano gareng ga ditshedi le tikologo;

**"Dikarolo tse kopaneng tsa tshekatsheko"** e tlhalosa dikarolo tse kopaneng tsa tshekatsheko tse di emetseng maemo a a tshwanang a tikologo ya tsamaiso ya metsi e e nang le ditlamorago tse di tshwanang le mmono tshitsinyo wa karolo e e bontshang maemo a katlatlelo loago le ekonomi a tikologo ya tsamaiso ya metsi e e farologaneng le go bega ka maemo a botsalano gareng ga ditshedi le tikologo a karolwana ya tikologo ya tsamaiso ya metsi;

**"Molao wa bosetshaba wa tsamaiso ya metsi"** e tlhalosa National Water Act, 1998 (Act No. 36 of 1998);

**"Selekanyetso mo lekgolong"** e tlhalosa kgonagalo ya go se fete tekanyetso, ke gore selekanyetso mo lekgolong sa 95 le tshwanetse go nna kwa tlase ga tekanetso; selekanyetso mo lekgolong sa 50 se tshwanetse go nna kwa tlase ga bogare jwa tekanyetso;

**"Maemo a gajaana a botsalano gareng ga ditshedi le tikologo"** e tlhalosa maemo a gajaana a pholo le botsitso jwa tikologo go tlhotlheletsa se se diragalang mo ditsheding tse di farologaneng, go bapisa le maemo a tlhago kgotsa maemo a a leng gaufi le tlhago;

**"Keleletso ya setlhopa sa botsalano gareng ga ditshedi le tikologo"** e tlhalosa setlhopa se se bontshang taolo ya go fitlhelela maikaelelo a maemo/setlhopa a botsalano gareng ga ditshedi le tikologo a motswedi wa metsi a a ka fitlhelelwang;

**"Maikaelelo a boleng jwa motswedi"** a tlhalosa maikaelelo a boleng jwa motswedi a a akaretsang tlhaloso le dipalo tsa se se tlhotlheletsang se se diragalang mo ditsheding, mo kemong le dikhemikhale tsa metswedi ya metsi e e botlhokwa mo karolong ya tikologo ya tsamaiso ya metsi.

**"Karolo ya motswedi"** e tlhalosa sebaka sa molapo, letsha/mogobe kgotsa setlhopa sa megobe, tulo ya bokopano jwa noka le lewatle, kgotsa letamo, e e kgethegileng go ya ka botsalano/kamano gareng ga ditshedi le tikologo go netefatsa tlhokego ya metsi a yona a a botsalano gareng ga ditshedi le tikologo kgotsa maikaelelo a boleng jwa motswedi le molelwane wa tikologo o o dirilweng;

**"Setlhopa sa motswedi wa metsi"** se tlhalosa karolo e e emetseng mekgwa e e tlhokagalang ya metswedi e e farologaneng go ya ka balaodi ba metswedi ya metsi (Lefapha la Metsi le Kgelelolesweng).

## 2. TLHALOSO YA MOTSWEDI WA METSI

Ditlhopa tsa motswedi ya metsi le maikaelelo a boleng jwa motswedi di tlhomamisediwa metswedi yotlhe kgotsa karolo ya motswedi mongwe le mongwe o o bonalang jaaka go tlhalositswe fa tlase:

| | |
|---|---|
| Lefelo la Taolo ya Metsi: | Limpopo North West |
| Kgaolo ya go Ntshetsa metsi: | A10, A21 go fitlha ka A24, A31, A32, A41 le A42 Kgaolo e Kgolo ya go Ntshetsa metsi |
| Noka/dinoka: | Mokolo, Matlabas, Crocodile (West) le Marico river systems |
| Lefelo la Taolo ya Metsi: | Lefelo la Taolo ya Metsi la Vaal |
| Kgaolo ya go Ntshetsa metsi: | D41A Quaternary Drainage Region |
| Noka/dinoka: | Noka ya Molopo |

## 3. TLHOMAMISO YA DITLHOPA TSA MOTSWEDI WA METSI JAAKA GO TLHOKEGA MALEBANA LE KAROLO 13(1)(a) YA MOLAO WA BOSETŠHABA WA METSI, 1998

i. Ditlhopa tsa metswedi ya metsi tsa madutiso a Mokolo, Matlabas, Crocodile (West) le Marico di tsentswe mo lenaaneng le le mo Lenaneong la 1 go ya ka setlhopa sa kakaretso mo dikarolong tse di kopaneng tsa tshekatsheko (IUA), e kailweng mo Setshwantsho 1.

ii. Di-IUA di beilwe ka ditlhopa malebana le selekano sa tsone sa tiriso e e letlelesegang le tshireletso jaaka Setlhopa I: se se kayang tshireletso e e kwa godimo ya tikologo le tiriso e e kwa tlase; Setlhopa II se se kayang tshireletso e e mo magareng le tiriso e e mo magareng; le Setlhopa III se se kayang tshireletso e e tswelelang mo go nnye le tiriso e e kwa godimo.

iii. Lenaneo 1 le neela IUA, setlhopa sa yone sa motswedi wa metsi le popego ya bodutiso jwa yone. Popego ya bodutiso e na le dintlhagare di le mmalwa tsa baeofisikhale tse di tlhagisang dikarolo tsa noka kgotsa dikarolo tsa metswedi (di-RU). Go tlametswe setlhopa sa ikholoji se se tshwanetseng go somarelwa mo RU nngwe le nngwe mo IUA.

**4. TLHOMAMISO YA MAIKAELELO A BOLENG JWA MOTSWEDI A METSWEDI YA METSI JAAKA GO TLHOKEGA MALEBANA LE KAROLO 13(4)(a)(i)(bb) YA MOLAO WA BOSETŠHABA WA METSI, 1998**

i. Maikaelelo a Boleng jwa Motswedi (di-RQO) a tlhaloseditswe mo RU nngwe le nngwe e e dirilweng setlapele sa IUA nngwe le nngwe malebana le bokanakang jwa metsi, legaetlhago le diphologolo, dimela le ditshedi tsa lefelo le le rileng, le boleng jwa metsi.

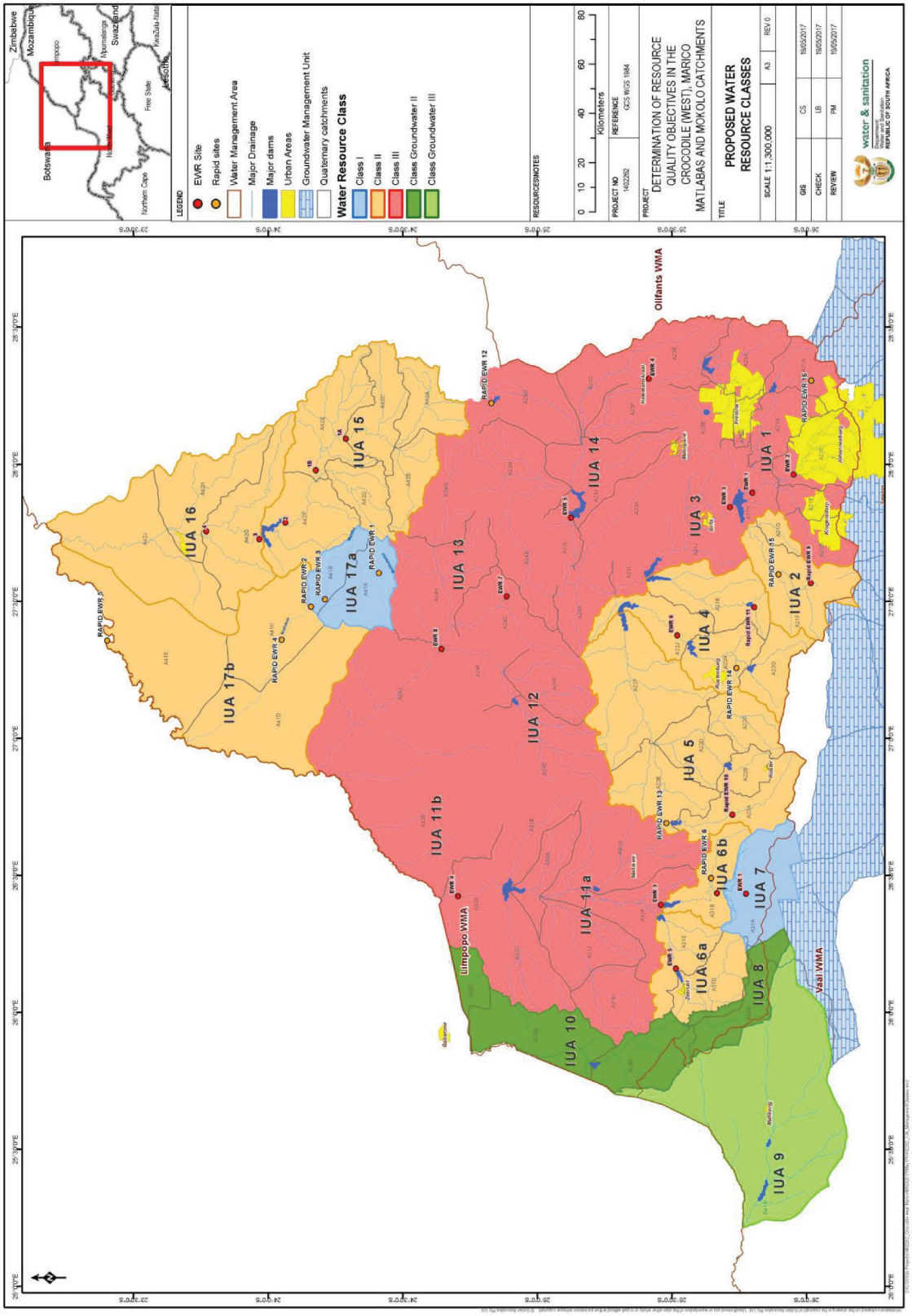
ii. Setshwantsho 2 se tlhagisa melelwane ya RU ya madutiso a Crocodile (West), Marico, Mokolo le Matlabas.

iii. Lenaneo 2 go ya go Lenaneo 20 le neela di-RQO tsa DINOKA LE MATAMO mo di-RU tse e leng ditlapele.

iv. Lenaneo 21 le tlhagisa di-RQO tsa MATSHA A E LENG DITLAPELE mo Dikarolong tse di tlhophilweng tsa Motswedi.

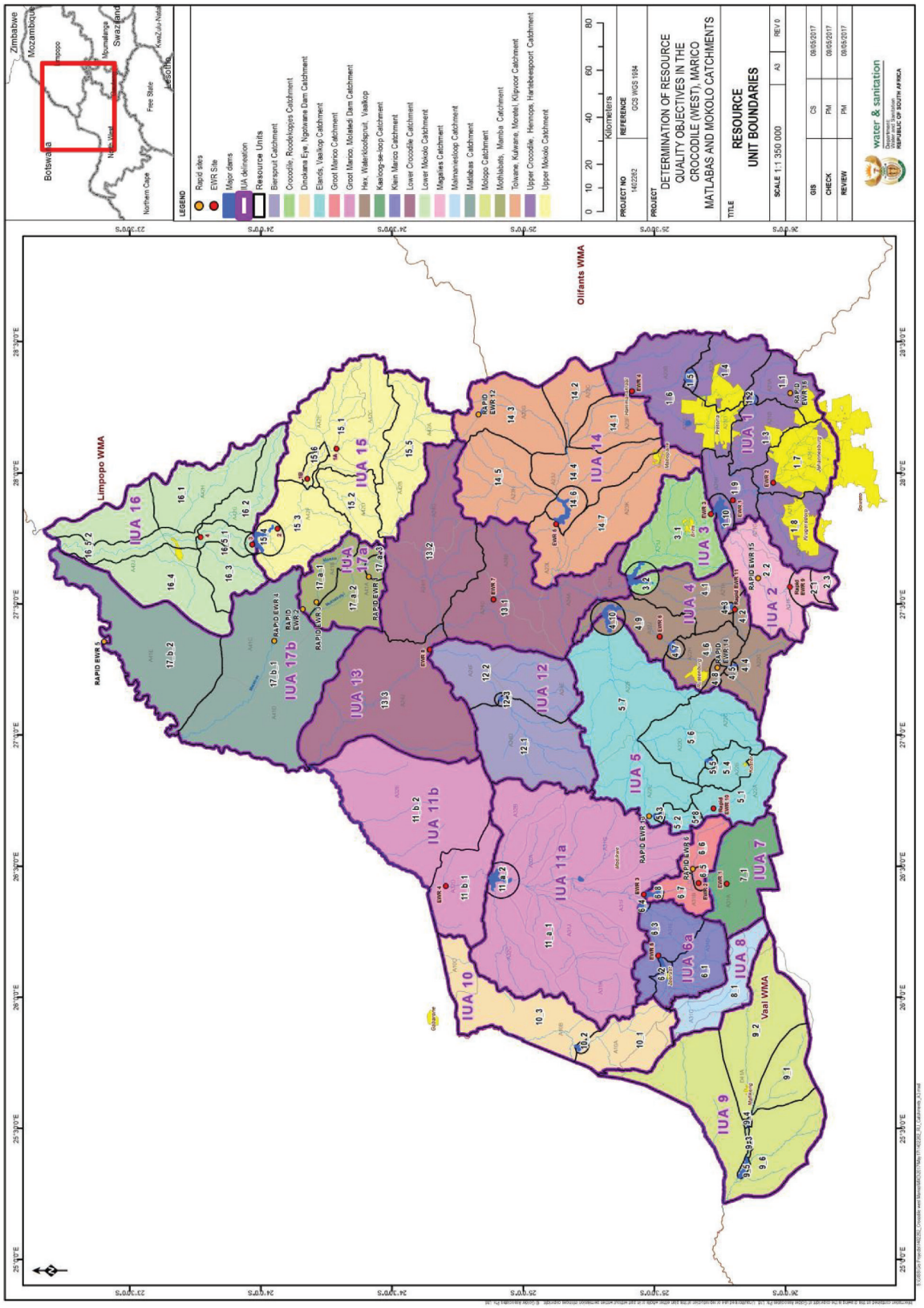
v. Lenaneo 22 go fitlha ka Lenaneo 32 le tlhagisa di-RQO tsa Kgaolo le tse di maleba mo RU e e rileng tsa METSI A A KA FA TLASE GA LEFATSHE mo di-RU tse e leng ditlapele.

vi. Di-RQO di tla dira go tloga ka letlha le di konoseditsweng ka lone jaaka go tlhomamisitswe malebana le Karolo 13(1) ya Molao wa Bosetšhaba wa Metsi, 1998, ntle le fa go tlhalositswe ka tsela e nngwe e sele ke Tona.




**Setshwantsho 1: Dithopa tsa Motswedi wa Metsi tsa madutiso a Crocodile (West), Marico, Mokolo le Matlabas**

5




**Setshwantsho 2: Dikarolo tsa Motswedi tsa madutiso a Crocodile (West), Marico, Mokolo le Matlabas**

6

**Lenaneo 1: Tshobokanyo ya Ditlhopa tsa Motswedi wa Metsi mo Karolong nngwe le nngwe e e Sobokantsweng ya Tshekatsheko le Ditlhopa tsa Ikholoji – madutiso a Crocodile (West), Marico, Mokolo le Matlabas**

| IUA | Setlhopa sa Metswedi ya metsi | Leina la Ntlhagare | Bodutiso jwa Kotanari | Karolo ya motswedi | Leina la Noka | Setlhopa sa Ikholoji se se tshwanetseng go somarelwa | Selekano sa magareng sa ngwaga le ngwaga sa metsi a a elelang ka bontsi mo bogodimong jwa lefatshe (milione $m^3/a$) | EWR jaaka % ya selekano sa magareng sa ngwaga le ngwaga sa metsi a tlhago a a a elelang mo bogodimong jwa lefatshe |
|---|---|---|---|---|---|---|---|---|
| 1 Karolo e e kwa godingwana ya Crocodile/ Hennops/ Hartbeespoort | III | CROC Rapid EWR_16 | A21A | 1_1 | Rietvlei (motswedi) | C | 4.788 | 27.83 |
| | | HN1 | A21A | 1_1 | Noka ya Hennops e e elelang go ya kwa ntlheng e sele ya Letamo la Rietvlei | C | 11.66 | 27.83 |
| | | HN2 | A21B | 1_3 | Sesmylspruit le dinokana tsa yone go kgatlhana le Hennops | D | - | - |
| | | HN3 | A21C | 1_7 | Modderfonteinspruit go kgatlhana le Jukskei | D | - | - |
| | | HN4 | A21C | 1_7 | Klein Jukskei mo makgatlhanong le Jukskei | D | - | - |
| | | EWR site CROC_ EWR2 | A21C | 1_7 | Noka ya Jukskei | D | 139.9 | 29.19 |
| | | HN6 | A21D | 1_8 | Bloubankspruit le dinokana (molomo wa kwatanari/makgatlhano le Crocodile) | D | - | - |
| | | HN8 | A21H | 1_9 | Swartspruit go ya Letamong la Hartbeespoort | D | - | - |
| | | EWR CROC_EWR1 | A21 H | 1_9 | Noka ya Crocodile go tswa mo makgatlhanong a Jukskei go elela mo teng ga Letamo la Hartbeespoort | D | 231.05 | 24.07 |
| | | HN11 | A23A | 1_4 | Karolo e e kwa godingwana ya Noka ya Pienaars, Dinoka tsa Edendalespruit le Moretele go ya kwa Letamong la Roodeplaat | D | - | - |
| | | EWR site CROC_EWR4 | A23B | 1_6 | Pienaars go tswa kwa Letamong la Roodeplaat go ya kwa molomong wa bodutiso jwa kotanari (molomo wa IUA1) | C | 28.2 | 30.81 |
| | | HN13 | A23B | 1_6 | Boekenhoutspruit go kgatlhana le Pienaars | C | - | - |
| | | HN14 | A23D | 1_6 | Skinnerspruit (motswedi) go kgatlhana le Apies | D | - | - |
| | | HN15 | A23D, E | 1_6 | Apies (motswedi) go ya kwa Letamong la Bon Accord, fa tlase ga letamo mo molomong wa IUA1 | D | - | - |
| 2 Magalies | II | CROC Rapid _EWR9 | A21F | 2_1 | Magalies fa tlase ga Maloney's Eye | B | 14.7 | 45.93 |
| | | CROC Rapid _EWR15 | A21G | 2_2 | Magalies, Klein Magalies, Bloubank | C/D | 21.9 | 21.18 |
| | | HN18 | A21G, F | 2_2 | Skeerpoort mo molomong wa IUA2 | C/D | - | - |
| 3 | III | HN19 | A21J | 3_1 | Rosespruit mo makgatlhanong le Crocodile | C/D | - | - |

| IUA | Setlhopa sa Metswedi ya metsi | Leina la Ntlhagare | Bodutiso jwa Kotanari | Karolo ya motswedi | Leina la Noka | Setlhopa sa Ikholoji se se tshwanetseng go somarelwa | Selekano sa magareng sa ngwaga le ngwaga sa metsi a a elelang ka bontsi mo bogodimong jwa lefatshe (milione $m^3/a$) | EWR jaaka % ya selekano sa magareng sa ngwaga le ngwaga sa metsi a tlhago a a a elelang mo bogodimong jwa lefatshe |
|---|---|---|---|---|---|---|---|---|
| Crocodile/ Roodekopjes | | EWR site CROC_EWR3 | A21J | 3_1 | Crocodile go tswa mo Letamong la Hartbeespoort go ya kwa noka e elelang go ya kwa teng mo Letamong la Roodekopjes | C/D | 143.3 | 25.02 |
| 4 Hex/ Waterkloof-spruit/ Vaalkop | II | CROC Rapid_EWR11 | A21K | 4_2 | Dikarolo tse di kwa godingwana tsa noka ya Sterkstroom (motswedi) go ya kwa metsing a a elelang go tsena mo teng ga Letamo la Buffelspoort | C | 13.95 | 28.21 |
| | | HN22 | A21K | 4_1 | Sterkstroom go tswa mo Letamong la Buffelskloof go ya kwa Letamong la Roodekopjes | C | - | - |
| | | HN23 | A22G | 4_4 | Karolo e e kwa godingwana ya Hex (motswedi) go ya kwa Letamong la Olifantsnek, Rooikloofspruit | C | - | - |
| | | CROC Rapid_EWR14 | A22H | 4_8 | Waterkloofspruit go kgatlhana le Hex | B/C | 5.469 | 28.27 |
| | | HN25 | A22H | 4_6 | Hex go tswa mo Letamong la Olifantsnek go ya kwa Letamong la Bospoort, Sandspruit | D | 12.11 | 15.26 |
| | | EWR site CROC_EWR6 | A22J | 4_9 | Hex go tswa mo Letamong la Bospoort go ya kwa elelang go tsena mo teng ga Letamo la Vaalkop | D | 26.9 | 14.96 |
| 5 Elands/ Vaalkop | II | CROC Rapid_EWR10 | A22A | 5_1 | Dikarolo tse di kwa godingwana tsa noka Elands (motswedi) go ya kwa Letamong la Swartruggens | B/C | 10.1 | 30.48 |
| | | HN29 | A22A | 5_2 | Elands go tswa kwa Letamong la Swartruggens go ya kwa Letamong la Lindleyspoort | C | 12.87 | 23.99 |
| | | HN30 | A22B | 5_4 | Karolo e e kwa godingwana ya Koster (motswedi) go ya kwa Letamong la Koster | C | 2.54 | 22.77 |
| | | HN31 | A22C, A22D | 5_6 | Noka ya Selons, Koedoespruit, Dwarsspruit, Noka e e ko tlasenyana ya Koster | C | - | - |
| | | CROC Rapid_EWR13 | A22E, A22F | 5_7 | Elands go tswa mo Letamong la Lindleyspoort go ya kwa Letamong la Vaalkop | C | 18.77 | 21.90 |
| 6b Groot Marico | II | MAR Rapid_EWR6 | A31B | 6_6 | Polkadraaispruit go kgatlhana le Marico | B | 9.87 | 49.27 |
| | | EWR Site MAR_EWR2 | A31B | 6_5 | Karolokgolo ya Noka ya Groot Marico a elelang go tswa mo nokeng go ya kwa makgatlhanong a Polkadraaispruit | B | 42.08 | 50.26 |
| | | HN63 | A31B | 6_7 | Groot Marico go tswa mo makgatlhanong a Polkadraaispruit go ya kwa Letamong la Marico Bosveld | B | 56.92 | 50.61 |
| 6a Klein Marico | II | HN64 | A31D | 6_1 | Malmaniesloop go kgatlhana le Klein Marico | C/D | - | - |
| | | HN35 | A31D | 6_1 | Klein Marico le dinokana tse di elelang go tswa mo molapong tsa Zeerust | C/D | - | - |

| IUA | Setlhopa sa Metswedi ya metsi | Leina la Ntlhagare | Bodutiso jwa Kotanari | Karolo ya motswedi | Leina la Noka | Setlhopa sa Ikholoji se se tshwanetseng go somarelwa | Selekano sa magareng sa ngwaga le ngwaga sa metsi a a elelang ka bontsi mo bogodimong jwa lefatshe (milione $m^3/a$) | EWR jaaka % ya selekano sa magareng sa ngwaga le ngwaga sa metsi a tlhago a a elelang mo bogodimong jwa lefatshe |
|---|---|---|---|---|---|---|---|---|
| | | HN65 | A31E | 6_1 | Klein Marico go tswa mo Letamong la Zeerust go ya kwa Letamong la Klein Maricopoort | C/D | 16.25 | 14.26 |
| | | EWR Site MAR_EWR5 | A31E | 6_3 | Klein Marico go tswa mo Letamong la Klein Maricopoort go ya kwa Letamong la Kromellemboog | C | 16.25 | 11.70 |
| 7 Kaaloog-se-Loop | I | EWR site MAR_EWR1 | A31A | 7_1 | Marico Eye, Kaaloog-se-Loop, Bokkraal-se-Loop, Ribbokfontein-se-Loop, Rietspruit (southern eye), Kuilsfontein, Syferfontein, Bronkhorstfontein | B | 10.539 | 76.32 |
| | | HN38 | A31A | 7_1 | Vanstraatenvlei le dinokana mo makgatlhanong le Kaaloog-se-Loop, molomo wa IUA7 | B | - | - |
| 8 Malmaniesloop | II* | - | A31C | 8_1 | Lefelo la metsi a dolomaete | B | - | - |
| 9 Molopo | II* | HN66 | D41A | 9_3 | Karolokgolo ya Noka ya Molopo fela go tswa mo Letamong la Modimola go ya kwa Letamong la Disaneng | D | - | - |
| | | HN67 | D41A | 9_2 | Dinokana tse di kwa godingwana ga Noka ya Molopo go elela go tsena mo letamong la Setumo (Modimola) (lefelo la metsi a dolomaete) | D | - | - |
| | | HN39 | D41A | 9_6 | Molopo mo molomong wa IUA9 | D | - | - |
| 10 Dinokana Eye/Letamo la Ngotwane | III* | HN68 | A10A | 10_1 | Ngotwane go tswa mo Letamong la Dinokana go ya kwa Letamong la Ngotwane | D | - | - |
| 11a Groot Marico/ Letamo la Molatedi | III | EWR Site MAR_EWR3 | A31F, A31G, A32A | 11a_1 | Marico Groot Marico go tswa mo go eleleng kwa ntle ga Letamo la Marico Bosveld go ya kwa Letamong la Molatedi, dinokana tsotlhe | C/D | 65.083 | 23.62 |
| 11b Groot Marico/ dinokana tsa nakwana (go ya ka setlha) | III | EWR Site MAR_EWR4 | A32D, E | 11b_1 | Marico go tswa mo Letamong la Molatedi go kgatlhana le Dinoka tsa Limpopo, Rasweu, Maselaje; molomo wa IUA11b | C | 153.25 | 7.96 |
| 12 Bierspruit | III | - | A24D | 12_1 | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe | C | | |
| | | HN42 | A24E, F | 12_2 | Bierspruit go kgatlhana le Noka ya Crocodile, Brakspruit, Phufane, Sefatlhane, Lesobeng, karolo e e kwa tlasenyana ya noka ya Bofule; molomo wa IUA12. | D | - | - |
| 13 | III | HN43 | A24G, A24H | 13_2 | Sand go kgatlhana le Crocodile | B | - | - |

| IUA | Setlhopa sa Metswedi ya metsi | Leina la Ntlhagare | Bodutiso jwa Kotanari | Karolo ya motswedi | Leina la Noka | Setlhopa sa Ikholoji se se tshwanetseng go somarelwa | Selekano sa magareng sa ngwaga le ngwaga sa metsi a a elelang ka bontsi mo bogodimong jwa lefatshe (milione $m^3/a$) | EWR jaaka % ya selekano sa magareng sa ngwaga le ngwaga sa metsi a tlhago a a a elelang mo bogodimong jwa lefatshe |
|---|---|---|---|---|---|---|---|---|
| Karolo e e kwa tlasenyana ya Noka ya Crocodile | | EWR Sites CROC_EWR7 | A21L, A24A-C, A24H | 13_1 | Noka ya Crocodile e elela go tswa mo Letamong la Roodekopjes go ya kwa ntlheng e sele mo makgatlhanong a Noka ya Sand, Sleepfonteinspruit, dinokana tsa Klipspruit | D | 463.4 | 13.9 |
| | | EWR Site CROC_EWR8 | A24J | 13_3 | Karolo e e kwa tlase ya Crocodile go tswa mo makgatlhanong a Bierspruit go kgatlhana le Limpopo, molomo wa IUA13 | D | 565.16 | 7.48 |
| 14 Tolwane/ Kulwane/ Moretele/ Klipvoor | III | CROC Rapid_EWR12 | A23G | 14_3 | Noka ya Plat | C/D | 4.864 | 23.08 |
| | | - | A23F | 14_1 | Noka ya Apies, nokana ya Tshwane | D | | |
| | | - | A23C | 14_2 | Noka ya Boekenshout go tswa mo makgatlhanong go ya kwa makgatlhanong a Noka ya Apies | C | | |
| | | | A23J | 14_4 | Noka ya Moretele (Pienaars) go tswa mo makgatlhanong a Noka ya Plat go ya kwa Letamong la Klipvoor, Kutswane go ya kwa Letamong la Klipvoor | C | | |
| | | EWR Site CROC_EWR5 | A23J A23J, A23L | 14_7 | Moretele (Pienaars) go kgatlhana le Crocodile, molomo wa IUA14 | D | 113.0 | 11.82 |
| | | HN49 | A23K | 14_7 | Tolwane go kgatlhana le Moretele | C/D | - | - |
| 15 Karolo e e kwa godingwana ya Mokolo | II | HN50 | A42A | 15_5 | Sand (motswedi) go kgatlhana le Grootspruit | C | - | - |
| | | HN51 | A42B | 15_5 | Grootspruit (motswedi) go kgatlhana le Sand | D | 27.8 | 21.73 |
| | | EWR Site MOK_EWR1a | A42C | 15_1 | Mokolo go kgatlhana le Dwars | C/D | 84.84 | 16.79 |
| | | EWR Site MOK_EWR1b | A42E | 15_6 | Mokolo go kgatlhana le Sterkstroom | B/C | 135.03 | 13.6 |
| | | HN54 | A42D | 15_2 | Sterkstroom (motswedi) go kgatlhana le Mokolo, | B | 43.45 | 52.63 |
| | | EWR Site MOK_EWR2 | A42F | 15_4 | Noka ya Mokolo mo A42F go elela go tsena mo Letamong la Mokolo, | B/C | 196.2 | 11.7 |
| | | EWR Site MOK_EWR3 | A42G | 15_4 | Letamo la Mokolo go ya kwa karolong e e kwa godingwana ya A42G (10km go elela kwa ntlheng ya kelelo ya letamo) | B/C | 213.99 | 8.65 |
| 16 Karolo e e kwa tlasenyana ya | II | - | A42H (karolwana e e mo botlhaba | 16_1 | Noka ya Tambotie | B | | |
| | | - | A42G | 16_2 | Poer-se-Loop | B | | |

| IUA | Setlhopa sa Metswedi ya metsi | Leina la Ntlhagare | Bodutiso jwa Kotanari | Karolo ya motswedi | Leina la Noka | Setlhopa sa Ikholoji se se tshwanetseng go somarelwa | Selekano sa magareng sa ngwaga le ngwaga sa metsi a a elelang ka bontsi mo bogodimong jwa lefatshe (milione $m^3/a$) | EWR jaaka % ya selekano sa magareng sa ngwaga le ngwaga sa metsi a tlhago a a elelang mo bogodimong jwa lefatshe |
|---|---|---|---|---|---|---|---|---|
| Mokolo | | - | A42J le karolo e e setseng ya A42H | 16_4 | Sandloop | C | | |
| | | EWR Site MOK_EWR4 | A42G | 16_5_1 | Karolokgolo ya Noka ya Mokolo - Mokolo tloga mo tlase ga EWR3 go ya kwa makgatlhanong a Tambotie | C | 253.3 | 12.3 |
| | | HN58 | A42H, A42J | 16_5_2 | Karolokgolo ya Noka ya Mokolo – go tswa mo makgatlhanong a Tambotie e go ya kwa Limpopo | C | - | - |
| 17a Motlhabatsi/ Mamba | I | HN59 | A41A | 17a_3 | Dinokana tse di kwa godingwana tsa molapo wa Motlhabatsi (Matlabas-Zyn-Kloof, mafatshe a a nang le dijalo tse di bodileng/humase) | A | 5.23 | 57.07 |
| | | MAT Rapid_EWR3 | A41B | 17a_1 | Mamba go kgatlhana le Motlhabatsi | B/C | 9.54 | 35.49 |
| | | MAT Rapid_EWR2 | A41B | 17a_2 | Makgatlhano a Matlabas/Motlhabatsi (molomo wa IUA) | B/C | 32.80 | 33.23 |
| 17b Matlabas | II | MAT Rapid_EWR4 | A41C | 17b_1 | Matlabas | B | 35.58 | 33.42 |
| | | HN62 | A41C, D | 17b_1 | Matlabas go kgatlhana le Limpopo, molomo wa IUA17b | B | - | - |

***Lefelo la metsi a a ka fa tlase ga lefatshe***

**Lenaneo 2: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 1: KAROLO E E KWA GODINGWANA YA CROCODILE/HENNOPS/HARTEBEESPOORT**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya le e e kwa tlase ka nako ya komelelo( $m^3/s$) |
| 1: KAROLWANA E E KWA GODINGWANA YA CROCODILE/HENNOPS/HARTEBEE SPOORT | III | Karolo e e kwa godingwana ya Noka ya Hennops le Noka ya Rietvlei (tse di elelang go tsena mo teng ga Letamo la Rietvlei) (A21A) | 1_1 | D | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Hennops mo A2H090 mo A21A<br>NMAR = $11.66 \times 10^6 m^3$<br>Setlhopa sa REC=C<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba | Kelelo e e bonya ya metsi ka nako ya komelelo - segolo bogolo e e tlhokegang morago ga go kgatlhana ga Dinoka tsa Rietvlei le Hennops<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Go tlhokomela Noka ya Hennops ka dipatlisiso | Diph | 0.041 | 0.007 |
| | | | | | | | | | Ngwan | 0.054 | 0.007 |
| | | | | | | | | | Sed | 0.056 | 0.010 |
| | | | | | | | | | Fer | 0.078 | 0.017 |
| | | | | | | | | | Tlhak | 0.100 | 0.015 |
| | | | | | | | | | Mop | 0.087 | 0.017 |
| | | | | | | | | | Mor | 0.072 | 0.014 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | metsi a kwa noka e elelang go ya teng. | tsa diphologolo le dijalo tsa lefelo le le rileng kwa A2H090) | Motsh | 0.065 | 0.013 |
| | | | | | | | | | Seet | 0.064 | 0.017 |
| | | | | | | | | | Phuk | 0.059 | 0.016 |
| | | | | | | | | | Phat | 0.054 | 0.013 |
| | | | | | | | | | Lwe | 0.048 | 0.007 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi.<br><br>Tiriso ya ditekanyetso tsa kokoano e tshwanetse go dirwa go tsamaisana le tekatekano ya selekano sa dikotla mo bodutisong. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.060 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naeterojene e e Tlhaolositsweng e e sa boleng (DIN) jaaka Naeterojene | Dimilegerama/dilitara tse ≤1.25 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa kgotsa go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Kgonagalo ya moela wa motlakase (EC) | MiliSiemens/metara tse ≤ 55 (mS/m) (Phesenthaele ya bo95) Hennops mo godimo ga makgatlhano Rietvlei | | |
| | | | | | | | | | MiliSiemens/metara ≤ 70 (mS/m) (Phesenthaele ya bo95) fa tlase ga makgatlhano | | |
| | | | | | | | | Salefeite ($SO_4$) | Dimilegerama/dilitara tse ≤ 80 (mg/l) Phesenthaele ya bo95) | | |
| | | | | | | | | Sodiamo (Na) | Dimilegerama/dilitara tse ≤ 70 (mg/l) (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | pH e tshwanetse go somarelwa ka seemo sa ga jaana. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. | | |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse 6-7 (mg/l) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | | |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho.<br><br>(Dibolayadisenyi di tshwanetse go tlhomamisiwa) | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.0725 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.105 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | | | | Oli le kirisi | 2.5 mg/l |
| | | | | | | | | Melemo e e tlhotlheleditsweng ke dihoromone | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Go tshwanetse ga fitlhelelwa boteng jo bo lekaneng jwa lobelo mo mefuteng e e boifang kelelo. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Setlhopa sa ikholoji sa tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong = C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Taolo ya diphologolo le dimela tsa seeng tse di senyang e tshwanetse go tsenngwa tirisong. Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa gore di nne mo setlhopheng sa C sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | Setlhopa sa ikholoji sa VEGRAI = C ≥ 62%<br>Fa losing lwa noka IHI = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go somarelwa se le mo setlhopheng sa ikholoji sa C. Lobelo lwa kelelo le golaganngwa le ditlhokego tsa nakwana tse di tlhokegang mo *BMAR, AURA* le *CPRE* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI).<br>Go tshwanetse ga elwa tlhoko go fetofetoga go ya ka ditlha. | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62% |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo maemong a a tokafaditsweng go se kaekae kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Setlhopa sa ikholoji sa MIRAI C ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 4.8 |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago le ditselana tse di salwang morago ke diphologolo, dinonyane kgotsa ditlhapi fa di fudugela kwa magaetlhagong a a farologaneng fa gare ga mariga le selemo tsa dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tlhomamisa mefuta ya kemedi ya dinonyane (mofuta le dipalo gore di dire jaaka dikao). Go na le tlhokego ya gore go dirwe ditekanyetso tsa dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | Letamo la Rietvlei (A21A) | 1_2 | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa | Selekano se se kwa tlase se se tlhokegang sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi. | | |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi kgotsa e e botoka. | Othofosofate | ≤ 0.025 mg/ℓ Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya Fosoforo | ≤ 0.130 mg/ℓ Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya Amonia jaaka N e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Total Amonia jaaka N | ≤ 0.0725 mg/L N Phesenthaele ya bo95 |
| | | | | | | | Kokoano ya palogotlhe ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi kgotsa e e botoka. | Naeteraete & Naetereite | ≤ 1.00 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo | Kgonagalo ya moela wa | ≤ 70 mS/m |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | motlakase | Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Salefeite | ≤ 80 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Sodiamo | ≤ 70 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* | ≤ makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng fa go balwa ≥0.4 m | Kgoberego | Phesenthaele e e kwa tlase ya bo95 |
| | | | | | | | Phetogo ya mo magareng | Thempereitša | Go sa fete 2 °C ya phetogo e e oketsegang mo palong e e kwa godimo le e e kwa tlase ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarela tsamaiso ya ikholoji. | Okosijene e e Tlhaologileng | ≥ 7.0 mg/L $O_2$<br>Phesenthaele ya bo95 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |
| | | | | | | | Metsi a noka ga a tshwanela go nna botlhole mo ditsheding tse dinnye tsa metsi kgotsa go nna | Dibolayadisenyi | Cyanide:≤ 110 µg/ℓ<br>Endosulfan:≤ 20 µg/ℓ<br>Atrazine:≤ 100 µg/ℓ<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | matshosetsi mo boitekanelong jwa batho. | | |
| | | | | | | | Metsi a a tshetsweng mo setshoding sengwe ga a tshwanela go nna matshosetsi mo tsweledisong ya matshelo a diphologolo kgotsa batho. | Melemo e e tlhotlheleditsweng ke dihoromone | 17ß-oestradiol: ≤ 1 µg/ℓ |
| | | Hennops go tswa mo kelelong ya kwa ntle mo Letamong la Rietvlei go ya kwa A21H Sesmylspruit, Kaalspruit le Olifantspruit (A21B) | 1_3 | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naeterojene e e Tlhaolositsweng e e sa boleng | Dimilegerama/dilitara tse ≤ 3.0 (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai Dipathojene | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Ditlamorago tse di mo lefatsheng le go tshololelwa ga metsimaswe go tshwanetse ga laolwa gore go sireletswe motswedi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 85 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 70 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* | makgetlho a le 130/dimililitara tse 100 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | selekano sa pH 7.5 (Phesenthaele ya bo5) - 9.2 (Phesenthaele ya bo95) |
| | | | | | | Dire tse di botlhole | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | molapong. | | |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.150 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.013 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0075 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. Go tshwanetse ga fitlhelelwa boteng jo bo lekaneng jwa lobelo mo mefuteng e e boifang kelelo (*AURA* le *CPRE)* mme go tlhokega mefutafuta e e farologaneng. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Setlhopa sa tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong ≥ D ≥ 42% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Go tlhokega taolo ya diphologolo le dimela tsa seeng tse di senyang. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya | Setlhopa sa ikholoji sa VEGRAI = D ≥ 42%<br>IHI ya mo losing lwa noka = D ≥ |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dimedi tsa mo dintshing tsa noka di tshwanetse go tokafadiwa gore di tswe mo setlhopheng sa E sa ikholoji go nna mo setlhopheng sa D. | dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | 42% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go tokafadiwa go tswa mo setlhopheng sa ga jaana sa ikholoji go ya kwa setlhopheng sa D. Lobelo lwa kelelo le golaganngwa le ditlhokego tsa nakwana tse di tlhokegang mo *BMAR* le *BMAT*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | FRAI e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji sa D.<br><br>FRAI ≥ 42% |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 55<br>ASPT ≥ 4.2 |
| | | Karolo e e kwa Godingwana ya Noka ya Pienaars, Dinoka tsa Edendalespruit le Moretele go ya kwa Roodeplaat (A23A) | 1_4 | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Taolo ya dikotla tse di tlhokegang go tokafatsa seemo sa boleng jwa metsi a a elelang go tsena mo nokeng. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naeterojene e e Tlhaolositsweng e e sa boleng (DIN) jaaka Naeterojene | Dimilegerama/dilitara tse ≤1.25 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa go tshegetsa ditlhokego tsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 65 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite ($SO_4$) | Dimilegerama/dilitara tse ≤ 50 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete (Cl) | Dimilegerama/dilitara tse ≤ 50 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | metsi tsa badirisi ba metsi. | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* | makgetlho a le 130/dimililitara tse 100 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho.<br><br>(Tlhaologileng) | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.0725 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.007 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0075 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Foloraete (F) | Dimilegerama/dilitara tse ≤ 2.54 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Benzene | Dimilegerama/dilitara tse ≤0.01 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Toluene | Dimilegerama/dilitara tse ≤0.7 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Melemo e e tlhotlheleditsweng ke dihoromone | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Go nna teng ga legaetlhago la ditlhapi le ditshedi tse di kgolo mme di se na mokwatla go tshwanetse ga somarelwa, go tsweledisa mefutafuta ya karolo ya ditshedi tse di rileng. Go tlhokega dimedi tse di tlhogang mo losing lwa metsi go tshegetsa *BANO*. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Setlhopa sa ikholoji sa tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong = D ≥ 42% (A2HART-KAMEE le A2PIEN-BAVIA) |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Go tlhokega taolo ya diphologolo le dimela tsa seeng tse di senyang. Dimedi tsa mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa E go ya go setlhopa sa ikholoji sa D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | Setlhopa sa ikholoji sa VEGRAI = D ≥ 42%<br>IHI ya losi lwa noka = D ≥ 42% (A2HART-KAMEE le A2PIEN-BAVIA) |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Malele | Kgobokano ya bolele e tshwanetse go somarelwa mo maemong a a fetotsweng thata kgotsa a a tokafaditsweng. | Tshupane e e Totobetseng ya Kgotlelego | Setlhopa sa malele sa ikholoji = D ≥ 42%<br>(mo ditsheng tsa REMP ka bobedi A2HART-KAMEE le A2PIEN-BAVIA) |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Setlhopa sa ikholoji sa MIRAI = D ≥ 42%<br>REMP Site kwa A2PIEN-BAVIA:<br>SASS ≥ 60<br>ASPT ≥ 3.8<br><br>REMP Site A2HART-KAMEE:<br>SASS ≥ 60<br>ASPT ≥ 3.8 |
| | | Letamo la Roodeplaat | 1_5 | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa le Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi.<br>Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | | |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka seemo se se nang le dikotla tse dintsi.<br><br>Kgolo ya hayiesenthe (hyacinth) e tshwanetse go laolwa. Go tlhokega togamaano ya taolo go samagana le mokoa wa disedimente. | Othofosofate | ≤ 0.025 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya Fosoforo | ≤ 0.130 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo | Naeteraete & Naetereite | ≤ 1.00 mg/ℓ N<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | | |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Salefeite | ≤ 80 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Sodiamo | ≤ 70 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Diphathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* | ≤ makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng ka palo ≥0.4 m | Kgoberego | Phesenthaele e e kwa tlase ya bo95 |
| | | | | | | | Phetogo ya mo magareng | Thempereitša | Go sa fete 2 °C ya phetogo e e oketsegang mo palong e e kwa godimo le e e kwa tlase ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarela diphologolo tsotlhe le dijalo tsa lefelo le le rileng. | Okosijene e e Tlhaologileng | ≥ 7.0 mg/L $O_2$<br>Phesenthaele ya bo95 |
| | | | | | | Dire tse di nang le | Letamo le tshwanetse go | Baketeria ya fotosintese | Phekeetso ya baketeria ya |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | botlhole | laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | | fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. | | |
| | | | | | | | Metsi a a a tshetsweng le go bewa mo setshoding ga a tshwanela go nna matshosetsi mo tsweledisong ya ditshedi le batho. | Melemo e e tlhotlhelediwang ke dihoromone | 17ß-oestradiol:<br>≤ 1 µg/ℓ | | |
| | | Dikarolo tse di kwa godingwana tsa noka _ Apies, Skinner-spruit le Noka ya Pienaars di elela go tswa mo Letamong la Roodeplaat (A23B, A23D, A23E) | 1_6 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo: Noka ya Pienaars mo CROC_EWR4 mo A23B<br>NMAR = 28.20x10$^6$ m$^3$<br>Setlhopa sa REC=C<br>Kelelo e e kwa tlase le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa gore go fitlhelelwe ditlhokego tsa metsi tse di tswelang mosola badiri ba mo tikologong e le go tshegetsa maemo a a itekanetseng a diphologolo tsotlhe le di. | Kelelo e e bonya ya metsi ka nako ya komelelo<br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Setsha sa magareng sa bo4 sa EWR mo Nokeng ya Pienaars (tlhokomelo mo A2H006) | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo(m$^3$/s) |
| | | | | | | | | | Diph | 0.104 | 0.063 |
| | | | | | | | | | Ngwan | 0.136 | 0.081 |
| | | | | | | | | | Sed | 0.146 | 0.086 |
| | | | | | | | | | Fer | 0.211 | 0.122 |
| | | | | | | | | | Tlhak | 0.242 | 0.140 |
| | | | | | | | | | Mop | 0.208 | 0.119 |
| | | | | | | | | | Mor | 0.174 | 0.102 |
| | | | | | | | | | Motsh | 0.144 | 0.085 |
| | | | | | | | | | Seet | 0.133 | 0.080 |
| | | | | | | | | | Phuk | 0.120 | 0.072 |
| | | | | | | | | | Phat | 0.111 | 0.067 |
| | | | | | | | | | Lwe | 0.103 | 0.063 |
| | | | | | | | | | Diph | 0.104 | 0.063 |
| | | | | | | | | | Ngwan | 0.136 | 0.081 |
| | | | | | | Kelelo e e kwa godimo ya metsi | Kelelo e e kwa godimo ya metsi ya EWR:<br>Noka ya Pienaars mo CROC_EWR4 mo A23B<br>NMAR = 28.20x10$^6$ m$^3$<br>Setlhopa sa REC=C<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa godimo ya metsi gore ditlhokego tsa kelelo ya metsi a boleng a a tlhokegang go tswela mosola diphologolo tsotlhe le dijalo le batho ba mo | Merwalela<br><br>(Leba Mametlelelo A dintlha ka ga ditlhokego tsa morwalela)<br><br>Setsha sa magareng sa bo4 sa EWR mo Nokeng ya Pienaars (tlhokomelo mo A2H006) | | Kelelo e e kwa godimo ya metsi (m$^3$/s) | |
| | | | | | | | | | Diph | 0 | |
| | | | | | | | | | Ngwan | 0.210 | |
| | | | | | | | | | Sed | 0.339 | |
| | | | | | | | | | Fer | 0.203 | |
| | | | | | | | | | Tlhak | 0.56 | |
| | | | | | | | | | Mop | 0.203 | |
| | | | | | | | | | Mor | 0 | |
| | | | | | | | | | Motsh | 0 | |
| | | | | | | | | | Seeteb | 0 | |
| | | | | | | | | | Phuk | 0 | |
| | | | | | | | | | Phat | 0 | |
| | | | | | | | | | Lwe | 0 | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tikologong e e rileng e fitlhelelwe go tshegetsa maemo a a itekanetseng a diphologolo tsotlhe le dijalo tsa lefelo le le rileng | | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Dikokoano ga di a tshwanela go letlelelwa gore di etegele go ya pele. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.5 (mg/l) (Phesenthaele ya bo50) Apies |
| | | | | | | | | | Dimilegerama/dilitara tse ≤ 0.09 (mg/l) (Phesenthaele ya bo50) Pienaars |
| | | | | | | | | | Dimilegerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo50) Skinnerspruit |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 3.0 (Phesenthaele ya bo50) Skinnerspruit le Apies |
| | | | | | | | | | Dimilegerama/dilitara tse ≤ 1.0 (mg/l) (Phesenthaele ya bo50) Pienaars |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo teng bo tshwanetse go somarelwa bo le mo dilekanong tse di amogelesegang go tshegetsa diphologolo tsotlhe le dijalo tse di itekanetseng tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 55 (mS/m) (95th percentile) Noka ya Pienaars |
| | | | | | | | | | DimiliSiemens/metara tse ≤ 70 (mS/m) (95th percentile) Noka ya Apies |
| | | | | | | | | Salefeite ($SO_4$) | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo (Na) | Dimilegerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | Makgetlho a le 130/dimililitara tse 100 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Go nna teng ga legaetlhago la ditlhapi le Go nna teng ga legaetlhago la ditlhapi le ditshedi tse di kgolo mme di se na mokwatla go tshwanetse ga somarelwa, go tsweledisa mefutafuta ya magaetlhago a a amanngwang le ditshedi tse di rileng, segolo bogolo go somarela dimedi tse di golang fa losing lwa metsi go tshegetsa mefutafuta ya ditlhapi tsa *MBRE* le *BANO.* | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Setlhopa sa ikholoji sa tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Go tlhokega taolo ya diphologolo le dimela tsa seeng tse di senyang. Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa gore di nne mo setlhopheng sa C sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi (VEGRAI) | Setlhopa sa ikholoji sa VEGRAI = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhapi tsa lefelo le le rileng di tshwanetse go tokafadiwa gore di tswe mo setlhopheng sa ga jaana sa E sa ikholoji mme di nne mo setlhopheng sa D. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D FRAI ≥ 42% (Dinoka tsa Apies/Skinnerspruit) |
| | | | | | | | Go tshwanetse ga dirwa tlhatlhobo ya ditlhapi tsa lefelo le le rileng ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa C sa ikholoji sa seemo sa ga jaana. Go somarela | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C FRAI ≥ 62% (Noka ya Pienaars mo REMP site A2PIEN-DINOK (d/s EWR 4) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mefutafuta e e leng teng. Kelelo e tshwanetse go somarelwa go amogela mefuta ya *LCYL, LMOL* le *BMAR* | | | | |
| | | | | | | Ditshedi tsa mets tse dikgolo mme d se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.4<br>(Apies le Skinner mo setsheng sa REMP A2APIE-BOSCH (A23D & A23E) | | |
| | | | | | | | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.0<br>(REMP site A2PIEN-DINOK (d/s EWR 4) | | |
| | | | | | | Malele | Pienaars e e elelang go ya kwa ntlheng e sele ya Letamo la Roodeplaat go ya kwa makgatlhanong a Boekenhoutspruit (A23B): Kgobokano ya bolele e tshwanetse go somarelwa mo maemong a a fetotsweng thata kgotsa a a tokafaditsweng. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42% | | |
| | | Jukskei, Klein Jukskei, Modderfonteinspruit (A21C) | 1_7 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Jukskei mo CROC_EWR2 mo A21C<br>PMAR = $139.9 \times 10^6 m^3$<br>Setlhopa sa REC=D<br><br>Go tshwanetse ga fitlhelelwa ditlhokego tsa metsi a a tswelang mosola diphologolo, dimedi le batho (Resefe) gore ditlhokego tsa kelelo e e tswelelang mosola badirisi ba metsi ba mo tikologong e e rileng di fitlhelelwe go tshegetsa | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Setsha sa magareng sa bo2 sa EWR mo Nokeng ya Jukskei (tlhokomelo mo A2H023/ A2H044) | ——— | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | Diph | 0.725 | 0.725 |
| | | | | | | | | | Ngwan | 0.775 | 0.775 |
| | | | | | | | | | Sed | 0.770 | 0.770 |
| | | | | | | | | | Fer | 0.814 | 0.814 |
| | | | | | | | | | Tlhak | 0.936 | 0.936 |
| | | | | | | | | | Mop | 0.845 | 0.845 |
| | | | | | | | | | Mor | 0.839 | 0.839 |
| | | | | | | | | | Motsh | 0.795 | 0.795 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | maemo a a itekanetseng a diphologolo tsotlhe le dijalo tsa lefelo le le rileng le badirisi. | | Seet | 0.815 | 0.815 |
| | | | | | | | | | Phuk | 0.785 | 0.785 |
| | | | | | | | | | Phat | 0.774 | 0.774 |
| | | | | | | | | | Lwe | 0.762 | 0.762 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Go tlhokega taolo ya dikotla go tokafatsa seemo sa ga jaana le go netefatsa tswelelo ya tsamaiso. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.5 (mg/l) (Phesenthaele ya bo50) (tekanyetso ya nakwana ya dipalo) Dimilegerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) (tekanyetso ya paka e telele ya dipalo) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa go tshegetsa ditlhokego tsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 65 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite ($SO_4$) | Dimilegerama/dilitara tse ≤ 70 (mg/l) (Phesenthaele ya bo95) | | |
| | | | | | | | | Sodiamo (Na) | Dimilegerama/dilitara tse ≤ 70 (mg/l) (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 60 (mg/l) (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. | | |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | | |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤0.013 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤0.0075 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa gore e tswe mo setlhopheng sa E sa ikholoji mme e tsene mo setlhopheng sa D. Bokgoni jwa diphologolo tsotlhe le dijalo jwa go tshegetsa le go tsweletsa ditirego tsa ikholoji le mefutafuta ya ditshedi e tshwanetse go tokafala. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji kgotsa mo maemong a a | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | botoka. Go tlhokega taolo ya diphologolo le dimela tsa seeng tse di senyang. | | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go tokafadiwa go tswa mo setlhopheng sa ga jaana sa ikholoji sa E go ya go setlhopa sa ikholoji sa D. Go netefatsa go nna teng ga mefuta ya *BMAR* le *BMOT* (mefuta e e ikaegileng ka kelelo). Boteng jwa kelelo bo tshwanetse go nna teng go tshegetsa ga legaetlhago la *TSPA, CGAR, BANO, BMAR* le *BMOT* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42% |
| | | | | | | Ditshedi tsa metsi ts dikgolo mme di se r mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Setlhopa sa ikholoji sa MIRAI = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(EWR2, A2JUKS-DIENR) |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 42%<br>A2JUKS-DIENR |
| | | Dikarolo tse di kwa godingwana tsa Noka ya Crocodile le Bloubank spruit (A21D, A21E) | 1_8 | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore setlhopa se se laoletsweng sa ikholoji se a fitlhelelwa. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa e le jwa boleng jwa seemo sa ga jaana. Laola ditlamorago le dikago tsa mo isagong. | Kgonagalo ya moela wa motlakase (EC) | Crocodile e elela go ya kwa makgatlhanong a Bloubankspruit: DimiliSiemens/metara tse ≤ 45 (mS/m)<br>(Phesenthaele ya bo95) |
| | | | | | | | Dilekano tsa boletswai di kwa godimo thata. | | Bloubankspruit:<br>DimiliSiemens/metara tse ≤ 85 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go tokafadiwa go somarela ditshedi tsotlhe le dimela tsa metsi di le mo seemong se se ka tswelediwang le go tshegetsa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi | | (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite ($SO_4$) | Crocodile e elela go ya kwa ntlheng ya makgatlhano a Bloubankspruit Dimilegerama/dilitara tse ≤ 40 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | | Bloubankspruit: Dimilegerama/dilitara tse ≤ 200 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho. | Cyanide | Dimilegerama/dilitara tse ≤ 0.110 (Phesenthaele ya bo95) |
| | | | | | | | | Yuraniamo (U) (238) | Dimilegerama/dilitara tse ≤ 0.03 (Phesenthaele ya bo95 |
| | | | | | | | | Arsenic (As) | Dimilegerama/dilitara tse ≤ 0.130 (Phesenthaele ya bo95 |
| | | | | | | | | Gross α | 0.42 Bq/dilitara |
| | | | | | | | | Gross β | 0.42 Bq/dilitara |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0075 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Zinki (Zn) | Dimilegerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Go tshwanetse ga tokafadiwa mefutafuta ya legaetlhago go somarela setlhopa D sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing di tshwanetse go somarelwa di le setlhopheng sa ikholoji sa D. Go tshwanetse ga tokafadiwa dimedi tse di tlhogang mo losing lwa metsi. Go tlhokega taolo ya dijalo tsa seeng tse di senyang le tsosoloso ya lefelo le le mo losing lwa metsi. Go na le legaetlhago le le lekanyeditsweng. Tsosoloso ya lefelo le le dirang molelwane wa metsi le lefatshe e a tlhokega go tshegetsa mefuta e e nnang mo metsing le mo lefatsheng (dinonyane). | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi (VEGRAI) | VEGRAI EC = D ≥ 42% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhapi tsa lefelo le le rileng di tshwanetse go laolwa gore di nne mo setlhopheng D se se laoletsweng sa ikholoji kgotsa di tshwanetse go tokafadiwa. Ditlhokego tsa legaetlhago tsa *BMOT* (dimedi) le kerabole e e khurumeditseng botlase jwa noka le kelelo ya *CPRE* di tshwanetse go fitlhelelwa | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa Ikholoji = D<br>FRAI ≥ 42% |
| | | | | | | Ditshedi tsa mets tse dikgolo mme d se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta | Setlhopa sa Ikholoji sa MIRAI = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0<br>(A2CROC-ELAND) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 5 (SASS5). | |
| | | Noka ya Crocodile go tswa mo makgatlhanong a Jukskei go ya kwa Letamong la Hartbeespoort (A21H) | 1_9 | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Go tlhokega taolo ya dikotla go tokafatsa seemo sa ga jaana le go netefatsa tswelelo ya tsamaiso. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.20 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 2.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa go tshegetsa ditlhokego tsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 75 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 60 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 60 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 75 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse | Cyanide | Dimilegerama/dilitara tse ≤ 0.110 (Phesenthaele ya bo95) |
| | | | | | | | | Yuraniamo (U) (238) | Dimilegerama/dilitara tse ≤ 0.03 (Phesenthaele ya bo95) |
| | | | | | | | | Gross α | 0.42 Bq/dilitara |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho. | Gross β | 0.42 Bq/dilitara |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.013 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0075 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimilegerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimilegerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Ga go a tshwanela go nna le tshenyo go ya pele ya legaetlhago la mo teng ga molapo e e tshwanetseng go direga. Go tshwanetse ga tokafadiwa mefutafuta ya magaetlhago go tswa mo setlhopheng sa ikholoji sa E go ya go setlhopa sa D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Popego ya Lefatshe | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Go somarela, go tsosolosa le go simolodisa losi la maitirelo le dintshi tsa noka. Go tlhokega taolo ya diphologolo le dimela tsa seeng tse di senyang. Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa gore di nne mo setlhopheng sa D sa ikholoji kgotsa di tshwanetse go tokafadiwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = D ≥ 42% |
| | | | | | Diphologolo, | Ditlhapi | Setlhopa sa ditlhapi tsa | Tshupane ya Tlhatlhobo | Setlhopa sa ikholoji sa ditlhapi = D |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | dimela le ditshedi tsa lefelo le le rileng | | lefelo le le rileng se tshwanetse go somarelwa se le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa. Tokafatso ya legaetlhago le boleng jwa metsi e a tlhokega mo *CFLA* mme kelelo e tshwanetse go nna e e lekaneng go direla mefuta e e ikaegileng ka kelelo go tshela *BMAR, BPOL, CPRE* | ya Tsibogo ya Ditlhapi (FRAI) | FRAI ≥ 42% |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo maemong a a fetotsweng thata kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dipholologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(mo EWR1 = A2CROC-HARTB) |
| | | | | | | Dipholologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago le ditselana tse di salwang morago ke dipholologolo, dinonyane kgotsa ditlhapi fa di fudugela kwa magaetlhagong a a farologaneng fa gare ga mariga le selemo tsa dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa dipholologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Malele | Kgobokano ya bolele e tshwanetse go somarelwa mo maemong a a fetotsweng thata kgotsa a a tokafaditsweng. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42%<br>(mo EWR1 = A2CROC-HARTB) |
| | | Letamo la Hartbeespoort | 1_10 | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa go sireletsa Letamo le tshwanetse go laolwa go sireletsa tiro ya dipholologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa dipholologolo tsotlhe le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi.<br>Kgololo ya metsi a letamo e tlhoka go fitlhelela ditlhokego tsa kelelo ya kwa metsi a yang teng go direla mabaka a kelelo ya metsi go tswela mosola diphologolo le dijalo<br>Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | | |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka seemo se se nang le dikotla tse dintsi. | Othofosofate | ≤ 0.050 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya Fosoforo | ≤ 0.130 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya Amonia jaaka N e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go | Palogotlhe ya Amonia | ≤ 00725 mg/L N<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | | |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Naeteraete & Naetereite | ≤ 1.00 mg/L N Phesenthaele ya bo95 |
| | | | | | | Boleng jwa go itumelela bontle | Boleng jwa go itumelela bontle jwa letamo bo tshwanetse go laolwa go tshegetsa tiriso ya boitapoloso le bojanala | Matlakala, masalela, malele, mefero ya mo metsing | Bo tshwanetse go tlhomamisiwa |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 85 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Salefeite | ≤ 100 mg/L<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Tleloraete | ≤ 50 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka | Metsi a tshwanetse go nna | pH | 6.5 – 9.0 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | kgonang go fetoga | a maemo a a amogelesegang go ka dirisetswa boitapoloso. | | Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | | | | | | Phetogo ya mo magareng | Thempereitša | Go sa fete 2 °C ya phetogo e e oketsegang mo palong e e kwa tlase e e kwa godimo ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarelwa mo diphologolong tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e Tlhaologileng | ≥ 7.0 mg/L $O_2$<br>Phesenthaele ya bo95 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |
| | | | | | | | Metsi a a tshetsweng le go bewa mo ditshoding ga a tshwanela go nna botlhole mo ditsheding tse dinnye tsa metsi kgotsa go nna matshosetsi mo boitekanelong jwa batho. | Dibolayadisenyi | Cyanide: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Metsi a a tshetsweng le go bewa mo setshoding sengwe ga a tshwanela go nna matshosetsi mo tsweledisong ya matshelo a diphologolo kgotsa batho. | Melemo e e tlhotlhelediwang ke dihoromone | 17ß-oestradiol:<br>≤ 1 µg/ℓ |
| | | | | | | Periphyton/ Phytoplankton | Dikokoano tsa Chl *a* di tshwanetse go somarelwa di le mo seemong se go nang le selekano se se humileng ka dikotla kgotsa di tshwanetse go tokafadiwa. | Chl a | 20-30µg/ℓ<br>Phesenthaele ya bo50 |

**Lenaneo 3: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 2: MAGALIES**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2: MAGALIES | II | Maloneys Eye (A21F) | 2_1 | C | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo: Noka ya Magalies mo CROC_EWR9 mo A21F<br>NMAR = 14.68x10$^{6}$ m$^{3}$<br>Setlhopa sa REC=B<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>(Rapid EWR site 9 mo Nokeng ya Magalies Tlhokomelo mo A2H010) | | Kelelo e e kwa tlase ya metsi (m$^{3}$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo(m$^{3}$/s) |
| | | | | | | | | | Diph | 0.211 | 0.211 |
| | | | | | | | | | Ngwan | 0.216 | 0.216 |
| | | | | | | | | | Sed | 0.211 | 0.211 |
| | | | | | | | | | Fer | 0.212 | 0.212 |
| | | | | | | | | | Tlhak | 0.224 | 0.224 |
| | | | | | | | | | Mop | 0.206 | 0.206 |
| | | | | | | | | | Mor | 0.212 | 0.212 |
| | | | | | | | | | Motsh | 0.208 | 0.208 |
| | | | | | | | | | Seet | 0.214 | 0.214 |
| | | | | | | | | | Phuk | 0.210 | 0.210 |
| | | | | | | | | | Phat | 0.211 | 0.211 |
| | | | | | | | | | Lwe | 0.217 | 0.217 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.020 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Kokoano ya boletswai jo bo elelelang go tsena mo teng e tshwanetse go somarelwa e le mo seemong sa ga jaana go netefatsa tshireletsego ya diphologolo tsotlhe le dimela tsa tlhago kgotsa motswedi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 30 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Go tshwanetse ga somarelwa tshwanelego ya mefutafuta ya magaetlhago e le mo setlhopheng se se laoletsweng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% (Rapid EWR 9) |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng se se laoletsweng sa ikholoji sa B. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | VEGRAI EC = B ≥ 82% (Rapid EWR 9) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa lefelo le le rileng di tshwanetse go laolwa gore di nne mo setlhopheng se se laoletsweng sa ikholoji sa B Go netefatsa go nna teng ga mefuta ya *Yellow fish (BPOL), AURA, CPRE, BMOT* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B<br>FRAI ≥ 82%<br>Kgobokanya bonnye mefuta e le 10 mo maitekong a kgobokanyo ya sampole ya metsotso e le 20<br>mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 bonnye 50+ CPRE le 5 BMOT<br>(Rapid EWR site 9 = REMP site A2MAGA-MALON) |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo maemong a tlhago kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Tsamaiso ya Kabo ya Maduo ya Aforikaborwa, Mofuta 5 (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>(Rapid EWR site 9 = REMP site A2MAGA-MALON) |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go tlhomamisa mefuta ya kemedi ya dinonyane (mofuta le dipalo gore di dire jaaka dikao). Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | Dinoka tsa Magalies, Klein Magalies, Bloubank, Skeerpoort (A21F) | 2_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo: Noka ya Magalies mo CROC_EWR15 mo A21F<br>NMAR = $21.899 \times 10^6 m^3$<br>Setlhopa sa REC=C/D<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>(Setsha sa Karolo ya nako e metsi a elelang ka bonako mo go yone CROC_EWR 15 mo Nokeng ya Magalies<br><br>Tlhokomelo ya tshololo ka nako ya dipatlisiso tsa baeolojikhale | |

| | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
|---|---|---|
| Diph | 0.042 | 0.015 |
| Ngwan | 0.044 | 0.016 |
| Sed | 0.052 | 0.019 |
| Fer | 0.100 | 0.035 |
| Tlhak | 0.163 | 0.031 |
| Mop | 0.151 | 0.045 |
| Mor | 0.111 | 0.039 |
| Motsh | 0.080 | 0.028 |
| Seet | 0.066 | 0.023 |
| Phuk | 0.057 | 0.020 |
| Phat | 0.051 | 0.018 |
| Lwe | 0.045 | 0.016 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa setlhopa se se laoletsweng sa ikholoji le gore go fitlhelelwa setlhopa se se laoletseng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.090 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa bo le mo seemong sa ga jaana go netefatsa tshireletso ya motswedi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 40 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 15 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 15 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go fitlhelelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.072 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.006 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C/D sa ikholoji. Dimedi tse di tlhogang mo losing lwa metsi tse di siameng le selekano se se kwa tlase sa mmukgogodi mo dikarolong tse di tletseng maje tsa molapo di tshwanetse go somarelwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C/D sa ikholoji. Go tshwanetse ga dirwa taolo ya diphologolo le dijalo tsa seeng tse di senyang mme tshireletso ya karolo e e dirang molelwane wa noka le lefatshe e tshwanetse go tokafala. Go tshwanetse ga laolwa tsenelelo. Mefuta ya dijalo tsa seeng tse di senyang e tshwanetse go laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhapi tsa lefelo le le rileng di tshwanetse go somarelwa di le mo setlhopheng se se laoletsweng sa C/D sa ikholoji. Netefatsa go nna teng ga mefuta ya sekai. Kelelo e tshwanetse go somarelwa go direla mefuta. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = C/D FRAI ≥ 58%<br>Kgobokanya bonnye 8 spp. mo maitekong a kgobokanyo ya sampole ya metsotso e le 20. Mefuta ya sekao *Yellow fish (BPOL), AURA, CPRE , BMOT*<br><br>(Karolo e e kwa tlasenyana ya Skeerpoort setsha A2SKEE-R560B – se se ntšhwa se se tshitshinngwang; Karolo ya noka moo metsi a a elelang ka bonako ya Magalies EWR 15 – karolo ya noka A21F-01168) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditshedi tsa metsi ts dikgolo mme se na mokwatl | Karolo e e kwa godingwana ya Skeerpoort (A2SKEE-UITKO):<br>Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo maemong a tlhago kgotsa e tshwanetse go tokafadiwa (setlhopa B sa ikholoji).<br>Karolo e e kwa tlasenyana ya noka ya Skeerpoort (A2SKEE-R560B): le Noka ya Magalies (CROC_ EWR 15):<br>Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo teng ga maemo a fetotsweng mo go seng kaekae kgotsa e tshwanetse go tokafadiwa (setlhopa C sa ikholoji). | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa, Mofuta 5 (SASS5). | Karolo e e kwa godingwana ya setsha sa Skeerpoort: A2SKEE-UITKO;<br>MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>Karolo e e kwa tlasenyana ya Noka ya Skeerpoort A2SKEE-R560B setsha se se ntšhwa se se tshitshintsweng le Noka ya Karolo e metsi a elelang ka bonako ya Noka ya Magalies EWR 15 – karolo ya noka A21F-01168;<br><br>MIRAI EC = C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a a fetotsweng mo magareng kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = C ≥ 62% |
| | | Bodutiso jwa Rietspruit<br><br>Karolwana le e mo Borwa botlhaba jwa A21F | 2_3 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Leba di-RQO tsa metsi a a ka fa tlase ga lefatshe | Kelelo e e bonya ya metsi ka nako ya komelelo | Tsamaiso e e tlhotlhelediwang ke metsi a a ka fa tlase ga lefatshe (didolomaete) karolo ya Steenkoppies ya go tlosa. Tshupane ya kgatelelo ga e a tshwanela go nna <65% |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.010 (mg/l) (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya Karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi. | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.05 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa bo le mo seemong sa ga jaana go netefatsa tshireletso ya motswedi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 20 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |

**Lenaneo 4: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 3: CROCODILE / ROODEKOPJES**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3: CROCODILE/ROODEKOPJES | III | Noka ya Crocodile go tswa mo kelelong ya kwa ntle ya Letamo la Hartebeespoort go ya kwa metsing a a elelang go tsena mo Letamong la Roodekopjes, Rosespruit, Ramogatla le Kareespruit (A21J) | 3_1 | C/D | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Crocodile mo CROC_EWR3 mo A21J<br>NMAR = 143.3x10$^6$m$^3$<br>Setlhopa sa REC=C/D<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>(Setsha sa magareng sa EWR mo Noka ya Crocodile Tlhokomelo mo A2H083) | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo(m$^3$/s) |
| | | | | | | | | | Diph | 1.425 | 1.446 |
| | | | | | | | | | Ngwan | 1.591 | 1.607 |
| | | | | | | | | | Sed | 1.690 | 1.703 |
| | | | | | | | | | Fer | 1.993 | 1.995 |
| | | | | | | | | | Tlhak | 2.276 | 2.267 |
| | | | | | | | | | Mop | 2.290 | 2.279 |
| | | | | | | | | | Mor | 2.022 | 2.024 |
| | | | | | | | | | Motsh | 1.870 | 1.878 |
| | | | | | | | | | Seet | 1.765 | 1.776 |
| | | | | | | | | | Phuk | 1.679 | 1.690 |
| | | | | | | | | | Phat | 1.564 | 1.580 |
| | | | | | | | | | Lwe | 1.441 | 1.462 |
| | | | | | | Kelelo e e kwa godimo ya metsi | Kelelo e e kwa godimo ya metsi ya EWR:<br>Noka ya Crocodile mo CROC_EWR3 mo A21J<br>NMAR = 143.3x10$^6$m$^3$<br>Setlhopa sa REC=C/D | Merwalela<br>Kelelo e e kwa godimo ya metsi e e tlhalositsweng gape jaaka ditlhokego ka nosi tsa morwalela malebana le bogolo le boleele jwa paka (leba Mametlelelo A) | | Kelelo e e kwa godimo ya metsi (m$^3$/s) | |
| | | | | | | | | | Diph | 0 | |
| | | | | | | | | | Ngwan | 1.717 | |
| | | | | | | | | | Sed | 2.942 | |
| | | | | | | | | | Fer | 0 | |
| | | | | | | | | | Tlhak | 6.191 | |
| | | | | | | | | | Mop | 1.668 | |
| | | | | | | | | | Mor | 0 | |
| | | | | | | | | | Motsh | 0 | |
| | | | | | | | | | Seet | 0 | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Phuk 0<br>Phat 0<br>Lwe 1.729 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Boletswai mo metsing a a elelelang mo teng bo tshwanetse go somarelwa bo le mo seemong sa ga jaana go netefatsa tshireletso ya motswedi le tswelelo ya motswedi. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 75 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 90 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | ≤ Dimilegerama/dilitara tse 60 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse ≥ 6 (mg/l) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di nang le botlhole ga di a tshwanela go tlhola kotsi epe mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.0725 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.105 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.005 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa gore e tswe mo setlhopheng sa D sa ikholoji mme e tsene mo setlhopheng sa C/D. Go tshwenyegela go fapaana ga kelelo mo ditsheding tsotlhe tse di ikaegileng ka kelelo le legaetlhago. Kelelo e tshwanetse go nna e e lekaneng go direla mefuta e e ikaegileng ka kelelo. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM), Tshupane ya Tlhatlhobo ya Popego ya Lefatshe | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C/D sa ikholoji kgotsa di tshwanetse go tokafadiwa. Go tlalatlala ga dimedi tsa seeng go tshwanetse ga laolwa mme go tshwanetse ga kganelwa dikago mo karolong e e dirang molelwane wa noka le lefatshe. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58%.<br>Kganela kago epe go ya pele mo lefelong le le mo dintshing tsa noka. |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go tokafadiwa gore se tswe mo setlhopheng sa D sa ikholoji go tsena mo setlhopheng sa C/D sa ikholoji. Go tlhokega go fetofetoga go go laolwang ga ditlha go direla mefuta ya ditlhapi tse di boifang kelelo. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D FRAI ≥ 58%<br><br>Mefuta ya sekao mo *(Noka ya Crocodile): AJOH,* le e e ikaegileng ka kelelo *BMAR, CPRE* |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0 |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la tsa dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. Go tshwanetse ga tokafadiwa legaetlhago la karolo e e dirang molelwane fa gare ga metsi le lefatshe . | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa . | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Roodekopjes (A21J) | 3_2 | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi.<br>Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Othofosofate | ≤ 0.050 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya Fosoforo | ≤ 0.130 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.70 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi le dijalo tsotlhe tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 70 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Salefeite | ≤ 85 mg/L<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Sodiamo | ≤ 70 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | | | | | | Phetogo ya mo magareng | Thempereitša | Go sa fete 2 °C ya phetogo e e oketsegang mo palong e e kwa godimo le e e kwa tlase ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarelwa mo diphologolong tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e Tlhaologileng | ≥ 7.0 mg/L O2<br>Phesenthaele ya bo95 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |

**Lenaneo 5: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 4: HEX / WATERKLOOFSPRUIT / VAALKOP**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 4: HEX/WATERKLOOFSPRUIT/VAALKOP | II | Sterkstroom go tswa mo metsing a a elelang go tswa mo Letamong la Buffelspoort go ya kwa metsing a a elelang go tsena mo Letamong Roodekopjes, Maretwane, Tshukutswe – Bodutiso jwa Kotanari A21K | 4_1 | C | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 70 (mS/m)<br>(Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | bodutiso jo bo mo gare le jo bo kwa tlase fa tlase ga letamo | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.0725 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Chromium (IV) | Dimilegerama/dilitara tse ≤ 0.0675 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤0.005 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤0.07 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C sa ikholoji. Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, boleng jwa metsi le maemo a kelelo di tshwanetse go somarelwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM), Tshupane ya Tlhatlhobo ya Popego ya Lefatshe | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong E= C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Taolo ya dimedi e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C. Taolo ya go tlalatlala ga diphologolo kgotsa dijalo tsa seeng e tshwanetse go tsenngwa tirisong. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa ditlhapi tsa lefelo le le rileng mo setlhopheng sa C/D sa ikholoji. Tlhatlhobo ya ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi= C/D<br>FRAI ≥ 58%<br>Kgobokanya mefuta e le 6 mo maitekong a kgobokanyo ya sampole ya metsotso e le 20.<br>Mefuta ya sekao *BMOT*<br><br>(site A2STER-MAMOG) |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | | | | | Malele | Kgobokano ya bolele e tshwanetse go somarelwa mo maemong a a fetotsweng thata kgotsa a a tokafaditsweng | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.078 | 0.033 |
| | | | | | | | | | Ngwan | 0.083 | 0.035 |
| | | | | | | | | | Sed | 0.086 | 0.036 |
| | | | | | | | | | Fer | 0.094 | 0.039 |
| | | | | | | | | | Tlhak | 0.113 | 0.047 |
| | | | | | | | | | Mop | 0.104 | 0.043 |
| | | | | | | | | | Mor | 0.101 | 0.042 |
| | | | | | | | | | Motsh | 0.09 | 0.038 |
| | | | | | | | | | Seet | 0.09 | 0.038 |
| | | | | | | | | | Phuk | 0.085 | 0.036 |
| | | | | | | | | | Phat | 0.082 | 0.035 |
| | | | | | | | | | Lwe | 0.082 | 0.035 |
| | | Dikarolo tse di kwa godingwana tsa noka ya Sterkstroom go elela go tsena mo Letamong la Buffelspoort (A21K bodutiso jo bo fa gare le jo bo kwa godingwana fa godimo ga letamo) | 4_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Sterkstroom mo CROC_EWR11 mo A21K<br>NMAR = $14.0x10^6 m^3$<br>Setlhopa sa REC=C<br><br>Tshireletso e e lekaneng ya dikelelo tse di tsenang mo teng e a tlhokega (e tshwanetse go somarelwa go tshegetsa diphologolo tsotlhe le dijalo tsa lefelo le le rileng).<br>Go tlhokega taolo ya ditiro tse di mo lefatsheng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Rapid EWR site 11 mo Sterkstroom (tlhokomelo mo A2H053) | | | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.010 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/metara tse ≤ 55 (mS/m)<br>(Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa B/C sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B/C ≥ 78% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa B/C sa ikholoji. Go tlalatlala ga diphologolo kgotsa dijalo tsa seeng go tshwanetse go laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B/C ≥ 78% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa ditlhapi tsa lefelo le le rileng mo setlhopheng sa B sa ikholoji. Tlhatlhobo ya ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Kgobokanya mefuta e le 6 mo maitekong a kgobokanyo ya sampole ya metsotso e le 20<br>Mofuta wa sekao – mofuta o o boifang kelelo, *AURA, BMOT*<br>(Sterkstroom mo CROC_EWR11 mo A21K) |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.7<br>(Sterkstroom mo CROC_EWR11 mo A21K) |
| | | Letamo la Buffelspoort (A21K) | 4_3 | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Othofosofate | ≤ 0.015 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.50 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | Karolo e e kwa godingwana ya Noka ya Hex go ya kwa Letamong la Olifantsnek, Rooikloofspruit (A22G) | 4_4 | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.015 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 55 (mS/m)<br>(Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Sodiamo | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C sa ikholoji. Kelelo e tshwanetse go nna e e lekaneng go tshegetsa mefuta le legaetlhago. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji. Go tlalatlala ga diphologolo kgotsa dijalo tsa seeng e tshwanetse go laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Tlhatlhobo ya setlhopha sa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopha se se laoletsweng sa ikholoji sa C. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br><br>Kgobokanya bonnye 20 BMOT mo maitekong a kgobokanyo ya sampole ya metsotso e le 20. |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla EC= C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.8 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Olifantsnek (A22G) | 4_5 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng ga mmogo le badirisi ba kwa metsi a elelang go ya kwa teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi. Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Othofosofate | ≤ 0.015 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.50 mg/L N<br>Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | Noka ya Hex go tswa mo Letamong la Olifantsnek, go elela go tsena mo Letamong la Bospoort, Sandspruit (A22H) | 4_6 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br><br>Noka ya Hex (mo karolong e ntšhwa ya W) mo A22H<br>NMAR = $12.11 \times 10^6 m^3$<br>Setlhopa sa REC=D<br><br>Kelelo e e kwa tlase le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa gore go fitlhelelwe ditlhokego tsa metsi tse di tswelang mosola badiri ba mo tikologong e le go tshegetsa maemo a a itekanetseng a diphologolo tsotlhe le di. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>(Ntlhagare mo Nokeng ya Hex go ya kwa ntlheng e sele ya kelelo ya Letamo la Olifantsnek. Tlhokomelo kwa karolong e ntšhwa ya W ya letamo | Diph | 0.013 | 0.011 |
| | | | | | | | | | Ngwan | 0.014 | 0.012 |
| | | | | | | | | | Sed | 0.015 | 0.013 |
| | | | | | | | | | Fer | 0.019 | 0.016 |
| | | | | | | | | | Tlhak | 0.028 | 0.023 |
| | | | | | | | | | Mop | 0.026 | 0.022 |
| | | | | | | | | | Mor | 0.020 | 0.017 |
| | | | | | | | | | Motsh | 0.017 | 0.015 |
| | | | | | | | | | Seet | 0.017 | 0.014 |
| | | | | | | | | | Phuk | 0.015 | 0.013 |
| | | | | | | | | | Phat | 0.014 | 0.012 |
| | | | | | | | | | Lwe | 0.014 | 0.012 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa boleng jwa metsi jwa badirisi ba metsi. Go tlhokega taolo ya dikotla go netefatsa tsweledisi ya tsamaiso. Boleng jwa metsi bo tshwanetse go tokafadiwa go tokafatsa seemo sa ga jaana sa ikholoji go tswa mo setlhopheng sa ikholoji sa E go ya mo go sa D. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai di kwa godimo thata. Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 85 (mS/m)<br>(Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | badirisi ba metsi. Boleng jwa metsi bo tshwanetse go tokafadiwa go tokafatsa seemo sa ga jaana sa ikholoji go tswa mo setlhopheng sa ikholoji sa E go nna sa D. | Tleloraete | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Amonia jaaka N | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤0.0073 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimilegerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimilegerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Tlelaefoseite | Dimilegerama/dilitara tse 0.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimaekherogerama/litara tse 0.13 (ug/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa gore e tswe mo setlhopheng sa D sa ikholoji mme e tsene mo setlhopheng sa C go tshegetsa bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa D sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | VEGRAI EC = D ≥ 42% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go somarelwa se le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa. Kelelo e tshwanetse go nna e e lekaneng go direla mefuta e e ikaegileng ka kelelo go tshela. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D FRAI ≥ 42% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. Go tshwanetse ga tokafadiwa legaetlhago la karolo e e dirang molelwane fa gare ga metsi le lefatshe . | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br><br>(SiteA2HEX-PAARD) |
| | | Letamo la Bospoort (A22H) | 4_7 | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Othofosofate | ≤ 0.5 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya Fosoforo | ≤ 0.130 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naetereite & naeteraete e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Naeteraete & Naetereite | ≤ 1.00 mg/L N<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 85 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Sodiamo | ≤ 100 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng ka palo. | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |
| | | | | | Legaetlhago | Legaetlhago la Letamo | Go laola motswedi wa metsi go direla tshomarelo ya mefutafuta ya ditshedi tsotlhe le dimela tsa metsi (kelelo ya go tsena mo teng, dilo tsotlhe tse di tshelang le mefuta e e nnang mo metsing le mo lefatsheng, dintshi tsa noka).<br>Go somarela, go tsosolosa le go simolodisa losi la maitirelo le dintshi tsa noka. Karolo e e dirang molelwane fa gare ga metsi le lefatshe ya tlhago e tshwanetse go somarelwa ka moo go ka kgonegang ka teng go netefatsa legaetlhago le le tlhokegang. | Boitekanelo jwa dimedi tse di mo dintshing tsa noka | 50% ya lefatshe le le apesitsweng ke dimela tsa mo dintshing tsa noka |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | Waterkloofspruit (A22H) | 4_8 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Waterkloofspruit mo CROC_EWR14 mo A22H<br>NMAR = $5.469 \times 10^6 m^3$<br>Setlhopa sa REC=B/C<br><br>Kelelo e e kwa tlase le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa gore go fitlhelelwe ditlhokego tsa metsi tse di tswelang mosola badiri ba mo tikologong e le go tshegetsa maemo a a itekanetseng a diphologolo tsotlhe le dijalo tsa lefelo le le rileng le badirisi. | Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Rapid EWR site 14 mo Waterkloofspruit (tlhokomelo mo A2H038) | Diph | 0.028 | 0.010 |
| | | | | | | | | | Ngwan | 0.027 | 0.010 |
| | | | | | | | | | Sed | 0.028 | 0.010 |
| | | | | | | | | | Fer | 0.035 | 0.013 |
| | | | | | | | | | Tlhak | 0.039 | 0.014 |
| | | | | | | | | | Mop | 0.038 | 0.014 |
| | | | | | | | | | Mor | 0.035 | 0.013 |
| | | | | | | | | | Motsh | 0.033 | 0.012 |
| | | | | | | | | | Seet | 0.033 | 0.012 |
| | | | | | | | | | Phuk | 0.031 | 0.011 |
| | | | | | | | | | Phat | 0.03 | 0.011 |
| | | | | | | | | | Lwe | 0.03 | 0.010 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.25 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Kokoano ya boletswai jo bo elelelang go tsena mo teng e tshwanetse go somarelwa e le mo seemong sa ga jaana go netefatsa tshireletsego ya diphologolo tsotlhe le dimela tsa tlhago kgotsa motswedi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 20 (mS/m)<br>(Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa B sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa B sa ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go somarelwa se le mo setlhopheng sa ikholoji sa B/C. Lefelo le le mo godimo ga lephororo le tshwanetse go sireletswa ka ntlha ya go nna teng ga *TSPA* gaufi le motswedi wa lephororo. FRAI e tshwanetse go dirwa go tlhokomela fa go bapisiwa le setlhopa sa ga jaana | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C<br>FRAI ≥ 78%<br>Sampole 20 BMOT mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. Go tshwanetse ga tokafadiwa legaetlhago la karolo e e dirang molelwane fa gare ga metsi le lefatshe . | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC =C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |
| | | Noka ya Hex e elela go tswa mo Letamong la Bospoort go elela mo teng ga Letamo la Vaalkop (A22J) | 4_9 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Hex mo CROC_EWR6 mo A22J<br>NMAR = 26.9x10$^{6}$m$^{3}$<br>Setlhopa sa REC=D<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo e tshwanetse go fitlhelelwa go tshegetsa maemo a a itekanetseng a diphologolo tsotlhe le dijalo tsa lefelo le le rileng le badirisi. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Setsha sa magareng sa bo6 sa EWR mo Nokeng ya Hex (tlhokomelo mo A2H094) | |

| | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
|---|---|---|
| Diph | 0.024 | 0.015 |
| Ngwan | 0.026 | 0.023 |
| Sed | 0.035 | 0.022 |
| Fer | 0.052 | 0.022 |
| Tlhak | 0.093 | 0.070 |
| Mop | 0.084 | 0.067 |
| Mor | 0.055 | 0.054 |
| Motsh | 0.039 | 0.039 |
| Seet | 0.035 | 0.035 |
| Phuk | 0.030 | 0.030 |
| Phat | 0.028 | 0.028 |
| Lwe | 0.025 | 0.023 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa boleng jwa metsi jwa badirisi ba metsi. Go tlhokega taolo ya dikotla go netefatsa tsweledisо ya tsamaiso. Boleng jwa metsi bo tshwanetse go tokafadiwa go tokafatsa seemo sa ga jaana sa ikholoji go tswa mo setlhopheng sa ikholoji sa E go nna sa D. | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 2.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai di kwa godimo thata. Boletswai jwa metsi a a elelang go tsena mo teng bo tshwanetse go tokafadiwa go tshegetsa diphologolo tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Boleng jwa metsi bo tshwanetse go tokafadiwa go tokafatsa seemo sa ikholoji sa ga jaana go tswa mo setlhopheng sa ikholoji sa E go ya go sa D. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 85 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go matshosetsi mo boitekanelong jwa batho | Amonia | Dimilegerama/dilitara tse ≤ 0.007 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤0.3 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimilegerama/dilitara tse ≤0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimilegerama/dilitara tse ≤0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa D sa ikholoji kgotsa e tokafadiwe. Mefutafuta ya magaetlhago go direla mefuta e e boifang kelelo le dimedi tse di tlhogang mo losing lwa metsi e tshwanetse go somarelwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji kgotsa mo maemong a a botoka. Go tlhokega tshireletso ya legaetlhago. Go tshwanetse ga laolwa dikago mo karolong e e dirang molelwane fa gare ga metsi le lefatshe. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Tlhatlhobo ya ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji sa D. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42% |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br>REMP site A2HEXR-ROOIW |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D kgotsa e tokafadiwe | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Vaalkop le karolo e e kwa tlasenyana ya noka ya Elands pele ga e kgatlhana le Crocodile (A22J) | 4_10 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi. Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Othofosofate | ≤ 0.05 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya Fosoforo | ≤ 0.055 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.70 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Salefeite, | ≤ 100 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Tleloraete | ≤ 100 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | | | | | | Phetogo ya mo magareng | Thempereitšha | Go sa fete 2 °C ya phetogo e e oketsegang mo palong e e kwa godimo le e e kwa tlase ka bobedi |
| | | | | | | | Dilekano tsa okosijene mo tsamaisong Dilekano tsa okosijene di tshwanetse go somarelwa mo diphologolong tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e Tlhaologileng | ≥ 7.0 mg/L O2<br>Phesenthaele ya bo95 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Legaetlhago la Letamo | Go laola motswedi wa metsi go direla tshomarelo ya mefutafuta ya ditshedi tsotlhe le dimela tsa metsi (kelelo ya go tsena mo teng, dilo tsotlhe tse di tshelang le mefuta e e nnang mo metsing le mo lefatsheng, dintshi tsa noka).<br>Go somarela, go tsosolosa le go simolodisa losi la maitirelo le dintshi tsa noka. Karolo e e dirang molelwane fa gare ga metsi le lefatshe ya tlhago e tshwanetse go somarelwa ka moo go ka kgonegang ka teng go netefatsa legaetlhago le le tlhokegang. | Boitekanelo jwa dimedi tse di mo dintshing tsa noka | 70% ya lefatshe le le apesitsweng ke dimela tsa mo dintshing tsa noka |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa mefutafuta le dipalogotlhe tsa ditlhapi. | Mefutafuta le palogotlhe ya ditlhapi | Setlhopa sa ditlhapi tsa mofuta o le mongwe se tshwanetse go tlhokomelwa ka go dirisa dithutopatlisiso tsa tlhatlhobo ya boitekanelo. Go tshwanetse ga tlhomamisiwa bontsintsi jo bo tshwanelegang. Go tshwanetse ga tlhomamisiwa ditlhotshwana tse di totilweng tsa ditlhapi tsa mofuta o le mongwe. |
| | | | | | | Periphyton/ Phytoplankton | Dikokoano tsa Chl *a* di tshwanetse go somarelwa di le mo seemong se go nang le selekano sa magareng sa dikotla tse di tlhaologileng. | Chl *a* | 11-20µg/ℓ<br>Phesenthaele ya bo50 |

**Lenaneo 6: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko5: ELANDS / VAALKOP**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5: ELANDS/VAALKOP | II | Dikarolo tse di kwa godingwana tsa noka ya Elands go ya mo Letamong la Swartruggens<br><br>karolwana e e mo A22A borwa botlhaba | 5_1 | C | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Elands mo CROC_EWR10 mo A22A<br>NMAR = $10.1x10^6 m^3$<br>Setlhopa sa REC=B/C<br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Rapid EWR site 10 mo | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | Diph | 0.038 | 0.015 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Nokeng ya Elands (tlhokomelo ka nako ya dipatlisiso tsa baeolojikhale) | Ngwan | 0.045 | 0.012 |
| | | | | | | | | | Sed | 0.050 | 0.011 |
| | | | | | | | | | Fer | 0.070 | 0.026 |
| | | | | | | | | | Tlhak | 0.094 | 0.031 |
| | | | | | | | | | Mop | 0.091 | 0.019 |
| | | | | | | | | | Mor | 0.073 | 0.015 |
| | | | | | | | | | Motsh | 0.056 | 0.015 |
| | | | | | | | | | Seet | 0.051 | 0.019 |
| | | | | | | | | | Phuk | 0.046 | 0.017 |
| | | | | | | | | | Phat | 0.042 | 0.016 |
| | | | | | | | | | Lwe | 0.039 | 0.015 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 55 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 30 (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Ditekanyetso di tshwanetse go tlhalosiwa go laola ditlamorago tsa go epa seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse 6-7 (mg/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C sa ikholoji. Mefutafuta ya magaetlhago go direla mefuta e e boifang kelelo le dimedi tse di tlhogang mo losing lwa metsi e tshwanetse go somarelwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji.<br>Go tlhokega tshireletso ya legaetlhago le le mo dintshing tsa noka. Go tshwanetse ga laolwa dikago mo karolong e e dirang molelwane fa gare ga metsi le lefatshe. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa ditlhapi tsa lefelo le le rileng mo setlhopheng sa C sa ikholoji. Tlhatlhobo ya ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa Ditlhapi = C<br>FRAI ≥ 62%<br>Sampole 20 BMOT mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 | | |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 155<br>ASPT ≥ 5.5 | | |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C kgotsa go tokafadiwa | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 62% | | |
| | | Elands go elela kwa ntlheng e sele ya Letamo la Swartruggens go ya kwa Letamong la Lindleyspoort (A22A) | 5_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Elands mo A2H107 mo A22A<br>NMAR = $12.87 \times 10^6 m^3$<br>Setlhopa sa REC=C<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br>Tlhokomelo ya Noka ya Elands mo A2H107 | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | Diph | 0.030 | 0.016 |
| | | | | | | | | | Ngwan | 0.037 | 0.014 |
| | | | | | | | | | Sed | 0.044 | 0.013 |
| | | | | | | | | | Fer | 0.063 | 0.028 |
| | | | | | | | | | Tlha | 0.083 | 0.009 |
| | | | | | | | | | Mop | 0.081 | 0.018 |
| | | | | | | | | | Mor | 0.064 | 0.016 |
| | | | | | | | | | Mots | 0.047 | 0.018 |
| | | | | | | | | | Seet | 0.042 | 0.019 |
| | | | | | | | | | Phuk | 0.036 | 0.018 |
| | | | | | | | | | Phat | 0.033 | 0.018 |
| | | | | | | | | | Lwe | 0.030 | 0.016 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Go tlhokega taolo ya ditiro tsa phepafatso le tshololo ya metsimaswe. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Go tlhokega taolo ya ditlamorago tsa mo lefatsheng le go tshololwa ga WWTW. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 55 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go baka kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse 6-7 (mg/l) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji kgotsa mo maemong a a botoka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.3 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C/D kgotsa go tokafadiwa | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 58% |
| | | **Letamo la Lindleyspoort (A22A)** | **5_3** | | Bokanakang | Selekano sa letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi.<br>Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Diothofosofate, | ≤ 0.015 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya Fosoforo | ≤ 0.055 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naetereite & naeteraete e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.70 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 | | |
| | | Karolo e e kwa Godingwana ya Noka ya Koster go ya kwa Letamong la Koster (A22B) | 5_4 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo: Noka ya Koster mo A2H036 mo A22B<br>NMAR = $2.54 \times 10^6 m^3$<br>Setlhopa sa REC=C<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya Noka ya Koster mo A2H036 | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | Diph | 0.006 | 0.002 |
| | | | | | | | | | Ngwan | 0.004 | 0.002 |
| | | | | | | | | | Sed | 0.006 | 0.001 |
| | | | | | | | | | Fer | 0.009 | 0.004 |
| | | | | | | | | | Tlhak | 0.020 | 0.005 |
| | | | | | | | | | Mop | 0.032 | 0.006 |
| | | | | | | | | | Mor | 0.031 | 0.007 |
| | | | | | | | | | Motsh | 0.018 | 0.006 |
| | | | | | | | | | Seet | 0.015 | 0.006 |
| | | | | | | | | | Phuk | 0.012 | 0.005 |
| | | | | | | | | | Phat | 0.010 | 0.004 |
| | | | | | | | | | Lwe | 0.008 | 0.003 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.05 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go somarelwa bo le mo seemong sa ga jaana go netefatsa tshireletso ya | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 30 (mS/m) (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | motswedi. | Sodiamo | Dimilegerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.0 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa ditshedi tsotlhe le dimela tsa metsi. | Okosijene e e Tlhaologileng | Dimilegerama/dilitara tse 6-7 (mg/l) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole di tshwanetse go somarelwa di le mo dilekanong tse di seng botlhole mo ditsheding tse dinnye tsa metsi le fa e le go nna matshosetsi mo boitekanelong jwa batho | Melemo e e tlhotlhelediwang ke dihoromone | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Setlhopa sa ditlhapi tsa lefelo le le rileng se tshwanetse go somarelwa se le mo setlhopheng se se laoletsweng sa ikholoji sa C. Kelelo e tshwanetse go nna e e lekaneng go tshegetsa mefutakemedi. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Sampole ya 20 BMOT mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | Noka ya Selons, Koedoespruit, Dwarsspruit, karolo e e kwa tlasenyana ya Noka ya Koster (A22C, A22D) | 5_6 | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Kokoano ya boletswai jo bo elelelang go tsena mo teng e tshwanetse go somarelwa go somarela seemo sa ga jaana le go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi mo setlhopheng se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.0 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. | | |
| | | Noka ya Elands e elela go tswa mo Letamong la Lindleyspoort go tsena mo Letamong la Vaalkop, Brakkloofspruit, Roosspruit, Sandspruit Mankwe. Leragane, Molapongwamongana (A22E, A22F) | 5_7 | | Bokanakang | | | Tleloraete | Dimilegerama /dilitara tse ≤ 20 (Phesenthaele ya bo95) | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | | 0.038 | 0.011 |
| | | | | | | | | | Ngwan | 0.048 | 0.014 |
| | | | | | | | | | Sed | 0.057 | 0.016 |
| | | | | | | | | | Fer | 0.081 | 0.023 |
| | | | | | | | | | Tlhak | 0.107 | 0.012 |
| | | | | | | | | | Mop | 0.105 | 0.027 |
| | | | | | | | | | Mor | 0.082 | 0.023 |
| | | | | | | | | | Motsh | 0.06 | 0.017 |
| | | | | | | | | | Seet | 0.054 | 0.016 |
| | | | | | | | | | Phuk | 0.047 | 0.014 |
| | | | | | | | | | Phat | 0.042 | 0.012 |
| | | | | | | | | | Lwe | 0.038 | 0.011 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Dilekano tsa dikotla di kwa godimo mme di tshwanetse go fokodiwa go fitlhelela ditlhokego tsa ditshedi le dimela tsotlhe tsa metsi. Dikokoano di tshwanetse go fokodiwa go fitlhelela setlhopa se se laoletsweng sa ikholoji sa C. | Othofosofate ($PO_4^-$) jaaka Fosoforo | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 2.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai di kwa godimo thata. Boletswai jwa metsi a a elelang go tsena mo nokeng bo tshwanetse go tokafadiwa go tshegetsa ditlhokego tsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Boleng jwa metsi bo tshwanetse go tokafadiwa gore bo nne mo setlhopheng sa C sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 85 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Sodiamo | Dimilegerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 120 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga nna le kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.0 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi epe mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimilegerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimilegerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimilegerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimilegerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimilegerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C/D sa ikholoji kgotsa mo go botoka. Go botlhokwa go somarela dimedi tse di tlhogang mo losing lwa metsi le kerabole e e khurumeditseng botlase jwa noka ya metsi a a elelang go tsena mo nokeng (ditlhopa tsa boteng jwa kelelo) tsa mefutafuta ya ditlhapi le ditshedi tse dikgolo mme di se na mokwatla. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Sekao le Mokgwa wa Tlhatlhobo ya ka Bonako ya Legaetlhago, Tshupane ya Tlhatlhobo ya Popego ya Lefatshe | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji. Taolo ya ditshedi tsa seeng tse di senyang e a tlhokega. Go tshwanetse ga lekanyediwa dikago mo karolong e e dirang molelwane fa gare ga metsi le lefatshe. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 70% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa ditlhapi tsa lefelo le le rileng mo setlhopheng sa D sa ikholoji kgotsa se se botoka. Tlhatlhobo ya ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go di ela tlhoko fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42%<br>Palotlase ya sampole ya mefuta e le 4 mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 110<br>ASPT ≥ 4.5 |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | Malele EC ≥ 62% |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka.<br>Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |

**Lenaneo 7: Maikaelelo a Boleng jwa Motswedi wa DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 6a: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6a: KLEIN MARICO/KROMELLEMBOOG | II | Karolo e e mo godingwana ya Klein Marico go elela go tsena mo Letamong la Klein Maricopoort, | 6_1 | B/C | Bokanakang | Kelelo e e kwa tlase ya metsi | Kelelo ya EWR le kelelo e e bonya ya metsi ka nako ya komelelo:<br>Noka ya Klein Marico e elela go ya kwa ntlheng ya Letamo Klein la Maricopoort | Kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Dikelelo tsa tshomarelo le kelelo e e bonya ya | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo($m^3/s$) |
| | | | | | | | | | Diph | 0.038 | 0.035 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rhenosterspruit, Malmaniesloop, Kareespruit (A31D) | | | | | mo A31D<br>NMAR = $16.25 \times 10^6 m^3$<br>Setlhopa sa REC=C/D<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badiri ba mo lefelong le noka e elelang go ya kwa teng. | metsi ka nako ya komelelo<br><br>Go tlhokomela Noka ya Klein Marico ka dipatlisiso tsa baeolojikhale | Ngwan | 0.039 | 0.036 |
| | | | | | | | | | Sed | 0.039 | 0.036 |
| | | | | | | | | | Fer | 0.041 | 0.038 |
| | | | | | | | | | Tlhak | 0.048 | 0.045 |
| | | | | | | | | | Mop | 0.044 | 0.040 |
| | | | | | | | | | Mor | 0.045 | 0.041 |
| | | | | | | | | | Motsh | 0.042 | 0.039 |
| | | | | | | | | | Seet | 0.043 | 0.039 |
| | | | | | | | | | Phuk | 0.041 | 0.038 |
| | | | | | | | | | Phat | 0.040 | 0.037 |
| | | | | | | | | | Lwe | 0.041 | 0.037 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 55 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimilegerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimilegerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) | | |
| | | | | | | | | Sodiamo | ≤ Dimilegerama/dilitara tse 70 (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.0 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi epe mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Foloraete | Dimilegerama/dilitara tse ≤ 2.5 (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C/D sa ikholoji. Go somarela dimedi tse di tlhogang mo losing lwa metsi le boalo jwa mo metsing a elelang go tsena mo teng jo ditshedi tse dinnye di nnang mo go jone (ditlhopa tsa boteng jwa lobelo) mo ditlhaping mefutafuteng ya ditlhapi le diphologolo tse dikgolo tse di se nang mokwatla. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go tokafadiwa gore di tswe mo setlhopheng sa D sa ikholoji mme di tsene mo setlhopheng sa C/D sa ikholoji. Go tshwanetse ga tsenngwa tirisong taolo ya dimedi tsa seeng. Kago ya mo lefelong le le mo dintshing tsa noka e tshwanetse go lekanyediwa le go laolwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Klein Maricopoort (A31D) | 6_2 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana e e ka dirisiwang go tsweletsa dilekano tse di kwa godimo tsa letamo go netefatsa gore go somarelwa mefutafuta ya ditshedi tsotlhe le dimela tsa metsi.<br>Go gololwa ga metsi a letamo go tshwanetse ga fitlhelela ditlhokego tsa kwa metsi a elelang go ya teng go direla mabaka a kelelo metsi e e tswelang mosola diphologolo le dijalo. | Selekano se se kwa tlase sa tiriso se se tlhokegang mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa botshelo jwa diphologolo tsotlhe le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Diothofosofate | ≤ 0.025 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya Fosoforo | ≤ 0.050 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete & Naetereite | ≤ 0.70 mg/L N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 65 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | | | Tleloraete | ≤ 40 mg/ℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Dipathojene di tshwanetse go somarelwa gore di nne ka dilekano tse di babalesegileng gore di ka dirisiwa ke batho. | *Escherichia coli* | makgetlho a le ≤ 10 /100µℓ<br>Phesenthaele ya bo95 |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Metsi a bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | Klein Marico go elela go ya kwa ntlheng e sele ya Letamo la Klein Maricopoort go ya kwa Letamong la Kromellenboog, Wilgeboomspruit (A31E) | 6_3 | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimilegerama/dilitara tse ≤ 0.050 (mg/l)<br>(Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimilegerama/dilitara tse ≤ 0.7<br>(Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/metara tse ≤ 65 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa gore se nne mo ditekanyetsong tse di tlhalositsweng go tshegetsa ditshedi tsotlhe le dimela tsa metsi le ditlhokego tsa badirisi ba metsi. | selekano sa pH | 6.5 (Phesenthaele ya bo5) le 9.0 (Phesenthaele ya bo95) |
| | | | | | | | Go itsheka ga sedimente go tshwanetse ga laolwa ka taolo ya mekgwatsamaiso ya tiriso ya lefatshe. Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Ditekanyetso di tshwanetse go tlhomamisiwa. |
| | | | | | Legaetlhago | Metsi a a elelang go tsena mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa C sa ikholoji kgotsa mo maemong a a botoka. Go somarela dimedi tse di tlhogang mo losing lwa metsi le boalo jwa mo metsing a elelang go tsena mo teng jo ditshedi tse dinnye di nnang mo go jone (ditlhopa tsa boteng jwa lobelo) mo ditlhaping mefutafuteng ya ditlhapi le diphologolo tse dikgolo tse di se nang mokwatla. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC =C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Legaetlhago le le mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa C sa ikholoji kgotsa mo maemong a a botoka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Go tshwanetse ga somarelwa ditlhapi tsa lefelo le le rileng mo maemong a setlhopa sa C sa ikholoji kgotsa di tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Kgobokanya mefuta e le 5 mo maitekong a kgobokanyo ya sampole ya metsotso e le 20 |
| | | | | | | Ditshedi tsa metsi tse dikgolo mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Tsamaiso ya Kabo ya Maduo ya Aforikaborwa ya Mofuta 5 (SASS5). | Diphologolo tsa metsi tse dikgolo mme di se na mokwatla EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.0 |

**Lenaneo 8: Maikaelelo a Boleng jwa Motswedi a DINOKA mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko6b: LETAMO LA GROOT MARICO / MARICO BOSVELD**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | II | Karolo e kgolo ya Groot Marico e elela mo ntlheng e sele ya makgatlhano a Polkadraaispruit (A31B) | 6_5 | B | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Marico mo MAR_EWR2 mo A31B<br>NMAR = $42.08 \times 10^6 m^3$<br>REC=B category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya Noka ya Groot Marico mo morathong o o rulagantsweng o montšhwa gaufi le EWR2 | Diph | 0.510 | 0.268 |
| | | | | | | | | | Ngwan | 0.540 | 0.283 |
| | | | | | | | | | Sed | 0.560 | 0.291 |
| | | | | | | | | | Fer | 0.620 | 0.319 |
| | | | | | | | | | Tlhak | 0.710 | 0.364 |
| | | | | | | | | | Mop | 0.637 | 0.327 |
| | | | | | | | | | Mor | 0.628 | 0.324 |
| | | | | | | | | | Motsh | 0.584 | 0.302 |
| | | | | | | | | | Seet | 0.588 | 0.305 |
| | | | | | | | | | Phuk | 0.557 | 0.290 |
| | | | | | | | | | Phat | 0.547 | 0.285 |
| | | | | | | | | | Lwe | 0.546 | 0.285 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.020 (mg/l) (Phesenthaele ya bo50) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji . | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara tse ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.8 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/litara ≥ 7 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/litara ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/litara ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/litara ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/litara ≤ 0.0057 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/litara ≤ 0.0048 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/litara ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Cobalt (Co) | Dimiligerama/litara ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo molapong | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. Go somarela dimedi tse di tlhogang mo losing lwa metsi le boalo jwa mo metsing a elelang go tsena mo teng jo ditshedi tse dinnye di nnang mo go jone (ditlhopa tsa boteng jwa lobelo) mo ditlhaping mefutafuteng ya ditlhapi le diphologolo tse dikgolo tse di se nang mokwatla. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. Legaetlhago le kelelo di tshwanetse go nna tse di lekaneng go direla mefuta e e ikaegileng ka kelelo. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = B<br>FRAI ≥ 82%<br>Sampole 20 *BMOT*, 30 *CPRE* le15 *AURA* mo maitekong a sampole a metsotso e le 20. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong sa ga jaana mo setlhopheng sa A/B sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.5<br>(Setsha EWR 2 = A3GMAR-KOEDO) |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a e leng a tlhago thata go ya go a e leng a tlhago. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 88% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Polkadraaispruit (A31B) | 6_6 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Polkadraaispruit mo MAR_EWR6 mo A31B<br>NMAR = $9.866 \times 10^{6}$ $m^3$<br>REC=B category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya tshololo ya Polkadraaispruit ka nako ya dipatlisiso tsa baeolojikhale | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.088 | 0.000 |
| | | | | | | | | | Ngwan | 0.099 | 0.003 |
| | | | | | | | | | Sed | 0.113 | 0.003 |
| | | | | | | | | | Fer | 0.138 | 0.024 |
| | | | | | | | | | Tlhak | 0.157 | 0.010 |
| | | | | | | | | | Mop | 0.130 | 0.007 |
| | | | | | | | | | Mor | 0.118 | 0.005 |
| | | | | | | | | | Motsh | 0.104 | 0.003 |
| | | | | | | | | | Seet | 0.105 | 0.002 |
| | | | | | | | | | Phuk | 0.098 | 0.000 |
| | | | | | | | | | Phat | 0.095 | 0.000 |
| | | | | | | | | | Lwe | 0.095 | 0.000 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.020 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 10 (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.8 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. | | |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 7 (mg/l) | | |
| | | | | | Legaetlhago | Metsi a a tsenang mo molapong | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya kwa setlhopheng sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% | | |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya go setlhopa sa B. Go tlhokega tshireletso ya legaetlhago la mo dintshing tsa noka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% | | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C kgotsa maemo a a botoka. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C FRAI ≥ 78% | | |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong sa ga jaana mo setlhopheng sa B/C sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 155<br>ASPT ≥ 6.0 | | |
| | | Groot Marico go tswa mo makgatlhanong a draaispruit go ya kwa borogong jwa N4 (A31B) | 6_7 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Marico mo borogong jwa tsela ya N4 mo A31B<br>NMAR = $56.92 \times 10^6 m^3$ | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo. | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | REC=B category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Tlhokomelo ya tshololo ya Noka ya Grrot Marico ka nako ya dipatlisiso tsa baeolojikhale | Diph | 0.649 | 0.345 |
| | | | | | | | | | Ngwan | 0.704 | 0.372 |
| | | | | | | | | | Sed | 0.762 | 0.398 |
| | | | | | | | | | Fer | 0.890 | 0.458 |
| | | | | | | | | | Tlhak | 1.030 | 0.513 |
| | | | | | | | | | Mop | 0.908 | 0.466 |
| | | | | | | | | | Mor | 0.864 | 0.447 |
| | | | | | | | | | Motsh | 0.783 | 0.408 |
| | | | | | | | | | Seet | 0.779 | 0.407 |
| | | | | | | | | | Phuk | 0.730 | 0.383 |
| | | | | | | | | | Phat | 0.709 | 0.373 |
| | | | | | | | | | Lwe | 0.701 | 0.370 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi, le go somarela seemo sa ikholoji le go tshegetsa badirisi ba kwa metsi e elelang go ya kwa teng. Ditshololo tsa metsimaswe di tshwanetse go laolwa go sireletsa bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi jwa lefelo. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Dikgololo tsa metsimaswe le ditlamorago tsa tiriso ya lefatshe di tshwanetse go laolwa go sireletsa bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi jwa lefelo. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) | | |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | | Dilekano tsa okosijene e e tlhaologileng di tshwanetse go tokafadiwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | DImiligerama/dilitara tse ≥ 7 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0057 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0048 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C/D kgotsa maemo a a botoka. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D<br>FRAI ≥ 58%<br>Mofuta wa sekao *certain BMOT, AURA, CPRE, AMOS* |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong sa ga jaana mo setlhopheng sa B sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 210<br>ASPT ≥ 6.2<br><br>(Site A3GMAR-WONDE) |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a e leng a tlhago thata go ya go a e leng a tlhago. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = A/B ≥ 88%<br><br>(Site A3GMAR-WONDE) |
| | | Letamo la Marico Bosveld (A31B) | 6_8 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a somarelwa.<br>Kgololo ya metsi a letamo e tlhoka go fitlhelela ditlhokego tsa kelelo ya kwa metsi a yang teng go direla mabaka a kelelo ya metsi go tswela mosola diphologolo le dijalo. | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dijalo le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Diothofosofate | ≤ 0.015 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go somarelwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya fosoforo | ≤ 0.025 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete& Naetereite | ≤ 0.70 mg/ℓ N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 35 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |

**Lenaneo 9: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko7: KAALOOG-SE-LOOP**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7: KAALOOG-SE-LOOP | I | Leitlho la Marico,<br>Kaaloog-se-Loop,<br>Bokkraal se Loop<br>Rietspruit | 7_1 | B | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Kaaloog-se-Loop mo MAR_EWR1 mo A31A<br>NMAR = $10.539 \times 10^6 m^3$<br>REC=B category | Dikelelo tsa Motheo<br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br>Tlhokomelo ya tshololo | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.244 | 0.159 |
| | | | | | | | | | Ngwan | 0.252 | 0.164 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ribbokfontein-se-Loop<br><br>Rietfontein<br><br>Bronkhorstfontein<br><br>Zyferfontein (Kuilfontein) Syferfontein<br><br>(A31A) | | | | | Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | kwa lefelong la EWR ka nako ya dipatlisiso tsa baeolojikhale le ntlha e metsi a elelang go ya kwa go yone kwa morathong o montšhwa o o sa tswang go rulaganya. | Sed | 0.245 | 0.160 |
| | | | | | | | | | Fer | 0.250 | 0.162 |
| | | | | | | | | | Tlhak | 0.280 | 0.182 |
| | | | | | | | | | Mop | 0.254 | 0.165 |
| | | | | | | | | | Mor | 0.262 | 0.170 |
| | | | | | | | | | Motsh | 0.253 | 0.164 |
| | | | | | | | | | Seet | 0.261 | 0.170 |
| | | | | | | | | | Phuk | 0.252 | 0.164 |
| | | | | | | | | | Phat | 0.252 | 0.163 |
| | | | | | | | | | Lwe | 0.257 | 0.167 |
| | | | | | Boleng | Matswai | Seemo sa metsi a a se nang selabe se tshwanetse go somarelwa. Ga go na kwelotlase mo boleng jwa metsi e e tshwanetseng go letlelelwa. Boletswai jwa metsi a a tsenang mo molapong bo tshwanetse go somarelwa go netefatsa gore bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi jwa Karolo ya motswedi bo nna bo sa fetoge. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 50 (mS/m)<br>(Phesenthaele ya bo95) | | |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 25% | | |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = B<br>FRAI ≥ 82% |
| | | | | | | Diphologolo tse di nang le mokwatla tsa mo metsing | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong sa ga jaana mo setlhopheng sa A/B sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.4<br><br>(Site A3KAAL-RIETS) |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a e leng a tlhago thata go ya go a e leng a tlhago. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 88% |

**Lenaneo 10: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko8: MALMANIESLOOP**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| **8: MALMANIESLOOP** | **III** | **Malmanies-loop (A31C)** | **8_1** | **-** | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go somarela boleng jwa metsi le seemo sa ga jaana sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Boletswai jwa metsi a a tsenang mo nokeng bo tshwanetse go somarelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le go somarela seemo sa ga jaana sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m)<br>(Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa tiriso tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | Legaetlhago | Lefatshe le le manyemunyemu | Leba di-RQO tsa lefatshe le le manyemunyemu, legaetlhago ke karolo ya lefatshe le le manyemunyemu. | | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C kgotsa maemo a a botoka. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji.<br>Laola le go tlosa mefuta ya ditlhapi tsa seeng le tse di senyang ya MSAL. Thibela go anama ga mefuta ya seeng. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Sampole 10 *BMOT* mo maitekong a sampole a metsotso e le 20 |

**Lenaneo 11: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko 9: MOLOPO**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 9: MOLOPO | II | **leitlho la Bodibe**<br><br>**D41A (Polfonteinspruit le bodutiso jwa nokana ya Lotlhakane)** | **9_1** | **C** | Leba di-RQO tsa Metsi a ka fa tlase ga lefatshe | | | | |
| | | Leitlho la Molopo, Leitlho la Grootfontein, dinokana tse e le motswedi wa metsi tsa Molopo go elela mo teng ga Letamo la Setumo/Modimola<br><br>D41A | 9_2 | | Bokanakang | Dikelelo | Metsi a a ka fa tlase ga lefatshe (Leitlho la Molopo le Grootfontein) | | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai tsa metsi a a tsenang mo molapong jaaka go totobaditswe di tshwanetse go fitlhelelwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi le go tshegetsa badirisi ba kwa metsi a elelang go ya kwa teng. Go tlhokega tokafalo mo dikokoanong tsa boletswai. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 75 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH e tshwanetse go somarelwa e le mo ditekanyetsong tse di tlhalositsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa tiriso ya badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.8 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Leba di-RQO tsa lefatshe le le manyemunyemu, legaetlhago ke karolo ya lefatshe le le manyemunyemu. | | |
| | | | | | | Lefatshe le le manyemunyemu | | | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa E go ya kwa setlhopheng sa D. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42%<br>Sampole ya mefuta e le 3, go akaretsa *BBRI* mo patlisisong ya 20. Sampole 15 *PPHI* mo metsotsong e le 20 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa D sa ikholoji (maemo a a fetotsweng ka bontsi) kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 4.0 |
| | | Karolo e kgolo ya Noka ya Molopo go tswa mo Letamong la Modimola go ya kwa Letamong la Disaneng D41A (karolokgolo) | 9_3 | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa E go ya kwa setlhopheng sa D. Tokafatsa metsi a a elelang mo bogodimong jwa lefatshe mo lefelong go tokafatsa go nna mo setlhopheng sa ikholoji sa D. Laola go bopega ga sedimente le matheriale o o bolang. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa E go ya go setlhopa sa D. Mefuta ya seeng e e tlhaselang e tshwanetse go laolwa. Lefelo le le mo dintshing tsa noka le tshwanetse go tsosoloswa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = D ≥ 42% |
| | | Letamo la Modimola (Setumo) (D41A) | 9_4 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a somarelwa. | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. Tokafatso e e tlhokegang go tswa mo seemong sa koketsego e e feteletseng. | Diothofosofate | ≤ 0.050 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya fosoforo | ≤ 0.055 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya naetereite & naeteraete e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Naeteraete& Naetereite | ≤ 0.70 mg/ℓ N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 85 mS/m Phesenthaele ya bo95 |
| | | | | | | | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Tleloraete | ≤ 100 mg/ℓ Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0 Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng ka palo ≥0.4 m | Kgoberego | Phesenthaele e e kwa tlase ya bo95 |
| | | | | | | | Phetogo ya magareng | Thempereitša | E seng go feta 2 °C phetogo e e oketsegang mo minimamong le makisimamong ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarela diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e tlhaologileng | ≥ 7.0 mg/L $O_2$ Phesenthaele ya bo95 |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl a e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |
| | | **Letamo la Disaneng (D41A)** | **9_5** | | Bokanakang | Dilekano tsa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a somarelwa. | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Diothofosofate | ≤ 0.010 mg/ℓ Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go somarelwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya fosoforo | ≤ 0.025 mg/ℓ Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naetereite & naeteraete e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Naeteraete& Naetereite | ≤ 0.70 mg/ℓ N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 75 mS/m Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0 Phesenthaele ya bo95 |

**Lenaneo 12: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko11a: LETAMO LA GROOT MARICO / MOLATEDI**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| 11a: LETAMO LA GROOT MARICO / MOLATEDI | III | Groot Marico go tswa mo metsing a a elelang go tswa mo Letamong la Marico Bosveld go ya | 11a_1 | **C/D** | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR: Noka ya Groot Marico mo MAR_EWR3 mo A31F NMAR = $65.0839 \times 10^6 m^3$ | Dikelelo tsa Motheo Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo. Tlhokomelo ya Noka ya Groot Marico mo A3H029 | Diph | 0.248 | 0.196 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | kwa Letamong la Molatedi, Dinokana tsotlhe (A31G, A31H, A31F, A31J, A32A, A32B, A32C) | | | | | REC=C/D setlhopa<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba kwa metsi a elelang go ya kwa teng. | | Ngwan | 0.262 | 0.206 |
| | | | | | | | | | Sed | 0.266 | 0.209 |
| | | | | | | | | | Fer | 0.284 | 0.223 |
| | | | | | | | | | Tlhak | 0.318 | 0.250 |
| | | | | | | | | | Mop | 0.281 | 0.221 |
| | | | | | | | | | Mor | 0.278 | 0.219 |
| | | | | | | | | | Motsh | 0.262 | 0.207 |
| | | | | | | | | | Seet | 0.268 | 0.211 |
| | | | | | | | | | Phuk | 0.258 | 0.203 |
| | | | | | | | | | Phat | 0.256 | 0.202 |
| | | | | | | | | | Lwe | 0.260 | 0.205 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.090 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) | | |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi.<br>Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.8 (Phesenthaele ya bo95) | | |
| | | | | | | | | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C/D go ya kwa setlhopheng sa B. Metsi a a elelang mo bogodimong jwa lefatshe a a feleletsang a dirile kgotlelego ya dibodi mme kgotlelego ya baketeria ya motswedi e tshwanetse go laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C/D. Dimedi tse di tlhaselang tsa seeng di tshwanetse go laolwa mme kago mo lefelong le le mo dintshing tsa noka e tshwanetse go lekanyediwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D kgotsa go tokafadiwa. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42%<br>Kgobokanya 10+ mefuta mo maitekong a go dira sampole a metsotso e le 20 |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong sa ga jaana mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5 |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a e leng a tlhago thata go ya go a e leng a tlhago. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = A/B ≥ 88% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. Lefelo le le mo dintshing tsa noka le tshwanetse go tokafadiwa. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | Letamo la Molatedi (A32A, A32B, A32C) | 11a_2 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a somarelwa. Kgololo ya metsi a letamo e tlhoka go fitlhelela ditlhokego tsa kelelo ya kwa metsi a yang teng go direla mabaka a kelelo ya metsi go tswela mosola diphologolo le dijalo. | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go somarelwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Diothofosofate | ≤ 0.015 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa lkholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go somarelwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Palogotlhe ya fosoforo | ≤ 0.055 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dilekano tse di magareng tsa dikotla. | Naeteraete& Naetereite | ≤ 0.70 mg/ℓ N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 55 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarela diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e tlhaologileng | ≥ 7.0 mg/ℓ O2<br>Phesenthaele ya bo95 |

**Lenaneo 13: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko11b: GROOT MARICO / DINOKANA TSA NAKWANA GO YA SETLHA**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa lkholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa godimo ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| 11b: GROOT MARICO / DINOKANA TSA NAKWANA GO YA KA SETLHA | III | Groot Marico, Rasweu, Maselaje (A32D) | 11b_1 | C | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka Groot Marico mo MAR_EWR4 mo A32D<br>NMAR = $153.25 \times 10^6 m^3$<br>REC=C category<br><br>Go tshwanetse ga fitlhelelwa kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo gore ditlhokego tsa diphologolo le dijalo tsa tikologo e e rileng go tshegetsa maemo a boitekanelo a diphologolo le dijalo tsa lefelo le le rileng le badirisi. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya Noka ya Groor Marico mo A3H007 | Diph | 0.214 | 0.173 |
| | | | | | | | | | Ngwan | 0.230 | 0.185 |
| | | | | | | | | | Sed | 0.239 | 0.191 |
| | | | | | | | | | Fer | 0.264 | 0.209 |
| | | | | | | | | | Tlhak | 0.306 | 0.242 |
| | | | | | | | | | Mop | 0.267 | 0.211 |
| | | | | | | | | | Mor | 0.258 | 0.206 |
| | | | | | | | | | Motsh | 0.234 | 0.187 |
| | | | | | | | | | Seet | 0.236 | 0.189 |
| | | | | | | | | | Phuk | 0.227 | 0.182 |
| | | | | | | | | | Phat | 0.224 | 0.180 |
| | | | | | | | | | Lwe | 0.226 | 0.182 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.090 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m)<br>(Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C. Phethene ya kelelo ya tlhago e tshwanetse go somarelwa. Tokafatsa legaetlhago la metsi a a tsenang mo molapong le lobelo/boteng jwa mefutafuta ya diphologolo, dimela le ditshedi tsa metsi. Kgolagano le ntlha e metsi a elelang go ya kwa go yone go ya kwa (11b_2) e tshwanetse go fitlhelelwa, | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. Ditlamorago go akaretsa go fulwa/go gatiwa ga lefelo le le mo dintshing tsa noka go tshwanetse ga laolwa. Go tlhokega taolo ya go bopega ga sedimente. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C/D kgotsa mo go botoka. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. Ditselana tsa ditlhapi di tshwanetse go agelwa go direla mefuta e e fudugang gonne ga jaana ga go na kgolagano mo merathong e le mmalwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D<br>FRAI ≥ 58%<br><br>Sampole 8+ mefuta go ya ka patlisiso ya sampole nngwe le nngwe<br><br>Mofuta wa sekao: *BMAR, LMOL, SZAM* |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 4.8 |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a a fetotsweng mo magareng kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 62% |
| | | Elandslaagtespruit, Lengope la Kgamanyane, Lenkwane (A32E) | 11b_2 | | Go dirisiwa di-RQO tsa lefelo le le manyemunyemu | | | | |

**Lenaneo 14: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko12: BIERSPRUIT**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 12: BIERSPRUIT | III | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe (A24D) | 12_1 | D | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.090 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 40 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.0 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.105 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C. Somarela kelelo ya tlhago. Tokafatsa legaetlhago la metsi a a tsenang mo molapong le lobelo/boteng jwa mefutafuta ya ditlhapi. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C. Tokafatsa lefelo le le mo dintshing tsa noka. Tlosa dimedi tsa seeng. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C/D. Somarela kelelo e e kwa tlase ya metsi ya tlhago. Tokafatsa legaetlhago la metsi a a tsenang mo molapong le lobelo/boteng jwa mefutafuta ya ditlhapi. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D<br>FRAI ≥ 58%<br>Sampole bonnye 10+ mefuta mo maitekong a metsotso e le 20<br>Mofuta wa sekao: *AJOH, LCYL, BMAR, MBRE* |
| | | Bierspruit e elela go tswa mo Letamong la Bierspruit go kgatlhana le Noka ya Crocodile, Brakspruit, Phufane, Sefatlhane, Lesobeng (A24E, A24F) | 12_2 | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Dikokoano ga di a tshwanelwa gore di letlelelwe go wela tlase. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.125 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/dimetara ≤ 85 (mS/m) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. | Salefeite ($SO_4$) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo (Na) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete (Cl) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.0 (Phesenthaele ya bo5) le bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga diphathojene go tshwanetse ga tlhola kotsi e e kwa tlase mo boitekanelong jwa batho. | *Escherichia coli* (*E. coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D. Somarela kelelo e e kwa tlase ya metsi ya tlhago. Tokafatsa legaetlhago la metsi a a tsenang mo molapong le lobelo/boteng jwa mefutafuta ya ditlhapi le diphologolo tse dikgolo mme di se na mokwatla. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D. Kago mo lefelong le le mo dintshing tsa noka e tshwanetse go laolwa le go lekanyediwa. Ditlamorago tsa bopega ga sedimente go tshwanetse ga laolwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = D ≥ 42% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D kgotsa e tshwanetse go tokafadiwa. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42%<br>Kgobokanya 4+ mefuta mo maitekong a go dira sampole a metsotso e le 20 |

**Lenaneo 15: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko13: KAROLO E E KWA TLASENYANA YA CROCODILE**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13: KAROLWANA E E KWA TLASENYANA YA CROCODILE | III | Crocodile e elela go tswa mo Letamong la Roodekopjes go ya kwa makgatlhanong a noka ya Sand, | **13_1** | **C/D** | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Crocodile mo CROC_EWR7 mo A24C<br>NMAR = 463.4x10$^6$m$^3$<br>REC=D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go | Dikelelo tsa Motheo Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Noka ya Crocodile mo A2H132 | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s) |
| | | | | | | | | | Diph | 1.134 | 1.134 |
| | | | | | | | | | Ngwan | 1.362 | 1.362 |
| | | | | | | | | | Sed | 1.481 | 1.481 |
| | | | | | | | | | Fer | 1.938 | 1.938 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sleepfontein-spruit, Dinokana tsa Klipspruit (A21L, A24A, A24B, A24C) | | | | | fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | | Tlhak | 2.638 | 2.488 |
| | | | | | | | | | Mop | 2.481 | 2.481 |
| | | | | | | | | | Mor | 2.118 | 2.118 |
| | | | | | | | | | Motsh | 1.745 | 1.745 |
| | | | | | | | | | Seet | 1.574 | 1.574 |
| | | | | | | | | | Phuk | 1.389 | 1.389 |
| | | | | | | | | | Phat | 1.262 | 1.262 |
| | | | | | | | | | Lwe | 1.172 | 1.172 |
| | | | | | | Kelelo e e kwa godimo ya metsi | Dikelelo tse di kwa godimo tsa metsi tsa EWR:<br>Noka ya Crocodile mo CROC_EWR7 mo A24C<br>NMAR = $463.4 \times 10^6 m^3$<br>REC=D category<br><br>Kelelo e e kwa godimo ya metsi e tshwanetse go fitlhelelwa go tshegetsa ditlhokego tsa diphologolo tsotlhe le dijalo tsa metsi. | Merwalela<br><br>Kelelo e e kwa godimo le yone e totobaditswe jaaka tlhokego ya morwalela ka nosi malebana le bogolo le boleele jwa paka (Leba Mametlelelo A)<br><br>Tlhokomelo ya Noka ya Crocodile mo A2H132 | | Kelelo e e kwa godimo ya metsi ($m^3/s$) | |
| | | | | | | | | | Diph | 0 | |
| | | | | | | | | | Ngwan | 0.790 | |
| | | | | | | | | | Sed | 1.529 | |
| | | | | | | | | | Fer | 0 | |
| | | | | | | | | | Tlhak | 1.270 | |
| | | | | | | | | | Mop | 0 | |
| | | | | | | | | | Mor | 0.790 | |
| | | | | | | | | | Motsh | 0 | |
| | | | | | | | | | Seet | 0 | |
| | | | | | | | | | Phuk | 0 | |
| | | | | | | | | | Phat | 0 | |
| | | | | | | | | | Lwe | 0 | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Dikokoano ga di a tshwanelwa gore di letlelelwe go wela tlase. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.060 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Dikokoano ga di a tshwanelwa gore di letlelelwe go wela tlase. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/dimetara ≤ 85 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite ($SO_4$) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) | | |
| | | | | | | | | Sotiamo (Na) | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) | | |
| | | | | | | | | Tleloraete (Cl) | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa lkholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Metolachlor | Dimiligerama/dilitara tse ≤0.30 (mg/l) |
| | | | | | | | | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.3 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0073 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa D kgotsa mo maemong a a botoka. Somarela dikelelo tse di siameng tse di kwa tlase tsa metsi go tsweledisa legaetlhago go direla mefuta e e boifang legaetlhago le boalo jo bo kwa tlase ga noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% |
| | | | | | | Legae la mo dintshing tsa noka | Go tlhokega tsosoloso/paakanyo. Dimedi tse di tlholegetseng mo lefelong leo di tshwanetse go sireletswa (*Acacia galpinii* e e kgethegileng (Monkey thorn). Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D kgotsa mo maemong a a botoka. Somarela lefelo le le mo dintshing tsa noka mo mafelong a a lemilweng. Laola kago. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = D ≥ 42% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D kgotsa mo maemong a a botoka. Lobelo/boteng jwa kelelo bo tshwanetse go nna jo bo lekaneng go direla mefuta e e boifang kelelo *CPRE* le *LMOL* le mefuta e e bosisi mo legaetlhagong – *AJOH.* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D FRAI ≥ 42%<br>Sampole 6 + mofuta mo maitekong mangwe le mangwe a sampole<br>Mofuta wa sekao *Mofuta o o bosisi wa ditlhapi. boalo jo bo magwata jo bo mo tlase ga metsi, CPRE, LMOL* |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.5<br>(Site A2CROC-KOEDO) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.085 | 0.042 |
| | | | | | | | | | Ngwan | 0.104 | 0.024 |
| | | | | | | | | | Sed | 0.120 | 0.021 |
| | | | | | | | | | Fer | 0.196 | 0.063 |
| | | | | | | | | | Tlhak | 0.263 | 0.105 |
| | | | | | | | | | Mar | 0.199 | 0.055 |
| | | | | | | | | | Mor | 0.158 | 0.071 |
| | | | | | | | | | Motsh | 0.127 | 0.059 |
| | | | | | | | | | Seet | 0.119 | 0.056 |
| | | | | | | | | | Phuk | 0.108 | 0.051 |
| | | | | | | | | | Phat | 0.098 | 0.047 |
| | | | | | | | | | Lwe | 0.089 | 0.044 |
| | | Noka ya Sand go kgatlhana le Noka Crocodile (A24G, A24H) | 13_2 | | Bokanakang | Dikelelo tse di kwa tlase tsa metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Sand e elela go ya ntlheng e sele ya makgatlhanong a Noka ya Sondags mo S24.6289, E27.6223 mo A24H<br>NMAR = $26.56 \times 10^6 m^3$<br>REC=B category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tshololo ya Noka ya Sand ka nako ya dipatlisiso tsa baeolojikhale | | | |
| | | | | | | Kelelo e e kwa godimo ya metsi | Dikelelo tse di kwa godimo tsa metsi tsa EWR:<br>Noka ya Sand Tlhokomelo ya tshololo ya Noka ya Sand ka nako ya dipatlisiso tsa baeolojikhale mo S24.6289, E27.6223 mo A24H<br>NMAR = $26.56 \times 10^6 m^3$<br>REC=B category<br><br>Dikelelo tse di kwa godimo tsa metsi di tshwanetse go fitlhelelwa go netefatsa kelelo e e oketsegileng ya metsi go direla ditlhapi tse tsa baagi ba ba di tshwarang. | Dikelelo tse di oketsegileng go direla ditlhapi<br><br>Kelelo e e kwa godimo le yone e totobaditswe jaaka tlhokego ya morwalela ka nosi malebana le bogolo le boleele jwa paka (Leba Mametlelelo A) | | Kelelo e e kwa godimo ya metsi ($m^3/s$) | |
| | | | | | | | | | Diph | 0.009 | |
| | | | | | | | | | Ngwan | 0.056 | |
| | | | | | | | | | Sed | 0.090 | |
| | | | | | | | | | Fer | 0.181 | |
| | | | | | | | | | Tlhak | 0.500 | |
| | | | | | | | | | Mop | 0.181 | |
| | | | | | | | | | Mor | 0.093 | |
| | | | | | | | | | Motsh | 0 | |
| | | | | | | | | | Seet | 0 | |
| | | | | | | | | | Phuk | 0 | |
| | | | | | | | | | Phat | 0 | |
| | | | | | | | | | Lwe | 0 | |
| | | | | | Boleng | Dikotla Matswai | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji.<br>Dilekano tsa boletswai jwa metsi a a | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.020 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . Legaetlhago le kelelo e tshwanetse go nna tse di lekaneng go direla mefuta e e ikaegileng ka kelelo e e ikaegileng ka *go fetoga ga ditlha*, *CPAR*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B FRAI ≥ 82% |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.5<br>(Site A2SUND-WATER) |

CONTINUES ON PAGE 386 - PART 4

# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

**PART 4 OF 6**

N.B. The Government Printing Works will not be held responsible for the quality of "Hard Copies" or "Electronic Files" submitted for publication purposes

ISSN 1682-5843

9 771682 584003 42775

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Karolo e e kwa tlasenyana ya Crocodile go tswa mo Bierspruit go ya kwa molelwaneng wa Botswana (Noka ya Limpopo) (A24J) | 13_3 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Crocodile mo A2H128 mo A24J<br>NMAR = 565.16x10$^6$m$^3$<br>REC=C/D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Crocodile mo A2H128 | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s) |
| | | | | | | | | | Diph | 1.246 | 1.057 |
| | | | | | | | | | Ngwan | 1.454 | 1.228 |
| | | | | | | | | | Sed | 1.536 | 1.294 |
| | | | | | | | | | Fer | 1.932 | 1.616 |
| | | | | | | | | | Tlhak | 2.488 | 2.074 |
| | | | | | | | | | Mar | 2.128 | 1.776 |
| | | | | | | | | | Mor | 1.791 | 1.503 |
| | | | | | | | | | Motsh | 1.548 | 1.303 |
| | | | | | | | | | Seet | 1.524 | 1.285 |
| | | | | | | | | | Phuk | 1.425 | 1.203 |
| | | | | | | | | | Phat | 1.345 | 1.138 |
| | | | | | | | | | Lwe | 1.287 | 1.091 |
| | | | | | | Kelelo e e kwa godimo ya metsi | Dikelelo tse di kwa godimo tsa metsi tsa EWR:<br>Noka ya Crocodile mo A2H128 mo A24J<br>NMAR = 565.16x10$^6$m$^3$<br>REC=C/D category<br><br>Dikelelo tse di kwa godimo tsa metsi di tshwanetse go fitlhelelwa go netefatsa ditlhokego tsa morwalela tsa baagi ba ba tshwarang ditlhapi. | Merwalela<br><br>Kelelo e e kwa godimo le yone e totobaditswe jaaka tlhokego ya morwalela ka nosi malebana le bogolo le boleele jwa paka (Leba Mametlelelo A).<br><br>Tlhokomelo ya Noka ya Crocodile mo A2H128 | | Kelelo e e kwa godimo ya metsi (m$^3$/s) | |
| | | | | | | | | | Diph | 0 | |
| | | | | | | | | | Ngwan | 0.395 | |
| | | | | | | | | | Sed | 2.829 | |
| | | | | | | | | | Fer | 0 | |
| | | | | | | | | | Tlhak | 0.423 | |
| | | | | | | | | | Mop | 0 | |
| | | | | | | | | | Mor | 0 | |
| | | | | | | | | | Motsh | 0 | |
| | | | | | | | | | Seet | 0 | |
| | | | | | | | | | Phuk | 0 | |
| | | | | | | | | | Phat | 0 | |
| | | | | | | | | | Lwe | 0 | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Dikokoano ga di a tshwanelwa gore di letlelelwe go wela tlase. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.06 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/dimetara ≤ 85 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite ($SO_4$) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Dikokoano ga di a tshwanelwa gore di letlelelwe go wela tlase. | Sotiamo (Na) | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete (Cl) | Dimiligerama/dilitara tse ≤ 100 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimiligerama/dilitara tse 0.009 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C/D. Somarela dikelelo tse di siameng tse di kwa tlase tsa metsi go tsweledisa legaetlhago go direla mefuta e e boifang legaetlhago le boalo jo bo kwa tlase ga noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di tlholegetseng mo lefelong leo di tshwanetse go sireletswa *Acacia galpinii* e e kgethegileng (Monkey thorn). Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C/D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D. Lobelo/boteng jwa kelelo bo tshwanetse go somarelwa go direla *CPAR, MACU* le *LMOL*, le mefuta e e bosisi mo legaetlhagong le le rileng– *MMAC, BANN.* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = D<br>FRAI ≥ 42%<br>Sampole 6 + mofuta mo maitekong mangwe le mangwe a sampole |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago. Somarela lefatshe le le siameng le le khurumeditsweng ke dimedi tsa mo dintshing tsa noka goo direla manyedi. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Diphologolo tse di nang le mokwatla tsa metsi | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C/D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C/D ≥ 58%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a a fetotsweng thata kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 42% |

**Lenaneo 16: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko14: TOLWANE / KULWANE / MORETELE / KLIPVOOR**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | III | Noka ya Apies, Nokana ya Tshwane (A23F) | 14_1 | D | Bokanakang | Dikelelo | Togamaano ya taolo go laola metsi-phetelela a a leng teng (dikelelo tse di boelang morago) mo lefelong le diphologolo le dijalo di nnang mo go lone e tshwanetse go dirwa. Maitlhophelo a a tshwanelegang a taolo a tshwanetse go tlhatlhobiwa. Go tshwanetse ga tlhomamisiwa ditshiamelo tsa go fokotsa kelelo. | Kelelo e e kwa tlase ya metsi | Go tlhomamisiwa fa fela go dirilwe togamaano ya taolo |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.5 (mg/l) (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 3.0 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase (EC) | DimiliSiemens/dimetara ≤ 80 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite ($SO_4$) | Dimiligerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete (Cl) | Dimiligerama/dilitara tse ≤ 75 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo (Na) | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Mancozeb | Dimiligerama/dilitara tse 0.009 (mg/l) |
| | | | | | | | | Glyphosate | 0 Dimiligerama/dilitara tse.7 (mg/l) |
| | | | | | | | | Endosulfan | Dimiligerama/dilitara tse 0.13 (ug/l) |
| | | | | | | | | Chromium (VI) | Dimiligerama/dilitara tse ≤ 0.2 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0013 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Cb) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go ya kwa setlhopheng sa D. Somarela dikelelo tse di siameng tse di kwa tlase tsa metsi go tsweledisa legaetlhago go direla mefuta e e boifang legaetlhago le boalo jo bo kwa tlase ga noka (*BMAR, BUNI)*. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = D ≥ 42% (lefelo le le fa tlase ga makgatlhano a Apies le Tshwane) |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa D kgotsa mo maemong a a botoka. Somarela lefelo le le mo dintshing tsa noka mo mafelong a a lemileng. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = D ≥ 42% |
| | | Noka ya Pienaars go tswa mo makgatlhanong a Boekenshout go ya kwa makgatlhanong a Noka ya Apies (A23C) | 14_2 | | Bokanakang | Dikelelo | Togamaano ya taolo go laola metsi phethelela a a leng teng (dikelelo tsa poelomorago) mo lefelong e tshwanetse go dirwa. Maitlhophelo a a tshwanelegang a taolo a tshwanetse go tlhatlhobiwa. Go tshwanetse ga tlhomamisiwa ditshiamelo tsa go fokotsa kelelo. | Kelelo e e kwa tlase ya metsi | Go tlhomamisiwa fa fela go dirilwe togamaano ya taolo |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.090 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 50 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo | (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0095 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.00735 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C.<br>Go tlhokega paakanyo ya lefelo le le mo dintshing tsa noka le le Boekenshout. Go epiwa ga santa go tshwanetse ga laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C kgotsa mo go botoka. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. Lobelo/boteng jwa kelelo bo tshwanetse go somarelwa mo mefuteng ya ditlhapi – *CPAR* le *LMOL* le mefuta e e bosisi mo legaetlhagong – *AKAT* e go nang le kgonagalo ya gore e ka nna teng mo mafatsheng a a manyemunyemu. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Sampole 10 *CPAR* le 10 *LMOL* mo maitekong a metsotso e le 20 |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Go tshwanetse ga somarelwa Legaetlhago mo Motlhabeng wa Moretele. Boleele jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diamusi tsa mofuta o le mongwe ka taolo e e maleba ya legaetlhago. Somarela lefelo le le khurumeditsweng sentle la mo dintshing tsa noka go direla manyedi. Somarela lefelo la mo dintshing tsa noka jaaka legaetlhago la botlhokwa la dinonyane. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | Noka ya Plat (A23G) | 14_3 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Plat mo A2H064 mo A23G<br>NMAR = $9.64 \times 10^6 m^3$<br>REC=C/D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya Noka ya Plat mo A2H064 | |

| | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
|---|---|---|
| Diph | 0.021 | 0.012 |
| Ngwan | 0.023 | 0.012 |
| Sed | 0.023 | 0.013 |
| Fer | 0.025 | 0.014 |
| Tlhak | 0.030 | 0.016 |
| Mop | 0.027 | 0.015 |
| Mor | 0.027 | 0.014 |
| Motsh | 0.025 | 0.013 |
| Seet | 0.025 | 0.014 |
| Phuk | 0.024 | 0.013 |
| Phat | 0.024 | 0.013 |
| Lwe | 0.023 | 0.012 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya mo setlhopheng sa C/D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C/D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C/D ≥ 58% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C/D. Somarela lobelo/boteng jwa kelelo jwa mefuta ya ditlhapi ya *LCYL* le *LMOL* le mefuta e e bosisi mo legaetlhagong, *MBRE* le *BBR*. Ditlhopa tse di tlhaotsweng tsa *CTHE* mo boleeleng jo bo kwa godimo jwa noka di tshwanetse go somarelwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D<br>FRAI ≥ 58%<br>Sampole 2 kgotsa 3 *CTHE* le 10 *LMOL* mo maitekong a metsotso e le 20<br><br>(Site A2PLAT-KOMAN) |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse e go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br><br>(Site A2PLAT-KOMAN) |
| | | Moretele (Noka ya Pienaars) go tswa mo makgatlhanong a Noka ya Plat go ya kwa Letamong Klipvoor, Kutswane go ya kwa Letamong la Klipvoor (A23J) | 14_4 | | Bokanakang | Dikelelo | Togamaano ya taolo go laola metsi-phetelela a a leng teng (dikelelo tse di boelang morago) mo lefelong le diphologolo le dijalo di nnang mo go lone e tshwanetse go dirwa. Maitlhophelo a a tshwanelegang a taolo a tshwanetse go tlhatlhobiwa. Go tshwanetse ga tlhomamisiwa ditshiamelo tsa go fokotsa kelelo. | Kelelo e e kwa tlase ya metsi | Go tlhomamisiwa fa fela go dirilwe togamaano ya taolo |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.5 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 3.0 (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 85 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite ($SO_4$) | Dimiligerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) |
| | | | | | | | | Tleloraete (Cl) | Dimiligerama/dilitara tse ≤ 75 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo (Na) | Dimiligerama/dilitara tse ≤ 80 (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | Letamo la Klipvoor (A23J) | 14_6 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a somarelwa.<br>Kgololo ya metsi a letamo e tlhoka go fitlhelela ditlhokego tsa kelelo ya kwa metsi a yang teng go direla mabaka a kelelo ya metsi go tswela mosola diphologolo le dijalo. | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Othofosofate | ≤ 0.05 mg/ℓ<br>Phesenthaele ya bo50 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya fosoforo | ≤ 0.130 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya Amonia jaaka N e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dijalo le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka tsamaiso e e nang le dikotla tse dintsi. | Palogotlhe ya Amonia | ≤ 0.072 mg/ℓ N<br>Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 75 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 |
| | | | | | | | Bophepa jo bo oketsegileng | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 |
| | | | | | | | Phetogo ya magareng | Thempereitša | E seng go feta 2 °C phetogo e e oketsegang mo minimamong le makisimamong ka bobedi |
| | | | | | | | Dilekano tsa okosijene di tshwanetse go somarela diphologolo tsotlhe le dijalo tsa mo lefelong le le rileng. | Okosijene e e tlhaologileng | ≥ 7.0 mg/ℓ $O_2$<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml)<br>(Phesenthaele ya bo95) |
| | | | | | | Dire tse di botlhole | Letamo le tshwanetse go laolwa go fokotsa go runya ga baketeria e e botlhole ya fotosintese | Baketeria ya fotosintese | Phekeetso ya baketeria ya fotosintese ka kokoano ya Chl *a* e e kwa godingwana ga 30µg/ℓ e tshwanetse go tsholwa e le ka ga tlase ga 20% ya nako. |
| | | | | | | | Metsi a noka ga a tshwanela go nna botlhole mo ditsheding tse dinnye tsa metsi kgotsa go nna matshosetsi mo boitekanelong jwa batho. | Dibolayadisenyi | Cyanide: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>Phesenthaele ya bo95 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | Bokanaka ng | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Dinoka tsa Moretele/ Pienaars mo CROC_EWR5 mo A23J<br>NMAR = $113.0 \times 10^6 m^3$<br>REC=D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo<br><br>Tlhokomelo ya Noka ya Pienaars mo A2H106 | Diph | 0.162 | 0.159 |
| | | | | | | | | | Ngwan | 0.210 | 0.206 |
| | | | | | | | | | Sed | 0.230 | 0.226 |
| | | | | | | | | | Fer | 0.303 | 0.298 |
| | | | | | | | | | Tlhak | 0.356 | 0.351 |
| | | | | | | | | | Mar | 0.309 | 0.304 |
| | | | | | | | | | Mor | 0.260 | 0.256 |
| | | | | | | | | | Motsh | 0.220 | 0.216 |
| | | | | | | | | | Seet | 0.208 | 0.205 |
| | | | | | | | | | Phuk | 0.188 | 0.185 |
| | | | | | | | | | Phat | 0.174 | 0.171 |
| | | | | | | | | | Lwe | 0.160 | 0.158 |
| | | Noka ya Moretele go tswa kwa Letamong la Klipvoor go ya kwa Nokeng ya Crocodile, Tolwane (A23K, A23L) | 14_7 | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. Dikokoano tsa dikotla di tshwanetse go fokodiwa. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.060 (mg/l) (Phesenthaele ya bo50) | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 1.0 (Phesenthaele ya bo50) | |
| | | | | | | Matswai | Boletswai jwa metsi a a mo molapong bo tshwanetse go somarelwa go tshegetsa seemo sa ga jaana sa ikholoji. Ga go na tshenyego go ya pele e e tshwanetseng go direga. Ditiro tse di mo lefatsheng le dikgololo tsa WWTW di tshwanetse go laolwa. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 75 (mS/m) (Phesenthaele ya bo95) | |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 60 (Phesenthaele ya bo95) | |
| | | | | | | | | Tleloraete | Dimiligerama/dilitara tse ≤ 70 (Phesenthaele ya bo95) | |
| | | | | | | | | Sotiamo | ≤ Dimiligerama/dilitara tse 100 (Phesenthaele ya bo95) | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. Kgotlelego ya maekherobiale e tshwanetse go fokodiwa. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Metolachlor | Dimiligerama/dilitara tse ≤0.30 (mg/l) |
| | | | | | | | | Mancozeb | Dimiligerama/dilitara tse 0.009 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya mo setlhopheng sa C. Somarela dikelelo tse di siameng tse di kwa tlase tsa metsi go tsweledisa legaetlhago go direla mefuta e e boifang legaetlhago le boalo jo bo kwa tlase ga noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C. Go epiwa ga santa mo lefelong le le mo dintshing tsa noka go tshwanetse ga lekanyediwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C/D. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. Somarela lobelo/boteng jwa kelelo jwa mefuta ya *LMOL LCYL* le *CPAR* le mefuta e e bosisi mo legaetlhagong, *MBRE*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D<br>FRAI ≥ 58%<br>Sampole 10+ mefuta mo maitekong a sampole nngwe le nngwe Sampole 20 *BMAR* mo maitekong a metsotso e le 20 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.0<br><br>(REMP site A2PIEN – BUFFE kgotsa EWR5) |
| | | | | | | Diphologolo, dimela le ditshedi tse di nnang mo metsing le mo metsing | Boalo jwa noka bo tshwanetse go somarelwa gore bo kgone go dira jaaka legaetlhago la ditlhopa tsa dinonyane tsa metsi ka taolo e e maleba ya legaetlhago. Somarela lefelo le le mo dintshing tsa noka go tlamela magaetlhago a a maleba. | Mofuta wa sekao wa dinonyane tsa metsi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a a fetotsweng thata kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele = D ≥ 42% |

**Lenaneo 17: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko15: KAROLO E E KWA GODIMO YA MOKOLO**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| 15: KAROLO E E KWA GODIMO YA MOKOLO | II | Noka ya Moloko, Klein Sand, Sondagsloop, Heuningspruit, Dwars, dinokana tsa Jim se loop (A42C, A42E) | 15_1 | B/C | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mokolo mo MOK_EWR1a mo A42C<br>NMAR = $84.84 \times 10^6 m^3$<br>PES=C/D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo mo A4H002 | Diph | 0.110 | 0.005 |
| | | | | | | | | | Ngwan | 0.120 | 0.005 |
| | | | | | | | | | Sed | 0.200 | 0.020 |
| | | | | | | | | | Fer | 0.550 | 0.040 |
| | | | | | | | | | Tlhak | 0.850 | 0.060 |
| | | | | | | | | | Mar | 0.700 | 0.050 |
| | | | | | | | | | Mor | 0.500 | 0.040 |
| | | | | | | | | | Motsh | 0.350 | 0.030 |
| | | | | | | | | | Seet | 0.270 | 0.020 |
| | | | | | | | | | Phuk | 0.230 | 0.015 |
| | | | | | | | | | Phat | 0.180 | 0.010 |
| | | | | | | | | | Lwe | 0.100 | 0.005 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa lkholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) Tlhokomelo ya data – kgaolo |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | | |
| | | | | | | | | Bromoxynil | Dimiligerama/dilitara tse ≤0.010 (mg/l) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Maemo a legaetlhago a tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C/D go ya go setlhopa sa B/C. Dikelelo tse di kwa tlase tse di siameng tsa metsi di tshwanetse go somarelwa go tsweledisa legaetlhago la mefuta e e boifang boalo jwa noka le tse di bosisi mo legaetlhagong. Dikelelo tsa poelomorago le tloso mo karolong ya motswedi di tshwanetse go tlhokomelwa le go laolwa go sireletsa legaetlhago la metsi a a mo molapong. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B/C ≥ 78% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C/D go ya go setlhopa sa C. Mafelo a a mo dintshing tsa noka a tshwanetse go sala a le mo mafelong a a lemilweng. Temo e tshwanetse go laolwa go thibela tatlhegelo ya lefelo le le mo dintshing tsa noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C/D go ya kwa setlhopheng sa C. Lobelo/boteng jwa kelelo bo tshwanetse go somarelwa mo mefuteng, *LMOL, BMAR* le *CPRE* le mefuta e e bosisi mo legaetlhagong, *BRAD, BVIV*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C FRAI ≥ 62%<br>Sampole 15+ mefuta mo maitekong a sampole nngwe le nngwe<br>Sampole 25 *CPRE* le 15 *AURA* mo maitekong a metsotso e le 20<br><br>(Setsha EWR1a Dwars) |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boalo jo jwa noka bo tshwanetse go somarelwa gore bo kgone go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diphologolo ka | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | taolo e e maleba ya legaetlhago. | | dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. | | |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Dimedi tse dikgolo tse di nnang mo metsing mme di sa mokwatla di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C kgotsa go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5). | Ditsha:<br>EWR 1a = A4MOKO-VAALW<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5<br>A4SAND-TOPBR:<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br>Site DWARS 1a = Rapid EWR site:<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5 | | |
| | | | | | | Malele | Kgobokano ya malele e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B kgotsa mo maemong a a botoka. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 82% | | |
| | | Sterkstroom, Frikkie se Loop (A42D) | 15_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Sterkstroom mo A42D<br>NMAR = 43.43x10$^6$m$^3$<br>REC=B category<br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br>Tlhokomelo ya Sterkstroom mo A4H008 | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s) |
| | | | | | | | | | Diph | 0.382 | 0.060 |
| | | | | | | | | | Ngwan | 0.517 | 0.110 |
| | | | | | | | | | Sed | 0.972 | 0.130 |
| | | | | | | | | | Fer | 1.778 | 0.210 |
| | | | | | | | | | Tlhak | 2.842 | 0.070 |
| | | | | | | | | | Mar | 2.996 | 0.110 |
| | | | | | | | | | Mor | 2.529 | 0.020 |
| | | | | | | | | | Motsh | 1.908 | 0.020 |
| | | | | | | | | | Seet | 1.390 | 0.050 |
| | | | | | | | | | Phuk | 1.090 | 0.110 |
| | | | | | | | | | Phat | 0.758 | 0.080 |
| | | | | | | | | | Lwe | 0.426 | 0.060 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo | Othofosofate (PO$_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.015 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite (NO$_3^-$) & Naeteraete (NO$_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 20 (mS/m)<br>(Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa mo setlhopheng sa ikholoji sa B/C. Somarela dikelelo tse di kwa tlase tsa metsi go tsweledisa legaetlhago go direla mefuta e e boifang boalo jwa noka le tse di bosisi mo legaetlhagong. Setlhopa sa Ikholoji. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC B/C ≥ 78% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C kgotsa mo maemong a a botoka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B/C ≥ 78% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C FRAI ≥ 78%<br>Sampole 9+ mefuta mo maitekong a sampole nngwe le nngwe |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | rileng | | ikholoji sa B/C. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . Somarela lobelo/boteng jwa kelelo mo mefuteng, *LMOL, BMAR, AURA* le *CPRE* le mefuta e e bosisi mo legaetlhagong – *CTHE*. Go nna teng ga mefuta e mentšhwa: *B. waterbergensis* e tshwanetse go tlhomamisiwa. | | Sampole 10 *AJOH* le 2 *CTHE* mo maitekong a metsotso e le 20 | | |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boalo jo jwa noka bo tshwanetse go somarelwa gore bo kgone go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diphologolo ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. | | |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa B sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla EC ≥ 82% (Site A4STER-WELGE) | | |
| | | Noka ya Mokolo A42F, e elela go tsena mo Letamong la Mokolo, Taaibosspruit, Malmanies le Bulspruit (A42F) | 15_3 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mokolo mo MOK_EWR2 mo A42F<br>NMAR = 195.69x10$^6$m$^3$<br>PES=B/C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo mo A4H005 | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s) |
| | | | | | | | | | Diph | 0.230 | 0.008 |
| | | | | | | | | | Ngwan | 0.240 | 0.110 |
| | | | | | | | | | Sed | 0.370 | 0.146 |
| | | | | | | | | | Fer | 0.602 | 0.201 |
| | | | | | | | | | Tlhak | 1.064 | 0.318 |
| | | | | | | | | | Mop | 0.953 | 0.285 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | | Mor | 0.808 | 0.252 |
| | | | | | | | | | Motsh | 0.627 | 0.207 |
| | | | | | | | | | Seet | 0.512 | 0.181 |
| | | | | | | | | | Phuk | 0.400 | 0.120 |
| | | | | | | | | | Phat | 0.320 | 0.008 |
| | | | | | | | | | Lwe | 0.230 | 0.005 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.025 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Metolachlor | Dimiligerama/dilitara tse ≤0.30 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya mo setlhopheng sa B. Dikelelo tsa poelomorago ya mo legaetlhagong di tshwanetse go laolwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya go setlhopa sa B. Somarela lefelo le le mo dintshing tsa noka mo mafelong a a lemilweng, le go laola temo mo lefelong le le mo dintshing tsa noka. | Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . Somarela mefuta e e boifang lobelo/boteng jwa kelelo ya *CPRE* le e e bosisi, *MMAC* le *AJOH*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C FRAI ≥ 62%<br>Sampole 10+ mefuta mo maitekong a sampole nngwe le nngwe<br>Sampole 10 *AJOH* mo maitekong a metsotso e le 20 |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boalo jo jwa noka bo tshwanetse go somarelwa gore bo kgone go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diphologolo ka | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | taolo e e maleba ya legaetlhago. | | dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0<br><br>(Site MOK_EWR2) |
| | | | | | | Malele | Kgobokanyo ya malele e tshwanetse go somarelwa e le mo maemong a a fetotsweng thata kgotsa go tokafadiwa. | Tshupane e e Totobetseng ya Kgotlelego | EC ya Malele ≥ 82% |
| | | Letamo la Mokolo go ya kwa karolong e e kwa godimo ya A42G (10km go ya kwa letamo le elelang go ya kwa teng) | 15_4 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mokolo mo MOK_EWR3 mo A42G<br>NMAR = 215.995x10$^6$m$^3$<br>PES=B/C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo mo A4H010 | Kelelo e e kwa tlase ya metsi (m$^3$/s) / Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s)<br>Diph 0.383 0.005<br>Ngwan 0.399 0.005<br>Sed 0.406 0.005<br>Fer 0.444 0.015<br>Tlhak 0.559 0.020<br>Mar 0.504 0.018<br>Mor 0.493 0.015<br>Motsh 0.450 0.010<br>Seet 0.441 0.008<br>Phuk 0.413 0.006<br>Phat 0.399 0.005<br>Lwe 0.396 0.005 |
| | | | | | | Kelelo e e kwa godimo ya metsi | Dikelelo tse di kwa godimo tsa metsi tsa EWR:<br>Noka ya Mokolo mo MOK_EWR3 mo A42G<br>NMAR = 215.995x10$^6$m$^3$<br>PES=B/C category<br><br>Dikelelo tse di kwa godimo tsa metsi di tshwanetse go fitlhelelwa jaaka di totobaditswe go tshegetsa ditlhokego tsa diphologolo | Merwalela<br><br>Kelelo e e kwa godimo le yone e totobaditswe jaaka tlhokego ya morwalela ka nosi malebana le bogolo le boleele jwa paka.<br><br>Tlhokomelo ya Noka ya Mokolo mo A4H010 | Go ya ka melawana ya tiriso mo thempoleiteng ya Resefo, karolo 3. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tsotlhe le dijalo tsa metsi. | | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.010 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | ≤ DimiliSiemens/dimetara 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola kotsi epe mo boitekanelong jwa batho. | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya mo setlhopheng sa C/D. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C. Somarela lefelo la mo dintshing tsa noka malebana le *Syzygium cordatum* | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi. | VEGRAI EC = B/C ≥ 78% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C. Somarela boteng/lobelo la kelelo la mefuta ya *CPRE.* | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C<br>FRAI ≥ 78% |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boleele jo jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diamusi tsa mofuta o le mongwe ka taolo e e maleba ya legaetlhago. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0 |
| | | Letamo la Mokolo | 15_4 | | Bokanakang | Selekano sa Letamo | Letamo le tshwanetse go laolwa go sireletsa tiro ya diphologolo tsotlhe le dimela ga mmogo le badirisi ba kwa metsi a elelelang go ya teng. Go tlhama le go tlhabolola melawana ya tiriso go tsweledisa dilekano tse di kwa godimo tsa letamo go netefatsa gore mefutafuta ya diphologolo tsotlhe le dijalo tsa metsi e a | Go tlhokega selekano se se kwa tlase sa tiriso mo letamong | Melawana ya tiriso jaaka e le maleba.<br><br>Selekano se se kwa tlase go tsweledisa diphologolo le dijalo tsa metsi (15-18%). |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | somarelwa.<br>Kgololo ya metsi a letamo e tlhoka go fitlhelela ditlhokego tsa kelelo ya kwa metsi a yang teng go direla mabaka a kelelo ya metsi go tswela mosola diphologolo le dijalo. | | |
| | | | | | Boleng | Dikotla | Kokoano ya othofosofate e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka lefelo le go nang le tlhaelo ya dikotla tsa dijalo. | Diothofosofate | ≤ 0.010 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya palogotlhe ya fosoforo e tshwanetse go somarelwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka lefelo le go nang le tlhaelo ya dikotla tsa dijalo. | Palogotlhe ya fosoforo | ≤ 0.025 mg/ℓ<br>Phesenthaele ya bo50 |
| | | | | | | | Kokoano ya naeteraete & naetereite e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa ditshedi tsotlhe le dimela tsa lefelo le le rileng le ditlhokego tsa boleng jwa metsi tsa badirisi ba metsi. Letamo le tshwanetse go somarelwa jaaka lefelo le go nang le tlhaelo ya dikotla tsa dijalo. | Naeteraete& Naetereite | ≤ 0.50 mg/ℓ N Phesenthaele ya bo95 |
| | | | | | | Matswai | Boletswai mo letamong bo tshwanetse go somarelwa go tshegetsa boitekanelo jwa ditshedi tsotlhe le dimela le ditlhokego tsa boleng jwa metsi tsa badirisi ba kwa metsi a elelelang go ya teng. | Kgonagalo ya moela wa motlakase | ≤ 20 mS/m<br>Phesenthaele ya bo95 |
| | | | | | | Dipathojene | Go nna teng ga dipathojene ga go a tshwanela go tlhola | *Escherichia coli* (*E.coli*) | makgetlho a le 130/dimililitara tse 100 (ml) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | kotsi epe mo boitekanelong jwa batho. | | (Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Metsi a tshwanetse go nna a maemo a a amogelesegang go ka dirisetswa boitapoloso. | pH | 6.5 – 9.0<br>Phesenthaele ya bo95 | | |
| | | | | | | | Bophepha jo bo oketsegileng ka palo | Kgoberego | ≥0.4 m<br>Phesenthaele ya bo5 | | |
| | | Dinokana tsa Grootspruit le Sandspruit (Bodutiso jwa dinokana tse e leng motswedi wa metsi wa Mokolo) (A42A, A42B) | 15_5 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Grootspruit mo A42B<br>NMAR = 27.8 x$10^6$$m^3$<br>REC= D category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng | Dikelelo tsa motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br>Tlhokomelo ya tshololo ka nako ya dipatlisiso tsa baeolojikhale. | | Kelelo e e kwa tlase ya metsi ($m^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3$/s) |
| | | | | | | | | | Diph | 0.271 | 0.136 |
| | | | | | | | | | Ngwan | 0.269 | 0.135 |
| | | | | | | | | | Sed | 0.291 | 0.148 |
| | | | | | | | | | Fer | 0.345 | 0.180 |
| | | | | | | | | | Tlhak | 0.401 | 0.213 |
| | | | | | | | | | Mar | 0.384 | 0.203 |
| | | | | | | | | | Mor | 0.338 | 0.160 |
| | | | | | | | | | Motsh | 0.320 | 0.120 |
| | | | | | | | | | Seet | 0.311 | 0.160 |
| | | | | | | | | | Phuk | 0.304 | 0.156 |
| | | | | | | | | | Phat | 0.299 | 0.152 |
| | | | | | | | | | Lwe | 0.286 | 0.145 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla ya metsi a a elelang go tsena mo teng e tshwanetse go tokafadiwa go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.7 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a elelang go tsena mo nokeng di tshwanetse go fitlhelelwa jaaka go tlhalositswe mo go totobetseng go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m)<br>(Phesenthaele ya bo95) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa C. Kgolagano ya mefuta ya phudugo e tshwanetse go somarelwa. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C ≥ 62% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = C ≥ 70% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. Somarela lobelo/boteng jwa kelelo mo mefuteng ya *CPRE, AURA, LCYL* le mefuta e e bosisi | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Sampole 10+ mefuta mo maitekong a sampole nngwe le nngwe |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mo legaetlhagong *MMAC* le *AJOH*. | | |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boleele jo jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago le tselana ya phudugo ya ditlhopa tsa mofuta o le mongwe tsa dinonyane tsa metsi ka taolo e e maleba ya legaetlhago. Laola lefelo le le mo dintshing tsa noka – ntsha dimedi tsa seeng, tsosolosa mefuta e e tlholegetseng mo lefelong. | Mefuta ya dinonyane tsa metsi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa D sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 5.5<br><br>(site A4GROO-GROOT) |
| | | Noka ya Mokolo go tswa mo Nokeng ya Dwars go kgatlhana le Sterkstroom, Klein Vaalwaterspruit (A42E) | 15_6 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mokolo mo MOK_EWR1b mo A42E<br>NMAR = 135.03x10$^{6}$m$^{3}$<br>PES=B/C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tshololo ya Noka ya Mokolo ka nako ya dipatlisiso tsa baeolojikhale | Kelelo e e kwa tlase ya metsi (m$^{3}$/s) / Kelelo e e bonya ya metsi ka nako ya komelelo (m$^{3}$/s)<br>Diph 0.120 0.005<br>Ngwan 0.120 0.005<br>Sed 0.320 0.020<br>Fer 0.700 0.050<br>Tlhak 1.400 0.080<br>Mop 1.150 0.065<br>Mor 0.850 0.050<br>Motsh 0.600 0.040<br>Seet 0.450 0.020<br>Phuk 0.320 0.015<br>Phat 0.250 0.010 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.020 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.5 (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | | |
| | | | | | | Matswai | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.0 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya kwa setlhopheng sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C kgotsa mo maemong a a botoka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane | VEGRAI EC = B/C ≥ 78% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ya Tlhatlhobo ya Tsibogo ya Dimedi | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C FRAI ≥ 78% |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa B/C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 140<br>ASPT ≥ 6.0<br><br>(MOK_EWR1b le A42E) |

**Lenaneo 18: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko16: KAROLO E E KWA TLASENYANA YA MOKOLO**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 16: KAROLO E E KWA TLASENYANA YA MOKOLO | II | Noka ya Tambotie A42H (karolwana e kgolo - botlhaba) | 16_1 | B/C | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Somarela seemo sa lefelo le le mo dintshing tsa noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | VEGRAI EC = B ≥ 82% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. Somarela lobelo/boteng jwa kelelo jwa mefuta *CPRE, CPAR, LCYL, LRUD* le mefuta ya bosisi jwa legaetlhago *MMAC* le *AJOH*. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B FRAI ≥ 82%<br>Sampole 20+ mefuta mo maitekong a sampole nngwe le nngwe<br>Sampole 5 *BBRI* le 3 *PCAT* mo maitekong a metsotso e le 20 |
| | | Poer-se-Loop (karolo e e kwa godimo ya bodutiso) (A42G) | 16_2 | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B. Tlhokomela tloso le kelelo. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Somarela seemo sa lefelo le le mo dintshing tsa noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . Somarela lobelo/boteng jwa kelelo jwa mefuta e e ikaegileng ka kelelo le e e bosisi mo legaetlhagong le le rileng. (bodutiso jo bo kwa godingwana) | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi B FRAI ≥ 82%<br>Sampole 25+ mefuta mo maitekong a sampole nngwe le nngwe<br>Sampole 5 *BBRI* le 3 *PCAT* mo maitekong a metsotso e le 20 |
| | | Sandloop A42J le karolwana e e setseng ya A42H | 16_4 | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi go netefatsa gore go fitlhelelwa setlhopa se se laoletsweng sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.1 (Phesenthaele ya bo50 |
| | | | | | | Matswai | Kokoano ya boletswai jwa metsi a a mo nokeng e tshwanetse go somarelwa go sireletsa seemo sa ga jaana sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 55 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. Go tshwanetse ga tlhalosiwa gape ditekanyetso go laola ditlamorago tsa go epiwa ga seleiti mo motsweding. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. Go tshwanetse ga tlhomamisiwa ditekanyetso. |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | | | | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0057 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0048 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% | | |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B ≥ 82% | | |
| | | Karolo e kgolo ya Mokolo go ya kwa makgatlhanong a Tambotie fa tlase (boleele jwa boalo jwa noka (go itsheka ga santa, go ya kwa karolong e e atlhameng ya noka)<br><br>A42G mo karolong e kgolo ya noka | 16_5_1 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mokolo mo MOK_EWR4 mo A42G<br>NMAR = $253.5 \times 10^6 m^3$<br>PES=C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo mo A4H013 | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.489 | 0 |
| | | | | | | | | | Ngwan | 0.508 | 0 |
| | | | | | | | | | Sed | 0.508 | 0 |
| | | | | | | | | | Fer | 0.540 | 0 |
| | | | | | | | | | Tlhak | 0.657 | 0 |
| | | | | | | | | | Mop | 0.595 | 0 |
| | | | | | | | | | Mor | 0.589 | 0 |
| | | | | | | | | | Motsh | 0.547 | 0 |
| | | | | | | | | | Seet | 0.543 | 0 |
| | | | | | | | | | Phuk | 0.512 | 0 |
| | | | | | | | | | Phat | 0.500 | 0 |
| | | | | | | | | | Lwe | 0.504 | 0 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Kelelo e e kwa godimo ya metsi | Dikelelo tse di kwa godimo tsa metsi tsa EWR:<br>Noka ya Mokolo mo MOK_EWR4 mo A42G<br>NMAR = $253.5 \times 10^6 m^3$<br>REC=C category<br><br>Kelelo e e kwa godimo ya metsi e tshwanetse go totobadiwa go tshegetsa ditlhokego tsa diphologolo tsotlhe le dijalo tsa metsi. | Merwalela<br><br>Tlhokomelo ya Noka ya Mokolo kwa A4H013 | |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi, le go somarela seemo sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.02 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.05 (Phesenthaele ya bo50) |
| | | | | | | Matswai | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | ≤ Dimiligerama/dilitara tse 20 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B/C go ya kwa setlhopheng sa B. Tlhokomela tloso le kelelo. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C go ya go setlhopa sa B/C. Netefatsa gore go somarelwa kgolo e e kwa tlase go direla thaopo ya *Xanthocercis zambesiaca* ka nako ya ditlhatlhobo tsa VEGRAI. Somarela lefelo le le mo dintshing tsa noka | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi. | VEGRAI EC = B/C ≥ 80% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C go ya kwa setlhopheng sa B. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . Somarela lobelo/boteng jwa kelelo jwa mefuta e e ikaegileng ka kelelo le e e bosisi mo legaetlhagong le le rileng. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B/C FRAI ≥ 78%<br><br>Sampole 25+ mefuta mo maitekong a sampole nngwe le nngwe<br>Sampole 5 *BBRI* le 3 *PCAT* mo maitekong a metsotso e le 20 |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Tshwanelego ya boalo jo jwa noka go dira jaaka legaetlhago la dinonyane le diamusi tsa metsi e tshwanetse go somarelwa ka taolo e e maleba ya legaetlhago | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla EC = C ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 5.2 |
| | | Karolo e kgolo ya Mokolo go tswa mo makgatlhanong a Tambotie le Limpopo A42H, A42J mo noka ya karolo e kgolo | 16_5_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Somarela dikelelo mo nokeng go tshegetsa ditlhokego tsa lefatshe le le manyemunyemu mo A42J | Dikelelo tsa Motheo | Ditlhokego tsa lefatshe le le manyemunyemu la motlhaba – Tlhokomela dikelelo kwa morathong o montšhwa (e ne e le A4H014) |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi, le go somarela seemo sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.01 (mg/l) (Phesenthaele ya bo50) |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.05 (Phesenthaele ya bo50) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 30 (mS/m) (Phesenthaele ya bo95) |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | | | Sotiamo | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo95) |
| | | | | | | Dintlha tse di ka kgonang go fetoga | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a elelang go tsena mo molapong. | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | Dire tse di botlhole | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0057 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0048 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Atrazine | Dimiligerama/dilitara tse ≤0.078 (mg/l) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng sa C/D. Tlhokomela tloso le kelelo Somarela kgolagano e e siameng go ya kwa mafelong a ntlha e sele le e noka e elelang kwa go yone (16_5_1). | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = C/D ≥ 58% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tse di mo dintshing tsa noka di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya go setlhopa sa C/D. Netefatsa tshomarelo ya kgolo e e kwa tlase go letlelela thaopo ya *Xanthocercis zambesiaca* ka nako ya tlhatlhobo ya VEGRAI. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi. | VEGRAI EC = C/D ≥ 58% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhopa tsa mofuta o le mongwe di tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa D go ya kwa setlhopheng saC/ D. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji . | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C/D FRAI ≥ 58%<br>Sampole 12+ mefuta mo maitekong a sampole nngwe le nngwe |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boleele jo jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diamusi tsa mofuta o le mongwe ka taolo e e maleba ya legaetlhago. Somarela lefelo le le mo dintshing tsa noka. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |

**Lenaneo 19: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko17a: MOTLHABATSI / MAMBA**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17a: MOTLHABATSI / MAMBA | I | Noka ya Mamba (A41B) | 17a_1 | **B/C** | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Noka ya Mamba mo MAT_EWR3 mo A41B<br>NMAR = $9.54 \times 10^6 m^3$<br>REC=B/C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa e le go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le badirisi ba metsi a kwa noka e elelang go ya teng. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tshololo ya Noka ya Mamba ka nako ya dipatlisiso tsa baeolojikhale | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.034 | 0.004 |
| | | | | | | | | | Ngwan | 0.047 | 0.007 |
| | | | | | | | | | Sed | 0.072 | 0.014 |
| | | | | | | | | | Fer | 0.104 | 0.021 |
| | | | | | | | | | Tlhak | 0.149 | 0.016 |
| | | | | | | | | | Mop | 0.129 | 0.011 |
| | | | | | | | | | Mor | 0.090 | 0.011 |
| | | | | | | | | | Motsh | 0.058 | 0.004 |
| | | | | | | | | | Seet | 0.045 | 0.011 |
| | | | | | | | | | Phuk | 0.039 | 0.011 |
| | | | | | | | | | Phat | 0.035 | 0.011 |
| | | | | | | | | | Lwe | 0.030 | 0.007 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.015 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.25 (Phesenthaele ya bo50) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a tsenang mo molapong jaaka di totobaditswe di tshwanetse go somarelwa go sireletsa boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi le bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi jwa lefelo. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 20 (mS/m)<br>(Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B/C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC= B/C ≥ 78% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B/C. Netefatsa gore ga go na kago epe mo lefelong le le dintshing tsa noka. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | VEGRAI EC = B/C ≥ 78% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. Somarela kelelo e e kwa tlase go akaretsa ditlhopa tsa lobelo kwa kelelo le boteng tsa mefuta e e ikaegileng ka kelelo. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = C<br>FRAI ≥ 62%<br>Sampole 7+ mefuta mo maitekong a sampole nngwe le nngwe.<br>Sampole 8 *AURA* le 2 *CTHE* ka nako ya maiteko a go dira sampole |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boleele jo jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago le tselana ya phudugo ya ditlhopa tsa mofuta o le mongwe tsa dinonyane tsa metsi ka taolo e e maleba ya legaetlhago. Lefelo le le sireleditsweng le le mo dintshing tsa noka – ga go a tshwanela go nna le tsenelelo mo dintshing tsa | Mefuta ya dinonyane tsa metsi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | noka. | | | | |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.5 | | |
| | | Noka ya Motlhabatsi/ Matlabas (A41A, A41B) | 17a_2 | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Matlabas mo MAT_EWR2 mo<br>NMAR = 32.80x10$^6$m$^3$<br>REC=B/C category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tsholologo ya Noka ya Matlabas mo A4H004 | | Kelelo e e kwa tlase ya metsi (m$^3$/s) | Kelelo e e bonya ya metsi ka nako ya komelelo (m$^3$/s) |
| | | | | | | | | | Diph | 0.153 | 0.007 |
| | | | | | | | | | Ngwan | 0.178 | 0.012 |
| | | | | | | | | | Sed | 0.220 | 0.080 |
| | | | | | | | | | Fer | 0.280 | 0.101 |
| | | | | | | | | | Tlhak | 0.373 | 0.095 |
| | | | | | | | | | Mop | 0.330 | 0.116 |
| | | | | | | | | | Mor | 0.265 | 0.077 |
| | | | | | | | | | Motsh | 0.208 | 0.071 |
| | | | | | | | | | Seet | 0.193 | 0.070 |
| | | | | | | | | | Phuk | 0.179 | 0.065 |
| | | | | | | | | | Phat | 0.168 | 0.034 |
| | | | | | | | | | Lwe | 0.154 | 0.008 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi le bokgoni ka kakaretso jwa diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi jwa lefelo. | Othofosofate (PO$_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.015 (mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite (NO$_3^-$) & Naeteraete (NO$_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.25 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Dilekano tsa boletswai jwa metsi a a tsenang mo molapong jaaka di totobaditswe di tshwanetse go somarelwa go sireletsa boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi le bokgoni ka kakaretso jwa | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 20 (mS/m)<br>(Phesenthaele ya bo95) | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | diphologolo tsotlhe le dijalo jwa go tsweledisa ditirego tsa ikholoji le mefutafuta ya ditshedi ya lefelo. | | |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa C go ya kwa setlhopheng sa B/C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B/C ≥ 78% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi. | VEGRAI EC = C ≥ 62% |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa C. Tlhatlhobo ya ditlhopa tsa ditlhapi tsa lefelo le le rileng e tshwanetse go dirwa ngwaga le ngwaga go tlhokomela fa go bapisiwa le setlhopa se se laoletsweng sa ikholoji. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = C FRAI ≥ 62% |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boleele jo jwa noka bo tshwanetse go somarelwa go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diamusi tsa mofuta o le mongwe ka taolo e e maleba ya legaetlhago. Somarela lefelo le le mo dintshing tsa noka. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.5 |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Matlabas Zyn Kloof mo MAT_EWR1 mo A41A<br>NMAR = $5.23 \times 10^6 m^3$<br>REC=A category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tshololo ya Matlabasa Zyn Kloof ka nako ya dipatlisiso tsa baeolojikhale | Diph | 0.053 | 0.022 |
| | | | | | | | | | Ngwan | 0.057 | 0.027 |
| | | | | | | | | | Sed | 0.063 | 0.030 |
| | | | | | | | | | Fer | 0.075 | 0.037 |
| | | | | | | | | | Tlhak | 0.094 | 0.041 |
| | | | | | | | | | Mop | 0.086 | 0.037 |
| | | | | | | | | | Mor | 0.076 | 0.031 |
| | | | | | | | | | Motsh | 0.065 | 0.030 |
| | | | | | | | | | Seet | 0.065 | 0.033 |
| | | | | | | | | | Phuk | 0.061 | 0.032 |
| | | | | | | | | | Phat | 0.060 | 0.031 |
| | | | | | | | | | Lwe | 0.056 | 0.030 |
| | | Dinokana tse e leng motswedi wa Motlhabatsi (Matlabas-Zyn-Kloof, lefatshe la dimedi tse di bodileng tsa seka-mmu) (A41A) | 17a_3 | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go tokafadiwa go tswa mo setlhopheng sa ikholoji sa B go ya kwa setlhopheng sa A. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = A ≥ 90% | | |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi. | VEGRAI EC = B ≥ 82% | | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Somarela kelelo e e kwa tlase go akaretsa ditlhopa tsa lobelo kwa kelelo le boteng tsa mefuta e e ikaegileng ka kelelo. | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI). | Setlhopa sa ikholoji sa ditlhapi = B FRAI ≥ 82%<br><br>Sampole 5+ mefuta mo maitekong a sampole nngwe le nngwe. Sampole 8 *AURA* ka nako ya maiteko a go dira sampole | | |

**Lenaneo 20: Maikaelelo a Boleng jwa Motswedi a DINOKA LE MATAMO mo Dikarolong tsa setlapele tsa Motswedi mo Dikarolong tse di kopaneng tsa tshekatsheko17b: MATLABAS / LIMPOPO**

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17b: MATLABAS | II | Matlabas (A41D, A41C) | 17b_1 | B/C | Bokanakang | Kelelo e e kwa tlase ya metsi | Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo tsa EWR:<br>Matlabas mo MAT_EWR4 mo A41C<br>NMAR = $35.58 \times 10^6 m^3$<br>REC=B category<br><br>Kelelo e e kwa tlase ya metsi le kelelo e e bonya ya metsi ka nako ya komelelo di tshwanetse go fitlhelelwa go tshegetsa diphologolo tsotlhe le dijalo tsa metsi | Dikelelo tsa Motheo<br><br>Dikelelo tse di kwa tlase tsa metsi le kelelo e e bonya ya metsi ka nako ya komelelo.<br><br>Tlhokomelo ya tshololo ya Noka ya Matlabas ka nako ya dipatlisiso tsa baeolojikhale | | Kelelo e e kwa tlase ya metsi ($m^3/s$) | Kelelo e e bonya ya metsi ka nako ya komelelo ($m^3/s$) |
| | | | | | | | | | Diph | 0.151 | 0.007 |
| | | | | | | | | | Ngwan | 0.178 | 0.016 |
| | | | | | | | | | Sed | 0.225 | 0.072 |
| | | | | | | | | | Fer | 0.285 | 0.092 |
| | | | | | | | | | Tlhak | 0.398 | 0.100 |
| | | | | | | | | | Mop | 0.339 | 0.110 |
| | | | | | | | | | Mor | 0.266 | 0.077 |
| | | | | | | | | | Motsh | 0.208 | 0.066 |
| | | | | | | | | | Seet | 0.192 | 0.061 |
| | | | | | | | | | Phuk | 0.178 | 0.056 |
| | | | | | | | | | Phat | 0.166 | 0.034 |
| | | | | | | | | | Lwe | 0.151 | 0.008 |
| | | | | | Boleng | Dikotla | Kokoano ya dikotla tsa metsi a a elelang go tsena mo teng e tshwanetse go fitlhelelwa jaaka e tlhalositswe go tsweledisa boitekanelo jwa diphologolo tsotlhe le dimela tsa metsi, le go somarela seemo sa ikholoji. | Othofosofate ($PO_4^-$) jaaka Fosoforo | Dimiligerama/dilitara tse ≤ 0.050(mg/l) (Phesenthaele ya bo50) | | |
| | | | | | | | | Naetereite ($NO_3^-$) & Naeteraete ($NO_2^-$) jaaka Naeterojene | Dimiligerama/dilitara tse ≤ 0.07 (Phesenthaele ya bo50) | | |
| | | | | | | Matswai | Kokoano ya boletswai jwa metsi a a mo nokeng e tshwanetse go somarelwa go sireletsa seemo sa ga jaana le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi. | Kgonagalo ya moela wa motlakase | DimiliSiemens/dimetara ≤ 40 (mS/m) (Phesenthaele ya bo95) | | |
| | | | | | | | | Salefeite | Dimiligerama/dilitara tse ≤ 20 (Phesenthaele ya bo50) | | |
| | | | | | | Dintlha tse di ka kgonang go fetoga Dire tse di botlhole | Selekano sa pH se tshwanetse go somarelwa se le mo ditekanyetsong tse di totobaditsweng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi le ditlhokego tsa badirisi ba metsi. | Selekano sa pH | 6.5 (Phesenthaele ya bo5) le 8.5 (Phesenthaele ya bo95) | | |
| | | | | | | | Go tlhokega tlhatlhobo ya motheo go tlhomamisa seemo sa ga jaana sa kgoberego ya metsi a a | Kgoberego | Go letlelelwa phapogo ya 10% go tswa mo kokoanong ya lemorago. | | |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | elelang go tsena mo molapong. | | |
| | | | | | | | Go tshwanetse ga fitlhelelwa dilekano tsa okosijene e e tlhaologileng go tshegetsa diphologolo tsotlhe le dijalo tsa metsi. | Okosijene e e tlhaologileng | Dimiligerama/dilitara tse ≥ 6 (mg/l) |
| | | | | | | | Dikokoano tsa dire tse di botlhole ga di a tshwanela go tlhola kotsi mo ditsheding tse dinnye tsa metsi le mo boitekanelong jwa batho. | Aluminiamo (Al) | Dimiligerama/dilitara tse ≤ 0.062 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Mankanese (Mn) | Dimiligerama/dilitara tse ≤ 0.15 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Tshipi (Fe) | Dimiligerama/dilitara tse ≤ 0.1 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Lloto (Pb) e popota | Dimiligerama/dilitara tse ≤ 0.0057 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Koporo (Cu) e popota | Dimiligerama/dilitara tse ≤ 0.0048 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Nikele (Ni) | Dimiligerama/dilitara tse ≤ 0.07 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Cobalt (Co) | Dimiligerama/dilitara tse ≤ 0.05 (mg/l) (Phesenthaele ya bo95) |
| | | | | | | | | Zinki (Zn) | Dimiligerama/dilitara tse ≤ 0.002 (mg/l) (Phesenthaele ya bo95) |
| | | | | | Legaetlhago | Metsi a a tsenang mo nokeng | Mefutafuta ya magaetlhago e tshwanetse go somarelwa e le mo setlhopheng sa ikholoji sa B. Sireletsa bokgoni jwa molapo jwa go tshegetsa ditshedi le dijalo tsa one ka go laola ditlamorago tsa mo lefatsheng. Go tshwanetse ga somarelwa kgolagano le Noka ya Limpopo. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago, Mokgwa le Sekao sa ka bonako sa Tlhatlhobo ya Legaetlhago (RHAMM) | Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le legaetlhago la metsi a a mo molapong EC = B ≥ 82% |
| | | | | | | Legae la mo dintshing tsa noka | Dimedi tsa mo dintshing tsa noka di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. | Tshupane ya Tshomarelo ya popego e e lekalekanang ya dipharologantsho tsa fisikhokhemikale le | VEGRAI EC = B ≥ 82% |

| IUA | Setlhopa | Noka | Karolo ya motswedi | Setlhopa sa Ikholoji | Karolwana | Karolo ya karolwana | Tlhaloso ya RQO | Sekao | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | legaetlhago, Tshupane ya Tlhatlhobo ya Tsibogo ya Dimedi | |
| | | | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhapi | Ditlhopa tsa ditlhapi tsa mofuta o le mongwe di tshwanetse go somarelwa di le mo setlhopheng sa ikholoji sa B. Somarela tshireletso ya setlhopa sa boteng le lobelo mo mefuteng e e bosisi (e e boifang kelelo: *LMOL, BIMB* e bile e le bosisi mo legaetlhagong: *PCAT*) | Tshupane ya Tlhatlhobo ya Tsibogo ya Ditlhapi (FRAI) | Setlhopa sa ikholoji sa ditlhapi = B<br>FRAI ≥ 82%<br>Sampole 13+ mefuta ka nako ya maiteko a sampole |
| | | | | | | Mefuta e e nnang mo metsing le mo lefatsheng | Boalo jo jwa noka bo tshwanetse go somarelwa gore bo kgone go dira jaaka legaetlhago la dinonyane tsa metsi le ditlhopa tsa diphologolo ka taolo e e maleba ya legaetlhago. Somarela lefelo le le mo dintshing tsa noka. | Dinonyane tsa metsi/Mofuta wa sekao wa diamusi | Go tshwanetse ga dirwa tlhatlhobo ya motheo go tlhomamisa dipalopalo tsa dinonyane tsa metsi le mefutakemedi ya diamusi mo karolong e telele ya noka. Go na le tlhokego ya gore go dirwe RQC ya dipalo go direla bokanakang jwa diphologolo/dinonyane go ya ka data e e leng teng/e e kgobokantsweng. |
| | | | | | | Ditshedi tse dikgolo tse di nnang mo metsing mme di se na mokwatla | Kgobokanyo ya ditshedi tse dikgolo mme di se na mokwatla e tshwanetse go somarelwa mo seemong mo setlhopheng sa C sa ikholoji kgotsa e tshwanetse go tokafadiwa. | Tshupane ya Tlhatlhobo ya Tsibogo ya Diphologolo tse dikgolo mme di se na mokwatla, le Mokgwatsamaiso wa Kabo ya Maduo wa Aforikaborwa wa Mofuta 5 (SASS5) | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |

**Lenaneo 21: Maikaelelo a Boleng jwa Motswedi tsa MATSHA A E LENG DITLAPELE mo Dikarolong tse di tlhophilweng tsa Motswedi mo WMA ya Mokolo, Matlabas, Crocodile (West) le Marico**

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| 1: KAROLO E E KWA GODIMO CROCODILE / HENNOPS / HARTEBEES POORT | 1_1 | Khompelekese ya Pane ya Bronkhorstfontein (Deprešene/Pane) | Bokanakang | Perimetara e e kolobileng ya pane jaaka e lekanyeditswe go tswa mo go diriseng mmapa malebana le pula e e neleng pele. | Ditlamorago tsa bokanakang jwa metsi di tshwanetse go laolwa gore di se nyenyefatse boleng jwa ikholoji jwa pane. Segolo bogolo, go tlosiwa kgotsa dilo tsa maitirelo tse di tsenyang metsi di tshwanetse go lekanyediwa mo | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa perimetara e e kolobileng malebana le go na ga pula e e neng pele mo dipaneng tse di |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | dipaneng gore boteng le boleele jwa nako ya morwalela bo a somarelwa mo selekanong se se tlwaelegileng mo dingwageng tsa selekano se se kwa godimo, sa magareng kgotsa se se kwa tlase sa pula. | tlhophilweng.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga perimetara e e kolobileng le pula e e neleng pele mo dipaneng tse di tlhophilweng. |
| | | | Boleng | pH, Kgonagalo ya moela wa motlakase, TDS, Palogotlhe ya Boalekali jaaka $CaCO_3$, Sotiamo, Khalesiamo, Makenesiamo, Salefeite, Tshipi, Tleloraete, Potasiamo, Makenesiamo, Mankanese, Aluminiamo, Fosoforo, Silikha, Foloraete, Amonia le Naetereite. | Ditlamorago tsa boleng jwa metsi mo dipaneng di tshwanetse go lekanyediwa go netefatsa gore khemiseteri ya metsi le sedimente e nna e le mo selekanong sa motheo (kokoano ya anyione le khatione mo kamanong ya bolumu ya pane) mo mofuteng o wa pane ya khemiseteri ya metsi. | Mo dipaneng tse di tlhophilweng, dira sampole mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa dipane mo khompelekeseng ya lefatshe le le manyemunyemu | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa C/D se tshwanetse go somarelwa. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | 1_1<br>1_2 | Khompelekese ya Lefatshe le le Manyemunyemu la Rietvlei<br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang (lefatshe la dimedi tse di bodileng tsa seka-mmu) | Bokanakang | Go koloba ga leruri. | Go tlhokega gore go nne manyemunyemu go somarela dimedi tse di bodileng tsa seka-mmu. Dikelelo le tsone di tshwanetse gore di se ke tsa nna matshosetsi mo popego e e sa lebisiwang mo go sepe se se rileng/thuto ya saentefiki ya lefatshe le le manyemunyemu. | Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa gore a lefelo le le rileng le diphologolo tsotlhe le dijalo di nnang mo go lone le manyemunyemu le gore a go na le dimedi tse di bodileng tsa seka-mmu. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (se se ikaegileng ka maduo a seka-dipalo a lefatshe le le manyemunyemu.<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka- | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa B le fa seemo se go nang le kgonagalo e ntsi ya gore se ka fitlhelelwa ke Setlhopa B/C.<br><br>Go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | 1_3 | Pane ya Glen Austin<br><br>(Diprešene / Pane) | Bokanakang | Perimetara e e kolobileng ya pane jaaka e lekanyeditswe go tswa mo go diriseng mmapa malebana le pula e e neleng pele. | Ditlamorago tsa bokanakang jwa metsi di tshwanetse go laolwa gore di se nyenyefatse boleng jwa ikholoji jwa pane. Segolo bogolo, go tlosiwa kgotsa dilo tsa maitirelo tse di tsenyang metsi di tshwanetse go lekanyediwa mo dipaneng gore boteng le boleele jwa nako ya morwalela bo a somarelwa mo selekanong se se tlwaelegileng mo dingwageng tsa selekano se se kwa godimo, sa magareng kgotsa se se kwa tlase sa pula. | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa perimetara e e kolobileng malebana le go na ga pula e e neng pele mo dipaneng tse di tlhophilweng.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga diperimetara tse di kolobileng le pula e e neleng pele mo paneng. |
| | | | Boleng | pH, Kgonagalo ya moela wa motlakase, TDS, Palogotlhe ya Boalekali jaaka $CaCO_3$, Sotiamo, Khalesiamo, Makenesiamo, Salefeite, Tshipi, Tleloraete, Potasiamo, Makenesiamo, Mankanese, Aluminiamo, Fosoforo, Silikha, Amonia ya Foloraete, Naetereite le | Ditlamorago tsa boleng jwa metsi mo dipaneng di tshwanetse go lekanyediwa go netefatsa gore khemiseteri ya metsi le sedimente e nna e le mo selekanong sa motheo (kokoano ya anyione le khatione mo kamanong ya bolumu ya pane) mo mofuteng o wa pane ya | Dira sampole mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | Foloraete. | khemiseteri ya metsi. | |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu – leba mokgwa wa ga Kotze, 2016a le 2016b). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C/D le fa Setlhopa se se kgonagalang sa BAS e le D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Ditlhopa tsa tsadiso ya Matlametlo a Magolo. | Go somarela dipalopalo tse di kgonegang tsa tsadiso ya Matlametlo a Magolo mo paneng. | Rurifatsa go tswa mo direkotong tsa tlhokomelo le matlametlo a magolo a a bonwang sewelo le ditiragalo tse di rekotilweng tsa tsalo. Bega ka se mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | 1_4 | Lefatshe le le manyemunyemu la Mokgatsha wa Colbyn<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang | Bokanakang | Go koloba ga leruri. | Go tlhokega gore go nne manyemunyemu go somarela dimedi tse di bodileng tsa seka-mmu. Dikelelo le tsone di tshwanetse gore di se ke tsa nna matshosetsi mo popego e e sa lebisiwang mo go sepe se se rileng/thuto ya saentefiki ya lefatshe le le manyemunyemu. | Tlhomamisa gore a lefelo le le rileng le diphologolo tsotlhe le dijalo di nnang mo go lone le manyemunyemu le gore a go na le dimedi tse di bodileng tsa seka-mmu. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (se se ikaegileng ka maduo a seka-dipalo a lefatshe le le manyemunyemu).<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C.<br><br>Go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 4: HEX / WATERKLOOFSPRUIT / VAALKOP | 4_6 | Lefatshe le le manyemunyemu la Waterkloofspruit<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Matleputlepu a leruri. | Go tlhokega gore go nne manyemunyemu go somarela dimedi tse di bodileng tsa seka-mmu. Dikelelo le tsone di tshwanetse gore di se ke tsa nna matshosetsi mo popego e e sa lebisiwang mo go sepe se se rileng/thuto ya saentefiki ya lefatshe le le manyemunyemu. | Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa gore a lefelo le le rileng le diphologolo tsotlhe le dijalo di nnang mo go lone le manyemunyemu le gore a go na le dimedi tse di bodileng tsa seka-mmu. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (se se ikaegileng ka maduo a seka-dipalo a lefatshe le le manyemunyemu.<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A le fa Setlhopa se se kgonagalang sa BAS e le A/B.<br><br>Go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 5: ELANDS / VAALKOP | 5_1 | Khompelekese ya Pane ya Koster<br><br>Diprešene / Pane | Bokanakang | Perimetara e e kolobileng ya pane jaaka e lekanyeditswe go tswa mo go diriseng mmapa malebana le pula e e neleng pele. | Ditlamorago tsa bokanakang jwa metsi di tshwanetse go laolwa gore di se nyenyefatse boleng jwa ikholoji jwa pane. Segolo bogolo, go tlosiwa kgotsa dilo tsa maitirelo tse di tsenyang metsi di tshwanetse go lekanyediwa mo dipaneng gore boteng le boleele jwa nako ya morwalela bo a somarelwa mo selekanong se se tlwaelegileng mo dingwageng tsa selekano se se kwa godimo, sa magareng kgotsa se se kwa tlase sa pula. | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa perimetara e e kolobileng malebana le go na ga pula e e neng pele mo dipaneng tse di tlhophilweng.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga perimetara e e kolobileng le pula e e neleng pele mo dipaneng tse di tlhophilweng. |
| | | | Boleng | pH, Kgonagalo ya moela wa motlakase, TDS, Palogotlhe ya Boalekali jaaka $CaCO_3$, Sotiamo, Khalesiamo, Makenesiamo, Salefeite, Tshipi, Tleloraete, Potasiamo, Makenesiamo, Mankanese, Aluminiamo, Fosoforo, Silikha, Amonia ya Foloraete, Naetereite le Foloraete. | Ditlamorago tsa boleng jwa metsi mo dipaneng di tshwanetse go lekanyediwa go netefatsa gore khemiseteri ya metsi le sedimente e nna e le mo selekanong sa motheo (kokoano ya anyione le khatione mo kamanong ya bolumu ya pane) mo mofuteng o wa pane ya khemiseteri ya metsi. | Mo dipaneng tse di tlhophilweng, dira sampole mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa dipane mo khompelekeseng ya lefatshe le le manyemunyemu ). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| MARICO / KROMELLEMBOOG 8: MAUMANI | 6_1<br>8_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Buffelshoek | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe RU 6_1 le 8_1)). | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe).<br><br>Dira Resefo ya lefatshe le le manyemunyemu la |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang | | Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga metsi). | lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba Ditekanyetso tsa dipalo tsa dinoka le tsa metsi a ka fa tlase ga lefatshe). Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B le fa Setlhopa se se kgonagalang sa BAS e le C/D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | 6_1<br>8_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Paardenvallei (Malmaniesloop)<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (lebala Ditekanyetso tsa dipalo tsa dinoka le tsa metsi a ka fa tlase ga lefatshe). Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | lefelo sa C/D le fa Setlhopa se se kgonagalang sa BAS e le D. | lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe). |
| 7: KAALOOG-SE-LOOP | 7_1 | Leitlho la lefatshe le le manyemunyemu la Marico (Kaaloog se Loop)<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe).<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba Ditekanyetso tsa dipalo tsa dinoka le tsa metsi a ka fa tlase ga lefatshe). Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu – leba mokgwa wa ga Kotze, 2016a le 2016b). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A/B le fa Setlhopa se se kgonagalang sa BAS e le B. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | 7_1 | Lefatshe le le manyemunyemu la Rietspruit<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | | Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | 7_1 | Lephororo la Tufa<br><br>(Tufa) | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele le gore lephororo le na le tlamelo e e tlhomameng ya metsi.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| | | | Boleng | pH, Kgonagalo ya moela wa motlakase, TDS, Palogotlhe ya Boalekali jaaka $CaCO_3$, Sotiamo, Khalesiamo, Makenesiamo, Salefeite, Tshipi, Tleloraete, Potasiamo, Makenesiamo, Mankanese, Aluminiamo, Fosoforo, Silikha, Amonia ya Foloraete, Naetereite le Foloraete. | Dilekano tsa boletswai ga di a tshwanela go oketsega.<br><br>Go tshwanetse ga somarelwa dikokoano di le mo dilekanong go sireletsa seemo se se siameng sa boleng jwa metsi se se humileng ka khalesiamo khaboneite. | Kgonagalo ya moela wa motlakase: ≤ 50 mS/m Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (55 mS/m).<br><br>Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| 8: MALMANIESLOOP | 8_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Malmanieloop<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu) | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele mme bontsi jwa dimedi tsa mo losing le tsa mo metsing di nna di sa swe mo setlheng sotlhe sa kgolo sa selemo le gore lefelo le medi e leng mo go lone le kolobile mo | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | ngwageng otlhe. E ke tlhokego ya go kgontsha dijalo tse di melang mo metsing fela tsa paka e telele go fetsa tshekotshelo ya tsone le go ntsha dikuno go somarela dimedi tse di bodileng tsa seka-mmu mo lefelong. .<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Ditekanyetso tsa dipalo tsa dinoka le tsa metsi a ka fa tlase ga lefatshe. Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu_.<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B le fa Setlhopa se se kgonagalang sa BAS e le C.<br><br>Go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa perimetara e e kolobileng malebana le go na ga pula e e neng pele mo dipaneng tse di tlhophilweng.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | lefatshe). | |
| 8: MALMANIESLOOP<br>9: MOLOPO | 8_1<br>9_2 | Khompelekese ya Lefatshe le le Manyemunyemu la Karolo e e kwa Godimo ya Molopo<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe.<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele mme bontsi jwa dimedi tsa mo losing le tsa mo metsing di nna di sa swe mo setlheng sotlhe sa kgolo sa selemo le gore lefelo le medi e leng mo go lone le kolobile mo ngwageng otlhe. E ke tlhokego ya go kgontsha dijalo tse di melang mo metsing fela tsa paka e telele go fetsa tshekotshelo ya tsone le go ntsha dikuno go somarela dimedi tse di bodileng tsa seka-mmu mo lefelong. . | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu).<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B le fa Setlhopa se se kgonagalang sa BAS e le C/D.<br><br>Go anamisiwa ga dimedi tse di | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| 8: MALMANIESLOOP | 8_1 | Lefatshe le le manyemunyemu Vergenoegd<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya diphrologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. |
| 9: MOLOPO | 9_2 | Khompelekese ya Lefatshe le le Manyemunyemu la Nokagare ya Molopo | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya pele ya lefatshe le le manyemunyemu le le golaganeng le la Lefatshe le le Manyemunyemu |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng | | tlhoka go tlhomamisiwa. | nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | la Noka ya Molopo le go tlhomamisa ditlhokego tsa kelelo ya ikholoji ya lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba Ditekanyetso tsa dipalo tsa dinoka le tsa metsi a ka fa tlase ga lefatshe). Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu – leba mokgwa wa ga Kotze, 2016a le 2016b).<br><br>Selekano le go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le ditlhopa tsa dimedi tse di bodileng tsa seka-mmu tsa mefuta ya tsone mo lefatsheng le le manyemunyemu. | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C/D le fa Setlhopa se se kgonagalang sa BAS e le D.<br><br>Go anamisiwa ga dimedi tse di bodileng tsa seka-mmu le selekano sa tsone go tshwanetse ga tlogelwa bonnye go le mo seemong se se sa fetogeng/se se tlhomameng kgotsa go tshwanetse ga oketsega. | Rulaganya kgobokanyo ya data ya GIS e e dirang mmapa wa lefelo le diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nnang mo go lone pele ga tshimologo ya tlhokomelo ka go dirisa ditshwantsho tsa sešweng tse di leng teng tse di kgakala le go tlhomamisa/fopholetsa le go kaya mo mmapeng selekano sa dimedi tse di bodileng tsa seka-mmu le mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu mo lefelong.<br><br>Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa/fopholetsa gore a mme selekano sa dimedi tse di bodileng tsa seka-mmu se fetogile mo lefelong le diphologolo tsotlhe le dijalo di nnang mo go lone. Fopholetsa selekano sa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | 9_3<br>9_5 | Khompelekese ya Lefatshe le le Manyemunyemu la Karolo e e kwa tlase ya Noka ya Molopo<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng | Legaetlhago | tha). | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | kwa sengwe se se rileng | | | | ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 10: LEITLHO LA DINOKANA / LETAMO LA NGOTWANE | 10_1 | Lefatshe le le manyemunyemu la Dinokana<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu la Hillslope leba tsebe | Bokanakang | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe).<br><br>Dikao tsa kelelo ya bogodimo di tlhoka go tlhomamisiwa. | Kelelo e e tlhomameng ya motheo e tshwanetse go somarelwa go netefatsa gore diphologolo tsotlhe le dijalo tsa lefelo le le rileng di nna di tshela nako e telele.<br><br>Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe.<br><br>Dira Resefo ya lefatshe le le manyemunyemu la lefelo le diphologolo le dijalo di nnang mo go lone le go tlhomamisa ditlhokego tsa kelelo tsa lefatshe le le manyemunyemu. Dirisa tse go seta mokgwatiriso wa dipalo wa karolwana ya bokanakang jwa metsi ya di-RQO. |
| | | | Boleng | Go dirisiwa dikao tsa noka le metsi a a ka fa tlase ga lefatshe (leba dikao tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa noka le metsi a a ka fa tlase ga lefatshe). | Go dirisiwa noka le ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe. Tlhabolola tseno go ya ka diphitlhelelo tsa karolwana ya boleng jwa metsi ya Rasefo ya pele ya metsi. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Lefelo la Tshireletso | Go dirisiwa dikao tsa metsi a a ka fa tlase ga lefatshe (leba dikao tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa di-RQO tsa metsi a a ka fa tlase ga lefatshe (leba di-RQO tsa metsi a a ka fa tlase ga lefatshe). | Go dirisiwa ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe (leba ditekanyetso tsa dipalo tsa metsi a ka fa tlase ga lefatshe). |
| | 10_1 | Lefatshe le le manyemunyemu la Ngotwane<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng | Legaetlhago | Setlhopa sa PES ya Desekethopo (go ya ka lefelo la seka-palo go ya ka maduo a magareng a khompelekese ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| 11b: GROOT MARICO / DINOKANA TSA NAKWANA TSE DI IKAEGILENG KA SETLHA | 11_b_2 | Karolo e e kwa tlasenyana ya Lefatshe le le manyemunyemu la Noka ya Lenkwane<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa motlhabeng | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa B. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 12: BIERSPRUIT | 12_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Kolobeng<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 13: KAROLO E E KWA TLASENYANA YA CROCODILE<br><br>17b: MATLABAS / LIMPOPO | 13_3<br>17_b_1 | Karolo e e kwa godingwana ya Noka ya Crocodile<br><br>Motlhaba | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | Boleng | Go dira dikao tsa noka (leba dikao tsa noka). | Go dira di-RQO tsa Noka (leba di-RQO tsa noka). | Go dira ditekanyetso tsa palo tsa noka (leba ditekanyetso tsa palo tsa noka). |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Tshomarelo ya lefelo le le mo dintshing tsa noka le le nang le mefuta e e farologaneng le e e farologaneng ka popego . | Mefutafuta ka kakaretso ya popego le mefuta ya lefelo le le mo dintshing tsa noka e tshwanetse go somarelwa. | Go dirisiwa tlhatlhobo ya ka bonako e e mo lefelong le le kwa ntle tlhokomela popego le mefutafuta ya lefelo le le mo dintshing tsa noka mo mafelong a a tlhophilweng mo motlhabeng. Tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa. Bega ka se mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | 14_1 | Motlhaba wa Noka ya Apies | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | Boleng | Go dira dikao tsa noka | Go dira di-RQO tsa Noka | Go dira ditekanyetso tsa palo tsa noka. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | 14_1<br>14_2<br>14_3<br>14_4 | Motlhaba wa Noka ya Moretele | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | Boleng | Go dira dikao tsa noka. | | |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Dielo tsa pegelo tsa mefuta ya dinonyane tse di ikaegileng ka go nna mo metsing/lefatshe le le manyemunyemu. | Mefutafuta ka kakaretso le ditlhopa tsa mefuta e e ikaegileng ka metsi/lefatshe le le manyemunyemu e tshwanetse go somarelwa. | Rurifatsa go tswa mo direkotong tsa tlhokomelo le dipono tse di rekotilweng go tswa mo dateng e e leng teng ya pegelo ya dinonyane le dijalo.<br><br>Bega ka se mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | 14_3 | Motlhaba wa Noka ya Plat | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | Boleng | Go dira dikao tsa noka. | Go dira di-RQO tsa Noka. | Go dira ditekanyetso tsa palo tsa noka. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | la lefatshe le le manyemunyemu | | ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Dielo tsa pegelo tsa mefuta ya dinonyane tse di ikaegileng ka go nna mo metsing/lefatshe le le manyemunyemu. | Go tshwanetse ga somarelwa mefuta ya dinonyane tse di ikaegileng ka Data e Khibidu tsa mefutafuta ya kakaretso le ditlhopa tsa diphologolo le dijalo tsa motlhaba. | Rurifatsa go tswa mo direkotong tsa tlhokomelo le dipono tse di rekotilweng go tswa mo dateng e e leng teng ya pegelo ya dinonyane le dijalo.<br><br>Bega ka se mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | 14_4 | Pane ya Tswaing Crator<br><br>Diprešene / Pane | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A le fa Setlhopa se se kgonagalang sa BAS e le B. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona lefatshe le le manyemunyemu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 15: KAROLO E E KWA GODIMO YA MOKOLO | 15_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Karolo e e kwa godimo ya Noka ya Mokolo<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C le fa Setlhopa se se kgonagalang sa BAS e le C/D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano (5x5 disekwere tsa metsotso - karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano (2425_2800 le 2425_2805). |
| | 15_1 | Khompelekese ya Lefatshe le le Manyemunyemu la Noka ya Klein Sand<br><br>Karolo e e kwa tlase ya | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | | khompelekeseng ya lefatshe le le manyemunyemu). | | ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa dipholologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo setlhopheng sa tlhano (5x5 disekwere tsa metsotso – karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano (2425_2805). |
| | 15_2 | Khompelekese ya Lefatshe le le Manyemunyemu la Noka ya Frikkiesloon<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa dipholologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | 15_2 | Khompelekese ya Lefatshe le le Manyemunyemu la Grootfonteinspruit<br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa magareng se se filweng palo se se ikaegileng ka lefelo sa C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa dipholologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo setlhopheng sa tlhano (5x5 disekwere tsa metsotso – karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano. |
| | 15_5 | Khompelekese ya Lefatshe le le | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | Manyemunyemu la Grootspruit<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | | magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo setlhopheng sa tlhano (5x5 disekwere tsa metsotso – karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano (2425_2800). |
| | 15_5 | Khompelekese ya Lefatshe le le Manyemunyemu la Sandspruit<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C/D le fa Setlhopa se se kgonagalang sa BAS e le D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo setlhopheng sa tlhano (5x5 disekwere tsa metsotso – karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano (2430_2800). |
| | 15_5 | Khompelekese ya Lefatshe le le Manyemunyemu la Noka ya Sand<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C/D le fa Setlhopa se se kgonagalang sa BAS e le D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng.<br><br>Rurifatsa ka go tsaya tlhatlhobo ya PES ya ka bonako e e ikaegileng ka lefelo la kwa ntle ya lefatshe le le |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | Hillslope | | | | manyemunyemu le go tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano (5x5 disekwere tsa metsotso - karolo ya go mmapa e e dirisiwang mo SABAP2) e e khurumetsang mafatshe a a manyemunyemu. | Go nna teng mo go tsweletseng ga Megolodi go tshwanetse ga somarelwa. | Ka go dirisa data e e dirilweng ke Porojeke 2 ya Atlelase ya Dinonyane tsa Aforikaborwa (SABAP2), go tshwanetse ga tlhomamisiwa go nna teng mo go tsweletseng ga Megolodi mo ditlhopheng tsa tlhano ka go netefatsa gore go somarelwa seelo sa pegelo se kwa godimonyana ga 5% mo setlhopheng se se amegang sa tlhano (2425_2800 le 2425_2805). |
| | 15_5 | Khompelekese ya Lefatshe le le Manyemunyemu la Nokana ya Noka ya Sand<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo a dikarolo tsotlhe tsa lefatshe le le manyemunyemu mo khompelekeseng ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa C le fa Setlhopa se se kgonagalang sa BAS e le C/D. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 16: KAROLO E E KWA TLASENYANA YA MOKOLO | 16_1<br>16_5_2 | Motlhaba wa Noka ya Tambotie | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo lefatsheng le le manyemunyemu.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | | Dikao tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU. | D-RQO tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 le tsone di tla dira | Ditekanyetso tsa dipalo tsa noka tsa RU 16_5_4 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_5_4 le tsone di a dira. |
| | | | Boleng | Dikao tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 le tsone di a dira. | Di-RQO tsa noka tsa RU 16_5_2 le di-RQO tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 ke tsone di a dira. | Ditekanyetso tsa dipalo tsa noka tsa RU 16_5_2 le ditekanyetso tsa dipalo tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 e a dira. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A/B le fa Setlhopa se se | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | kgonagalang sa BAS e le B/C. | manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Dielo tsa Pegelo (RR) tsa mefuta ya dinonyane tsa Data e Khibidu tse di ikaegileng ka go nna mo metsing/mo lefatsheng le le manyemunyemu .<br><br>Tshomarelo ya lefelo le le mo dintshing tsa noka le le nang le mefuta e e farologaneng le e e farologaneng ka popego . | Mefutafuta ya kakaretso le ditlhopa tsa mefuta ya dinonyane tsa Data e Khibidu tse di ikaegileng ka motlhaba e tshwanetse go somarelwa.<br><br>Mefutafuta ka kakaretso ya popego le mefuta ya lefelo le le mo dintshing tsa noka e tshwanetse go somarelwa. | Rurifatsa go tswa mo direkotong tsa tlhokomelo le dipono tse di rekotilweng go tswa mo dateng ya seelo sa pegelo sa dinonyane le dijalo.<br><br>Go dirisiwa tlhatlhobo ya ka bonako e e mo lefelong le le kwa ntle tlhokomela popego le mefutafuta ya lefelo le le mo dintshing tsa noka mo mafelong a a tlhophilweng mo motlhabeng. Tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa.<br><br>Bega ka ga se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | 16_3 | Rietspruit Wetland 2<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu | Bokanakang | Go dira dikao tsa noka. | Go dira di-RQO tsa Noka. | Go dira ditekanyetso tsa palo tsa noka. |
| | | | Boleng | Go dira dikao tsa noka. | Go dira di-RQO tsa Noka. | Go dira ditekanyetso tsa palo tsa noka. |
| | | | Legaetlhago | Setlhopa sa PES ya Desekethopo (go ya ka lefelo la seka-palo go ya ka maduo a magareng a khompelekese ya lefatshe le le manyemunyemu). | Setlhopa sa PES sa C se se filweng palo se se ikaegileng ka lefelo. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa.<br><br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | 16_5_2 | Motlhaba wa Noka ya Mokolo<br><br>Metlhaba, diprešene, dinokana tse e leng metswedi ya metsi ya molapo le mafatshe a a manyemunyemu a a tsimogang metsi | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo motlhabeng.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | Morwalela ga mmogo le metsi a a mo akhwifeng ya alubiale le yone e tshegetsa ditlhare tsa mo dintshing tsa metsi mo dintshing tsa motlhaba. | ditiragalo tsa go na ga pula. |
| | | | | Dikao tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU. | Di-RQO tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 le tsone di a dira. | Ditekanyetso tsa dipalo tsa noka tsa RU 16_5_2 le ditekanyetso tsa dipalo tsa noka go ya ka akhwifa ya alubiale ya motlhaba wa morwalela ya RU 16_4 le tsone di a dira. |
| | | | Boleng | Dikao tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 di a dira. | Di-RQO tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 le tsone di a dira. | Ditekanyetso tsa dipalo tsa noka tsa RU 16_5_2 le dikao tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba wa morwalela wa RU 16_4 le tsone di a dira. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa B/C le fa Setlhopa se se kgonagalang sa BAS e le C. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona khompelekese ya lefatshe le le manyemunyemu. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya dipane tse di tlhophilweng mme o tseye dinepe tse di totileng ntlha e e rileng ya dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa dipholologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Dielo tsa Pegelo (RR) tsa mefuta ya dinonyane tsa Data e Khibidu tse di ikaegileng ka go nna mo metsing/mo lefatsheng le le manyemunyemu .<br><br>Tshomarelo ya lefelo le le mo dintshing tsa noka le le nang le mefuta e e farologaneng le e e farologaneng ka popego . | Go tshwanetse ga somarelwa mefuta ya dinonyane tse di ikaegileng ka Data e Khibidu tsa mefutafuta ya kakaretso le ditlhopa tsa dipholologolo le dijalo tsa motlhaba.<br><br>Mefutafuta ka kakaretso ya popego le mefuta ya lefelo le le mo dintshing tsa noka e tshwanetse go somarelwa. | Rurifatsa go tswa mo direkotong tsa tlhokomelo le dipono tse di rekotilweng go tswa mo dateng ya seelo sa pegelo sa dinonyane le dijalo.<br><br>Go dirisiwa tlhatlhobo ya ka bonako e e mo lefelong le le kwa ntle tlhokomela popego le mefutafuta ya lefelo le le mo dintshing tsa noka mo mafelong a a tlhophilweng mo motlhabeng. Tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa.<br><br>Bega ka ga se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |
| | | | Lefelo la Tshireletso | Dikao tsa metsi a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba ya RU 16_4 di a dira. | Di-RQO tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba ya RU 16_4 di a dira. | Ditekanyetso tsa dipalo tsa metsi a a ka fa tlase ga lefatshe go ya ka akhwifa ya alubiale ya motlhaba ya RU 16_4 di a dira. |
| TLHABATSI | 17_a_2 | Lefatshe le le manyemunyemu la | Bokanakang | Matleputlepu a leruri. | Go tlhokega gore go nne manyemunyemu go somarela | Ka nako ya tlhatlhobo ya legaetlhago tlhomamisa gore |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | Matlabas (Peatland)<br><br>Karolo e e kwa tlase ya mokgatsha e e lebisitsweng kwa sengwe se se rileng kgotsa e e sa lebisiwang le mafatshe a a manyemunyemu a popego ya sedimente a Hillslope | | | dimedi tse di bodileng tsa seka-mmu. Dikelelo le tsone di tshwanetse gore di se ke tsa nna matshosetsi mo popego e e sa lebisiwang mo go sepe se se rileng/thuto ya saentefiki ya lefatshe le le manyemunyemu. | a lefelo le le rileng le diphologolo tsotlhe le dijalo di nnang mo go lone le manyemunyemu le gore a go na le dimedi tse di bodileng tsa seka-mmu. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (se se ikaegileng ka maduo a seka-dipalo a lefatshe le le manyemunyemu). | Dimedi tsa lefatshe le le manyemunyemu le thuto ya saentefiki ya lefatshe di tshwanetse go somarelwa go sireletsa popego e e sa lebisiwang sengwe se se rileng ya lefelo le diphologolo tsotlhe le dijalo di nnang mo go lone le mefutafuta ya diphologolo le dijalo mme di tshwanetse go somarelwa go akaretsa ditlhopa tse di kgonegang tsa mefuta ya dijalo tse di dirang dimedi tse di bodileng tsa seka-mmu.<br><br>Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A le fa Setlhopa se se kgonagalang sa BAS e le A/B. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona lefatshe le le manyemunyemu.<br>Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya lefatshe le le manyemunyemu.<br>Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| 17b: MATLABAS / LIMPOPO | 17_b_1 | Motlhaba o o kwa tlasenyana wa Noka ya Matlabas | Bokanakang | Selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo bodutisong. | Merwalela e botlhokwa go tlatsa motlhaba wa morwalela ka jalo e tlamela kolobetso e e tlhokegang go tshegetsa dimedi tsa motlhaba, segolo bogolo majang a a tlhogang mo metsing fela, metsitla le bojang jwa ditlama (fobo) tse di ikaegileng ka go nna teng ga morwalela mo ditshekotshelong tsa tsone. | Ka go dirisa ditshwantsho tse di leng teng tse di kgakala, fopholetsa selekano le bokgapetsakgapetsa jwa morwalela malebana le selekano sa pula mo motlhabeng.<br><br>Ka go dirisa se se fa godimo mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega ka ga se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo dipe tse di ka lekanyediwang mo kamanong fa gare ga selekano sa morwalela le ditiragalo tsa go na ga pula. |
| | | | Boleng | Go dira dikao tsa noka. | Go dira di-RQO. | Go dira ditekanyetso tsa dipalo tsa noka. |
| | | | Legaetlhago | Setlhopa sa PES sa Desekethopo (go ya ka maduo a magareng a a filweng palo a a ikaegileng ka lefelo la seka-palo la lefatshe le le manyemunyemu | Setlhopa sa PES sa Palogare e e filweng palo e e ikaegileng ka lefelo sa A/B le fa Setlhopa se se kgonagalang sa BAS e le B. | Dira tlhatlhobo ya PES ya Desekethopo le go tlhomamisa maduo a palogare a a ikaegileng ka lefelo go bona motlhaba wa morwalela. Rurifatsa ka go dira tlhatlhobo ya ka bonako e e direlwang kwa ntle ya PES ya lefelo le go tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa. Boeletsa mo dingwageng dingwe le dingwe tse 3 go ya go tse 5 le go tlhatlhoba le go bega se ka ntlhatebo ya go tlhatlhoba gore a go na le diphetogo |

| Dikarolo tse di Sobokantsweng tsa Tshekatsheko (IUA) | RU | Lefatshe le le manyemunyemu/Setsha | Karolwana e dirilwe setlapele | Sekao | Tlhaloso ya RQO | Mokgwatiriso wa dipalo |
|---|---|---|---|---|---|---|
| | | | | | | dipe mo seemong sa diphologolo tsotlhe le dijalo tsa lefelo le le rileng. |
| | | | Diphologolo, dimela le ditshedi tsa lefelo le le rileng | Tshomarelo ya lefelo le le mo dintshing tsa noka le le nang le mefuta e e farologaneng le e e farologaneng ka popego . | Mefutafuta ka kakaretso ya popego le mefuta ya lefelo le le mo dintshing tsa noka e tshwanetse go somarelwa. | Go dirisiwa tlhatlhobo ya ka bonako e e mo lefelong le le kwa ntle tlhokomela popego le mefutafuta ya lefelo le le mo dintshing tsa noka mo mafelong a a tlhophilweng mo motlhabeng. Tsaya dinepe tsa ntlha e e tlhomameng tsa dipharologantsho tsa botlhokwa. Bega ka se mo dingwageng dingwe le dingwe tse 3 go ya go tse 5. |

**Lenaneo 22: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko1: KAROLWANA E E KWA GODIMO YA CROCODILE / HENNOPS / HARTEBEESPOORT**

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| IUA1: Karolo e e kk kgogogo ya Crocodile/Hennops/Hartbeespoort | RU - G1 | 1_1, 1_2, 1_3, 1_8 le 1_9. | Bokanakang | Diphethene tsa kelelo tsa metsi a a ka fa tlase ga lefatshe go ya ka dikoketsego tsa phaesometeriki mo dikarolong tsa akhwifa ga di a tshwanela go busetswa morago go tswa mo dintlheng tse di elelang go ya kwa go tsone tsa tlhago go ya kwa ditshololong tsa selegae (Hennops, Rietvlei le Bloubankspruit). | Boteng jwa selekano sa metsi a ka fa tlase ga lefatshe (dilekano tsa phaezometeriki go bontsha kelelo malebana le metswedi ya metsi a fa godimo ga lefatshe).<br><br>Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le ditloso le metsi a a tsenang ka ntlha ya pula<br><br>Tloso ya metsi a ka fa tlase ga lefatshe mo mafelong a a laoletsweng go tswa kwa nokeng/lefatshe le le manyemunyemu/leitlho) | Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa magareng jwa selekano sa metsi jwa ~22 m (1_1 – 1_2), ~20 m (1_3), ~15 m (1_9), le ~34 m (1_8) mo lefelong la akhwifa ya dolomaete.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a.<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: go tshwanetse ga laolwa mo 1000 m ya rediase go tloga mo matlhong a a elelang. |
| | | | | Ditloso tse di tsweledisegang kwa Matlhong a Grootfontein-Rietvlei le Pretoria.<br>Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tlhoka go tlhatlhobelwa ditsheko tse di | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa e arogantswe ka Retšhatšhe Karolo ya Akhwifa) e e tlhagisitsweng jaaka phesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya65%); |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | kolobileng le tse di omeletseng (go babalela dilekano tsa metsi a a ka fa tlase ga lefatshe ka dipaka tsa komelelo). | | |
| | | | Boleng | Boleng jwa metsi a akhwifa bo somarelwa go tshegetsa tlamelo ya metsi a fa gae a boleng jo bo siameng. | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo | Naetereite: Ka fa tlase ga 1.0 mg/l.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 (*k.g.r.* 0.9 $NO^3$–N mg/l). |
| | | | | | Matswai - Kgonagalo ya moela wa motlakase (TDS), mg/l).<br>Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo | Kgonagalo ya moela wa motlakase ≤30 mS/m;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (*k.g.r.* 60 mS/m). |
| | | | | Seemo sa boleng jwa metsi sa lemorago mo akhwifeng ya dolomaete go ya kwa ntlheng e sele go tloga mo Tweelopies Spruit le Bloubank Spruit se tshwanetse go somarelwa. (Ga jaana se amegile jaana EC=220 mS/m, $SO_4$=965 mg/l, le $NO_3$–N=3.3 mg/l, bolengpalo jwa magareng). | EC, Disalefeite le Dinaetereite (tshimologo AMD) mo lefelong la dinokana tse e leng motswedi wa molapo (Tweelopies Spruit)<br>Tlhokomelo ya kgwedi le kgwedi ya boleng jwa metsi kwa motsweding (Dikgololo tsa TCTA WTW). | Tweelopiespruit (RU 1_8):<br>Lekanyetsa dikao tsa pakatelele tsa boleng jwa metsi:<br>Selekano sa EC = 220 mS/m;<br>Kokoano ya $SO_4$ = 200 mg/l; le<br>Kokoano ya $NO_3$–N = 3.3 mg/l. |
| | | | | Somarela seemo sa boleng jo bo siameng jwa metsi kwa Matlhong a Grootfontein-Rietvlei le Pretoria a Dolomaete. | EC, pH, $SO_4$ le $NO_3$–N di tshwanetse go dirisiwa jaaka dikao tsa boleng. | Lekanyetsa paka e telele–Paka e telele ya ngwaga le ngwaga:<br>EC: 25 mS/m–27 mS/m (Phesenthaele ya bo95);<br>$SO_4$: <4.5 mg/l–6.4 mg/l $SO_4$ (Phesenthaele ya bo95);<br>$NO_3$–N: 0.9 mg/l–1.0 mg/l (Phesenthaele ya bo95). |
| | | | Lefelo la Tshireletso | Segolo bogolo mafelo akhwifa a dolomaete (Hennops le Bloubankspruit, mafatshe a a manyemunyemu a Rietvlei, Matlho a Grootfontein-Rietvlei le Pretoria): Ditlhokego tse di rileng tsa motswedi wa metsi di tshwanetse go nna mabaka a boruni mo WUL. | Lekanyetsa rediase ya tlhotlheletso (r) ka ntlha ya ditloso | Phokotsego ya selekano sa metsi e lekanyeditswe go karolo ya karolwana ya khompatemente ya dolomaete. |
| | | | | | Sekgala go tswa fa nokeng (L) | Tiro e tshwanetse go nna >500 m. |
| | | | | | Sekgala go tswa mo lefatsheng le le manyemunyemu (L) | Tiro e tshwanetse go nna >1000 m. |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete (L) | Tiro e tshwanetse go nna >1000 m. |
| | | | | | Tlhomamo ya mmu (tekanyetso ya phokotsego ya selekano sa metsi, L, | E lekanyeditswe go 6 m mo karolong ya karolwana ya khompatemente, ntle le fa |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | go sireletsa dikago/ditsela/mafaratlhatlha) | go letleletswe ka tsela e e totobetseng. |

**Lenaneo 23: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko2: MAGALIES**

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| LEITLHO LA MALONEY | RU - G2 | 2_1; 2_3 | Bokanakang | Leitlho la Maloney – Kelelo e e tswelelang mo tshololong ya leitlho (dinokana tse e leng motswedi wa noka tsa Noka ya Magalies). | Ditekano tsa Metsi a a ka fa tlase ga lefatshe (didiba tse di borilweng) mo bodutisong jwa leitlho, k.g.r. Boteng jwa selekano sa metsi a a ka fa tlase ga lefatshe go tswa mo bogodimong jwa lefatshe;<br><br>Dibolumu tsa kelelo kwa Leitlhong la Maloney (fa go bapisiwa le metsi a a dirwang ke pula, mekgwatlwaelo ya selekano sa metsi le ditloso mo bodutisong jwa leitlho (k.g.r. Khomphatemente ya Steenkoppies);<br><br>Tloso ya metsi a ka fa tlase ga lefatshe mo mafelong a a laoletsweng a tshireletso kwa Leitlhong la Maloney (phulu le ntlha e metsi a elelang go ya kwa go yone go ya ka lenaneo la tlhokomelo). | Dilekano tsa dolomaete tsa kolobetso ya akhwifa ga di a tshwanela go fokodiwa gore di fete 6 m fa tlase ga boteng jwa selekano sa metsi sa magareng jwa **~65** m mo bodutisong jwa Leitlho la Maloney;<br><br>Bolumu ya kelelo kwa Leitlhong la Maloney ga e a tshwanela go nna kwa tlase ga ~4 $Mm^3/a$ (k.g.r. selekano sa pele ga 1974 sa paka e telele fa e sale ka 1908 – 1973).<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: e tshwanetse go laolwa ka kelelo mo leitlhong mo rediaseng ya 1000 m go tswa mo lefelong la phulu. |
| | | | | Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. Ke fela 65% ya bolengpalo jwa retšhatšhe jo bo tshwanetse go tlosiwa. | Tekanyetso ya bolengpalo jwa SI (</=65%); le<br>Bogodimo jwa kgato ya kelelo mo lefelong la tshololo (leitlho): <-0.50 m/a) fa gare ga ditiragalo tsa ngwaga le ngwaga tsa retšhatšhe. |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. | Dikotla - Naetereite ($NO^3$–N, mg/l). Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: Ka fa tlase ga 0.5 mg/l. Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (0.5 mg/l) |
| | | | | Sala mo seemo sa Boleng jo bo Siameng jwa Metsi kwa Leitlhong la Maloney le karolo e e kwa | Disalefeite (tshimologo AMD) mo dinokaneng tse e leng metswedi ya molapo mo Randfontein Spruit le | $SO_4$: Ka fa tlase ga 5 mg/l. Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | tlasenyana ya Noka ya Magalies. | Bloubank Spruit ka kgolagano e e kgonegang go ralala A21D le molelwane wa A21F (daeke e e robegileng ya Tarlton) | Phesenthaele ya bo95 (7.5 mg/l) |
| | | | | Dilekano tsa boletswai ga di a tshwanela go oketsega.<br>Dikokoano di tshwanetse go somarelwa mo maemong go babalela seemo se se siameng sa boleng jwa metsi. | Boletswai - Kgonagalo ya moela wa motlakase (TDS), mg/l).<br>Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo | Kgonagalo ya moela wa motlakase ≤26 mS/m;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (30 mS/m). |
| | | | Lefelo la Tshireletso | Mafelo a a tswaletsweng a tshireletso a tshwanetse go itsisiwe, k.g.r. dikgala fa gare ga tiro le leitlho/phulu.<br>Segolo bogolo mo mafelong a akhwifa a dolomaete (Leitlho la Maloney le kwa Noka ya Magalies e elelang go ya kwa teng). | Setlhotlheletsi sa Go fela ga Metsi a Molapo | Lekanyetsa go </=5% ya motswedi wa metsi wa lefatshe le le manyemunyemu/metsi a a mo godimo ga lefatshe |
| | | | | | Sekgala go tswa fa nokeng (L). | Tiro e a laolwa fa e le gore <500 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete (L). | Tiro e a laolwa fa e le gore <1000 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng. |
| | | | | | Sekgala go tswa mo lefatsheng le le manyemunyemu (L). | Tiro e a laolwa fa e le gore <1000 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng. |
| | | | | | Tlhomamo ya Mmu (DCU tekanyetso ya phokotsego ya metsi, L) (Dikago/ditsela/mafaratlhatlha). | E lekanyeditswe go karolo ya karolwana ya khompatemente ya 6 m, ntle le fa go letleletswe ka tsela e e totobetseng. |

**Lenaneo 24: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko3: CROCODILE / ROODEKOPJES**

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| godingwana) Noka ya Crocodile | RU – G3 Karolo ya Alubiale ya Noka | 3_1 le 3_2 | Bokanakang | Tlhokomelo ya selekano sa metsi sa tlhatlhamano ya nako (L) go ralala akhwifa ya selegae ya inthakrenyula le e e robegileng go simolodisa kamano ya metsi a noka le a akhwifa;<br>Ditebelelo tsa selekano sa metsi | Selekano sa metsi – Boteng go ya kwa selekanong sa metsi a a ka fa tlase ga lefatshe mo akhwifeng ya alubiale; le keradiente ya selekano sa Gwater mo mokgatsheng wa tshololo. | Ga go a letlelelwa keradiente ya metsi a a ka fa tlase ga lefatshe a poelomorago mo lefelong la 500 m mo karolong e kgolo.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | (seemo sa selegae sa phaezometeriki). | | ga 1.0 m/a. |
| | | | | Tshalelo ya Metsi (ntlhakopanyi ya Sw). | Diphopholetso tse di siameng/tse di sa siamang tsa tshalelo ya metsi, Bolumu (Q);<br>Go fela ga kelelo mo merathong ya tekanyetso ya kwa metsi a elelang go ya teng. | Ditatlhegelo tsa swater mo diteišeneng tsa tekanyetso di tshwanetse go lekana le ditloso tse di letleletsweng go tswa nokeng. |
| | | | | Seemo sa tshalelo ya metsi a ka fa tlase ga lefatshe mo akhwifeng ya inthakrenyula le e e robegileng | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Tekanyetso ya bolengpalo jwa SI (</=65%). |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: ka fa tlase ga 6.0 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95. |
| | | | | Laola dikelelo tsa pusetso tsa nosetso go tswa mo akhwifeng ya alubiale.<br>Dilekano tsa boletswai ga di a tshwanela go oketsega.<br>Dikokoano di tshwanetse go somarelwa di le mo dilekanong go babalela seemo se se siameng sa metsi. | Matswai - Kgonagalo ya moela wa motlakase<br>Tlhokomelo ya kgwedi le kgwedi<br>Go tlhokomela boleng jwa dikelelo tsa pusetso go tswa mo lefelong la alubiale.<br><br>SAR ya metsi a akhwifa a alubiale | Kgonagalo ya moela wa motlakase ≤75 mS/m;<br>(Phesenthaele ya bo95) |
| | | | Lefelo la Tshireletso | Sireletsa akhwifa e e Inthakrenyula (alubiale) le e e robegileng go bapa le dikarolwana tse di fa gare ga Noka ya Crocodile le Rose Spruit malebana le Kamano ya Sw-Gw | Setlhotlheletsi sa Go fela ga Metsi a Molapo (laola sekgala fa gare ga motswedi wa metsi a a fa godimo ga lefatshe le mafelo a didiba). | Lekanyetsa ditlamorago go nna <5% ya selekano sa tloso se se tshegeditsweng ke metswedi ya metsi a a mo godimo ga lefatshe. |
| | | | | Ditiro tsa tiriso ya lefatshe tse di ka nnang le ditlamorago mo akhwifeng ya inthakrenyula. | Tlhalosa ditiro tsotlhe tsa tiriso ya lefatshe mo lefelong la motlhaba le akhwifa ya inthakrenyula. | Lekanyetsa ditiro go ya ka boleng jwa metsi jwa malatsi a le 50 (maekherobiale) le malatsi a le 365 (tlhaoloso). Kgaoganyo ya lefelo go direla tshireletso (L). |

**Lenaneo 25: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko6a: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| 6a: Matlho a Klein Marico | RU – G6 | 6_1, | Bokanakang | Diphethene tsa kelelo tsa metsi a a ka fa tlase ga lefatshe go ya ka dikoketsego tsa phaesometeriki mo dikarolong tsa akhwifa ga di a tshwanela go busetswa morago go tswa mo dintlheng tse di elelang go ya kwa go tsone tsa tlhago go ya kwa ditshololong tsa selegae (Karolo e e kwa godimo ya Noka ya Klein Marico, Rhenosterfontein Spruit, le Karolo e e kwa tlasenyana ya Malmani Loop). | Ditekano tsa Metsi - Boteng jwa selekano sa metsi a a ka fa tlase ga lefatshe go tswa mo bogodimong jwa lefatshe.<br><br>Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le ditloso le metsi a a tsenang ka ntlha ya pula | Mafelo a akhwifa a dolomaete: Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa selekano sa magareng sa metsi sa ~21 m mo lefelong la akhwifa ya dolomaete.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a. |
| | | | | Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tlhoka go tlhatlhobelwa ditsheko tse di kolobileng le tse di omeletseng (go babalela dilekano tsa metsi a a ka fa tlase ga lefatshe ka dipaka tsa komelelo). | Palelo ya Tshupane ya Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga 65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya 65%); |
| | | | Boleng | Bolengpalo jwa naetereite bo tshwanetse go tshegediwa go tshegetsa badirisi ba fa gae ba metsi (Boleng jo bo Siameng jwa Metsi). | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: ~0.3 mg/l<br>Mokgwatlwaelo wa pakatelele ga o a tshwanela go atamela Phesenthaele ya bo95 (1.2 mg/l) |
| | | | | Foloraete – ditlamorago mo badirising – dilekano tse di oketsegileng tsa foloraete | Foloraete (F, mg/l) | Foloraete: ~0.2 mg/l.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 (0.2 mg/l). |
| | | | | Dilekano tsa boletswai ga di a tshwanela go oketsega.<br>Dikokoano di tshwanetse go somarelwa di le mo dilekanong go babalela seemo se se siameng sa metsi. | Matswai - Kgonagalo ya moela wa motlakase (TDS), mg/l).<br>Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo<br><br>Dikokoano tsa Na-Cl tse di tswang mo ditirong tsa go epe mo bodutisong kwa leitlho la selegae | Kgonagalo ya moela wa motlakase: ≤ 50 mS/m<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (60 mS/m) |
| | | | Lefelo la Tshireletso | Segolo bogolo mafelo akhwifa a dolomaete (Lefelo la nosetso);<br><br>Ditlhokego tse di rileng tsa motswedi | Bodutiso jwa mmapa (diheketara) jwa Leitlho le go akaretsa tekanyetso ya tloso ya tlamelo ya metsi a mantsintsi.<br><br>Tekanyetso ya phokotsego ya selekano sa | Kganelo ya tloso go ikaegile ka tiriso ya mokgwatebo wa Tshupane ya Kgatelelo.<br><br>Palo e e kwa godimo 6 m (ntle le fa go |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | wa metsi di tshwanetse go nna mabaka a boruni mo WUL; | metsi mo karolong ya khompatemente ya dolomaete . | letleletswe ka tsela e e totobetseng) |
| | | | | | Tekanyetso ya lefelo la nosetso mo bogolong jwa lefelo (di-ha). | Lekanyetsa go 9% ya lefelo la molao (di-ha) |
| | | | | | Sekgala go tswa kwa nokeng ya selegae | Tiro e tshwanetse go nna >500 m. |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete (L) | Tiro e tshwanetse go nna >1000 m, ntle le fa go letleletswe ka tsela e e totobetseng. |
| | | | | | Tlhomamo ya mmu (Tekanyetso ya phokotsego ya selekano sa metsi ya DCU, L) (dikago/ditsela/mafaratlhatlha). | E lekanyeditswe go karolo ya karolwana ya khompatemente ya 6 m . |

**Lenaneo 26: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko7: KAALOOG-SE-LOOP**

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| LEITLHO LA MARICO (ref. Kaaloog Se Matlho a Loop, Rietspruit le Bokkraal) | RU – G6 | 7_1, | Bokanakang | Tekanyetso ya Kelelo e e Tswelelang kwa matlhong a a tlhophilweng a dolomaete, k.g.r. Bokkraal Nr. 1 ka Noka ya Vanstratensvlei (data ya kelelo fela go simolola ka 1907 go fitlha ka 1947!).<br><br>(Leitlho le lengwe la botlhokwa le le tshololelang mo karolong e e kwa godingwana ya Noka ya Groot Marico ke Rietspruit (ka Noka ya Vanstratensvlei));<br><br>(Ela tlhoko, go na le matlho a mangwe a le mmalwa a dolomaete mo lefelong, mme ga go na tshedimosetso e e leng teng, ntle le ya Rhenosterfontein e e welang mo A31D QC). | Molelwane wa bodutiso jwa leitlho (molelwane o o mo borwa ga o bonale sentle);<br><br>Ditekano tsa Metsi - Boteng jwa selekano sa metsi a a ka fa tlase ga lefatshe go tswa mo bogodimong jwa lefatshe;<br><br>Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le ditloso le metsi a a tsenang ka ntlha ya pula; le<br><br>Tloso ya metsi a a mo tlase ga lefatshe mo mafelong a a laoletsweng go tswa mo nokeng/lefatshe le le manyemunyemu/leitlho-motswedi) | Mafelo a akhwifa a dolomaete: Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa magareng jwa selekano sa metsi jwa ~21 m mo lefelong la bodutiso jwa leitlho.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a.<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: go tshwanetse ga laolwa le kelelo ya leitlho mo rediaseng ya 1000 m go tswa kwa mafelong a diphulu a Leitlho la Bokkraal le Rietspruit. |

| IUA | Karolo ya metsi a a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tlhoka go tlhatlhobelwa ditsheko tse di kolobileng le tse di omeletseng (go babalela dilekano tsa metsi a a ka fa tlase ga lefatshe ka dipaka tsa komelelo). | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya65%); |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. | Dikotla - Naetereite ($NO^3$–N, mg/l). Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: ≤ 0.5 mg/l; Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 (0.5 mg/l) |
| | | | | Foloraete – ditlamorago mo badirising – dilekano tse di oketsegileng tsa foloraete | Foloraete (F, mg/l) Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Foloraete: ~0.1 mg/l Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (1.0 mg/l). |
| | | | | Dilekano tsa boletswai ga di a tshwanela go oketsega. Dikokoano di tshwanetse go somarelwa mo maemong go babalela seemo se se siameng sa boleng jwa metsi. | Matswai - Kgonagalo ya moela wa motlakase (TDS), mg/l). Tlhokomelo ya mo dingwageng dingwe le dingwe tse pedi tsa dikarolwana tse dikgolo | Kgonagalo ya moela wa motlakase: ≤ 50 mS/m Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (55 mS/m) |
| | | | Lefelo la Tshireletso | Mafelo a a tswaletsweng a tshireletso a tshwanetse go itsisiwe, k.g.r. dikgala fa gare ga tiro le leitlho/phulu. Segolo bogolo mo mafelong a akhwifa a dolomaete (Leitlho la Marico le kwa metsi a Noka ya Klein Marico a elelang go ya kwa teng). | Bodutiso jwa mmapa (diheketara) jwa Leitlho le go akaretsa tekanyetso ya tloso ya tlamelo ya metsi a mantsintsi. | Kganelo ya tloso go ikaegile ka tiriso ya mokgwatebo wa Tshupane ya Kgatelelo. |
| | | | | | Tekanyetso ya lefelo la nosetso mo bogolong jwa lefelo (di-ha). | Lekanyetsa go 9% ya lefelo la molao (di-ha) |
| | | | | | Sekgala go tswa kwa nokeng ya selegae | Tiro e a laolwa fa e le gore <500 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete (L) | Tiro e a laolwa fa e le gore <1000 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng. |
| | | | | | Sekgala go tswa mo lefatsheng le le manyemunyemu (L). | Tiro e a laolwa fa e le gore <1000 m go tswa mo tshololong ya kwa metsi a elelang go ya kwa teng. |
| | | | | | Tekanyetso ya phokotsego ya selekano sa metsi mo karolong ya khompatemente ya dolomaete. | E lekanyeditswe go karolo ya karolwana ya khompatemente ya 6 m . |

**Lenaneo 27: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko8: MALMANIESLOOP**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| 8: Malmanie Se Loop | RU – G8 | 8_1 | Bokanakang | Diphethene tsa kelelo tsa metsi a a ka fa tlase ga lefatshe go ya ka dikoketsego tsa phaesometeriki mo dikarolong tsa akhwifa ga di a tshwanela go busetswa morago go tswa mo dintlheng tse di elelang go ya kwa go tsone tsa tlhago go ya kwa ditshololong tsa selegae (Leitlho la Malmani Se Loop).<br><br>Mafelo a metsi a tswang mo go one (k.g.r. Leitlho la Malmani, Malmani-Noupoort, Leitlho la Doornplaat, Leitlho la Rietpoort le Leitlho la Doornfontein) a tshwanetse go sireletswa kgatlhanong le go fela gotlhelele ga selekano sa metsi). | Ditekano tsa Metsi - Boteng jwa selekano sa metsi a a ka fa tlase ga lefatshe go tswa mo bogodimong jwa lefatshe.<br><br>Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le ditloso le metsi a a tsenang ka ntlha ya pula<br><br>Tloso ya metsi a a mo tlase ga lefatshe mo mafelong a a laoletsweng go tswa mo nokeng/lefatshe le le manyemunyemu/leitlho-motswedi); | Mafelo a akhwifa a dolomaete: Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa magareng jwa selekano sa metsi jwa ~21 m mo lefelong la akhwifa ya dolomaete.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a.<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: go tshwanetse ga laolwa (1000 m ya diphulu tsa leitlho). |
| | | | | Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tlhoka go tlhatlhobelwa ditsheko tse di kolobileng le tse di omeletseng (go babalela dilekano tsa metsi a a ka fa tlase ga lefatshe ka dipaka tsa komelelo).<br><br>Disejule tse di maleba tsa nosetso di tlhoka go dirwa le go dirisiwa ka dinako tsotlhe (Kobamelo ya 100%). | Tloso - Bolumu (Q). Tlhatlhamano ya nako ya selekano sa tloso-pula-metsi ya akhwifa.<br>Tshalelo ya metsi a a ka fa tlase ga lefatshe ya ngwaga le ngwaga (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tshwanetse go nna ya ditsheko tse di kolobileng le tse di omileng. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya65%); |
| | | | | Seemo sa Tshalelo ya metsi | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | |
| | | | Boleng | Bolengpalo jwa naeteraete mo lefelong la retšhatšhe bo tshwanetse go somarelwa go tshegetsa badirisi ba metsi ba fa gae (Phesenthaele ya bo95 = 18 mg/l). | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: Ka fa tlase 1.0 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 (k.g.r. 3.5 mg/l) |
| | | | | Dilekano tsa boletswai ga di a tshwanela go oketsega.<br>Dikokoano di tshwanetse go somarelwa mo dilekanong go netefatsa go nna teng | Matswai - Kgonagalo ya moela wa motlakase<br>Tlhokomelo ya kgwedi le kgwedi mo tshololong | Kgonagalo ya moela wa motlakase: ≤ 50 mS/m;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | ga seemo sa boleng jo bo itekanetseng jwa metsi. | | Phesenthaele ya bo95 (k.g.r. 85 mS/m) |
| | | | | Foloraete – ditlamorago mo badirising – dilekano tse di oketsegileng tsa foloraete | Foloraete (F, mg/l)<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Foloraete ~0.1 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (1.0 mg/l). |
| | | | Lefelo la Tshireletso | Segolo bogolo mafelo akhwifa a dolomaete (k.g.r. Leitlho la Malmani, Malmani-Noupoort, Leitlho la Doornplaat, Leitlho la Rietpoort le Leitlho la Doornfontein);<br><br>Ditlhokego tse di rileng tsa motswedi wa metsi di tshwanetse go nna mabaka a boruni mo WUL; | Tekanyetso ya phokotsego ya selekano sa metsi mo karolong ya khompatemente ya dolomaete. | Makisimamo wa 6 m (ntle le fa go letleletswe ka tsela e e totobetseng) |
| | | | | | Setlhotlheletsi sa Go fela ga Metsi a Molapo | Lekanyetsa go </=5% ya motswedi wa metsi wa lefatshe le le manyemunyemu/metsi a mo godimo ga lefatshe |
| | | | | | Tekanyetso ya lefelo la nosetso mo bogolong jwa lefelo (di-ha). | Lekanyetsa go 9% ya lefelo la molao (di-ha) |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete le lefelo le le manyemunyemu (L) | E tshwanetse go nna >1000 m, ntle le fa go letleletswe ka tsela e e totobetseng ditlamelo tsa metsi a mantsi thata. |

**Lenaneo 28: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko9: MOLOPO**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| 9: Karolo e e kwa godimo ya Noka ya Molopo | RU – G9 | 9_1 le 9_2 | Bokanakang | Diphethene tsa kelelo tsa metsi a a ka fa tlase ga lefatshe go ya ka dikoketsego tsa phaesometeriki mo dikarolong tsa akhwifa ga di a tshwanela go busetswa morago go tswa mo dintlheng tse di elelang go ya kwa go tsone tsa tlhago go ya kwa ditshololong tsa selegae<br>Mafelo a metsi a tswang mo go one (k.g.r. Leitlho la Malapo) a tshwanetse go sireletswa kgatlhanong le go fela gotlhelele ga selekano sa metsi (k.g.r. mo lebakeng la Leitlho la Grootfontein le | Ditekano tsa Metsi - Boteng jwa selekano sa metsi a a ka fa tlase ga lefatshe go tswa mo bogodimong jwa lefatshe.<br><br>Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le ditloso le metsi a a tsenang ka ntlha ya pula<br>Tloso ya metsi a a mo tlase ga lefatshe mo mafelong a a laoletsweng go tswa mo nokeng/lefatshe le le manyemunyemu/leitlho-motswedi) | Mafelo a akhwifa a dolomaete: Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa magareng jwa selekano sa metsi jwa ~19 m mo lefelong la metsi a dolomaete.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a.<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: go tshwanetse ga laolwa (1000 m ya diakhwifa tsa kalaka. |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | Leitlho la Bodibe. | | |
| | | | | Tshalelo ya metsi a a ka fa tlase ga lefatshe (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tlhoka go tlhatlhobelwa ditsheko tse di kolobileng le tse di omeletseng (go babalela dilekano tsa metsi a a ka fa tlase ga lefatshe ka dipaka tsa komelelo).<br>Disejule tse di maleba tsa nosetso di tlhoka go dirwa le go dirisiwa ka dinako tsotlhe (100% ya kobamelo ya molawana). | Tloso ya Metsi - Bolumu (Q).<br>Tlhatlhamano ya nako ya selekano sa tloso-pula-metsi ya akhwifa.<br><br>Tshalelo ya metsi a a ka fa tlase ga lefatshe ya ngwaga le ngwaga (retšhatšhe ya akhwifa le tloso ya metsi a nosetso) e tshwanetse go nna ya ditsheko tse di kolobileng le tse di omileng. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (*k.g.r. SI ya*65%); |
| | | | | Seemo sa Tshalelo ya metsi | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. (Metswedi ya temothuo ya naetereite) | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi<br>Tlhokomelo ya kgwedi le kgwedi kwa diteišeneng tsa tekanyetso tsa DWS. | Naetereite: Ka fa tlase ga 1.0 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (3.0 mg/l). |
| | | | | Dilekano tsa boletswai ga di a tshwanela go oketsega.<br>Dikokoano di tshwanetse go somarelwa mo dilekanong go netefatsa go nna teng ga seemo sa boleng jo bo itekanetseng jwa metsi. | Matswai - Kgonagalo ya moela wa motlakase.<br>Tlhokomelo ya kgwedi le kgwedi kwa diteišeneng tsa tekanyetso tsa DWS. | Kgonagalo ya moela wa motlakase: ≤ 50 mS/m;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (80 mS/m). |
| | | | | Dikgotledi tsa madirelo/temothuo tsa Matlho a Molopo, Grootfontein, Itsoseng (Bodibe). | Dikokoano tsa Salefeite $SO_4$)<br>Tlhokomelo ya kgwedi le kgwedi ya boleng jwa metsi kwa mafelong a motswedi (tsa matlho le mafelo a didiba) | $SO_4$: Ka fa tlase ga 5.0 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (30 mg/l). |
| | | | Lefelo la Tshireletso | Tshireletso ya Diakhwifa tse di inthakrenyula le tse di Robegileng: Sireletsa dikarolo tse di kwa | Sekgala go tswa mo mokgatsheng wa tshololo: go ikaegile ka nako ya 50<br>Nako ya mosepele wa mo gare ga | <1000 m Kgaoganyo ya lefelo go direla tshireletso (diakhwifa tsa DLMT)<br><500 m Kgaoganyo ya lefelo go direla |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | tlasenyana tsa Madibe, Polfontein Spruit le Noka ya Noka ya Molopo kgatlhanong le kgotlelego ya intaseteri/temothuo/maekherobiale. | letsatsi (maekherobiale) le paka ya tlhaoloso ya malatsi a le 365 (dikarolwana tse di sa boleng) | tshireletso (diakhwifa tsa letlapa le le popota). |
| | | | | | Sekgala go tswa mo lefelong le metsi a tswang mo go lone la matlho a dolomaete: go ya ka nako ya mosepele ya malatsi a le 50 (maekherobiale) le paka ya tlhaoloso ya malatsi a le 365 (dikarolwana tse di sa boleng) | <1000 m Kgaoganyo ya lefelo go direla tshireletso (diakhwifa tsa letlapa le le popota) |

**Lenaneo 29: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko10: LEITLHO LA DINOKANA / LETAMO LA NGOTWANE**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| IUA10: Leitlho la Dinokana | RU – G10 | 10_1 | Bokanakang | Mafelo a metsi a tswang mo go one (k.g.r. Matlho/metswedi) a tshwanetse go sireletswa kgatlhanong le go fela gotlhelele ga selekano sa metsi) | Dilekano tsa metsi: Tlhokomelo ya selekano sa metsi ya tlhatlhamano ya nako (kgwedi le kgwedi) fa go bapisiwa le go ntshiwa le go na ga pula. | Mafelo a akhwifa a dolomaete: Dilekano tsa go koloba ga di a tshwanela go fokodiwa gore di nne > dimetara tse 6 fa tlase ga boteng jwa magareng jwa selekano sa metsi jwa ~24 m mo lefelong la akhwifa ya dolomaete.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.75 m/a.<br><br>Kgaoganyo ya lefelo le go ntshiwang metsi mo go lone: go tshwanetse ga laolwa (rediase ya 1000 m go tswa mo phulung ya leitlho) |
| | | | | Seemo sa Tshalelo ya metsi (Taolo ya tiriso ya metsi mo lefelong le metsi a tswang mo go lone) | Tekanyetso ya kelelo mo metsi a tswang teng mo leitlhong.<br><br>Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga 65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya 65%). |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong | Dikotla - Naetereite ($NO^3$–N, mg/l). | Naetereite: ~1.0 mg/l; |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. | Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (1.1 mg/l). |
| | | | | Foloraete – ditlamorago mo badirising – dilekano tse di oketsegileng tsa foloraete | Foloraete (F, mg/l)<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Foloraete ~0.15 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (0.5 mg/l). |
| | | | | Matswai:<br>Dikokoano di tshwanetse go somarelwa mo dilekanong go netefatsa go nna teng ga seemo sa boleng jo bo itekanetseng jwa metsi. | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi - Kgonagalo ya moela wa motlakase<br>Tlhokomelo ya kgwedi le kgwedi kwa lefelong le metsing a tswang mo go lone. | Kgonagalo ya moela wa motlakase: ≤ 45 mS/m;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo95 (55 mS/m). |
| | | | Lefelo la Tshireletso | Segolo bogolo mafelo akhwifa a dolomaete ;<br>Ditlhokego tse di rileng tsa motswedi wa metsi di tshwanetse go nna mabaka a boruni mo WUL. | Bodutiso jwa mmapa (diheketara) jwa leitlho le go akaretsa tekanyetso ya tloso ya tlamelo ya metsi a mantsi. | Kganelo ya tloso go ikaegile ka tiriso ya mokgwatebo wa Tshupane ya Kgatelelo. |
| | | | | | Tekanyetso ya kgogelomorago ya selekano sa metsi mo karolong ya setlhopa | Makisimamo ya 6 m (ntle le fa go letleletswe ka tsela e e totobetseng). |
| | | | | Mafelo a tlaleletso a didiba mo lefelong la bodutiso la Matlho a DMLT. | Tekanyetso ya lefelo la nosetso mo bogolong jwa lefelo (di-ha). | Tekanyetso ya 9% ya lefelo la molao (di-ha). |
| | | | | | Sekgala go tswa mo Leitlhong la Dolomaete (L). | Go tshwanetse go nna >1000 m, ntle le fa go letleletswe ka tsela e e totobetseng tsa ditlamelo tsa metsi a mantsi thata. |

**Lenaneo 30: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko13: KAROLO E E KWA TLASE YA CROCODILE**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| 13: Karolo e e kwa tlase ya Noka ya Crocodile | RU – G13 Karolo ya Alubiale ya Noka | 13_1 le 13_3 | Bokanakang | Lekanyetsa go tshwarwa ga metsi a a mo godimo fa o ntsha metsi ka didiba tse di borilweng mo diakhwifeng tsa motlhaba wa morwalela tsa alubiale (ga go a tshwanela go nna le tekanyetso ya sekgala). | Keradiente ya selekano sa metsi a a ka fa tlase ga lefatshe go ralala akhwifa e e inthakrenyula; le<br><br>Mekgwatlwaelo ya selekano sa metsi a a ka fa tlase ga lefatshe mo diakhwifeng tsa inthakrenyula. | Keradiente ya kwa morago ya metsi a a ka fa tlase ga lefatshe (noka e e yang kwa lebaleng la mo sedibeng se se mo lefelong la 500 m mo karolong ya botlhokwa ga e a letlelelwa.<br><br>Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | | 1.0 m/a. |
| | | | | | Tekanyetso ya molapo/noka: Diphopholetso tse di siameng/sa siamang tsa metsi: Bolumu (Q);<br><br>Go fela ga kelelo mo merathong ya tekanyetso ya kwa metsi a elelang go ya teng. | Ditatlhegelo tsa metsi a bogodimo di tshwanetse go lekana le ditloso tse di letleletsweng mo nokeng (go akaretsa ditatlhegelo tsa mowafalo le pula). |
| | | | | Seemo sa tshalelo ya metsi a ka fa tlase ga lefatshe mo akhwifeng ya inthakrenyula le e e robegileng | Palelo ya Ditshupane tsa Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya65%). |
| | | | Boleng | Bolengpalo jwa naetereite mo lefelong le go tshololelwang mo go lone le tshwanetse go somarelwa go tshegetsa badirisi ba fa gae ba metsi. | Dikotla - Naetereite ($NO^3$–N, mg/l).<br>Tlhokomelo ya ngwaga mongwe le mongwe wa bobedi. | Naetereite: ≤ 1.0 mg/l<br>(Phesenthaele ya bo95) |
| | | | | Matswai a a tlhaologileng mo motsweding wa metsi a a mo tlase ga lefatshe:<br>Laola boleng jwa kelelo ya poelomorago ya nosetso go tswa mo akhwifeng ya inthakrenyula.<br><br>Dikokoano di tshwanetse go somarelwa di le mo dilekanong go babalela seemo se se siameng – seemo sa boleng jo bo siameng jwa metsi. | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi - Kgonagalo ya moela wa motlakase<br>Tlhokomelo ya Beke le beke/Kgwedi le kgwedi.<br><br>Boleng jwa akhwifa ya alubiale.<br><br>SAR ya metsi a akhwifa a alubiale | Kgonagalo ya moela wa motlakase: ≤ 85 mS/m<br>(Phesenthaele ya bo95)<br><br>SAR: Mo tekanyetsong e e maleba ya metsi a nosetso. |
| | | | Lefelo la Tshireletso | Sekgala se se kwa tlase go tswa mo motsweding wa metsi a a mo godimo ga lefatshe moo go ka ntshiwang metsi a a ka fa tlase ga lefatshe (go ikaegile ka dipharologantsho tsa haeteroloji tsa akhwifa ya inthakrenyula. | Feketara ya Go fela ga metsi a Molapo. | Lekanyetsa selekano sa tloso ya metsi a sediba se se borilweng/sediba gore se nne ka fa tlase ga 5% ya kelelo mo metsweding ya metsi a mo godimo ga lefatshe (mo lefelong le le rileng la tloso ya metsi). |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikaelelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | Ditiro tsa tiriso ya lefatshe tse di ka nnang le ditlamorago mo akhwifeng ya alubiale.<br><br>Totobatsa kgaolo ya tshireletso (k.g.r. sekgala go tswa mo metsweding ya metsi e e mo bogodimong) mo akhwifeng ya alubiale malebana le phudugo ya kgotlelego ya temothuo/madirelo le maekherobiale. | Tekanyetso ya boleng jwa metsi (khudugelo mo motsweding wa metsi a a fa godimo);<br><br>Tekanyetso ya bokanakang jwa metsi (ditlamorago mo metsing a a mo godimo ga lefatshe fa a ntshiwa mo akhwifeng sa alubiale. | Tekanyetso ya boleng jwa metsi (1): Kgaoganyo ya malatsi a le 50 (maekherobiale), sekgala fa gare ga tiro le motswedi wa metsi a a fa godimo ga lefatshe.<br><br>Tekanyetso ya bokanakang jwa metsi (2): Kgaoganyo ya malatsi a le 365 (tlhaoloso) ya tshireletso ya boleng jwa metsi (L). |

**Lenaneo 31: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko16: KAROLO E E KWA TLASENYANA YA MOKOLO**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| 16: Sandloop & Mokolo | RU – G16_4 | 16_4 | Bokanakang | Go ya tlase ga dilekano tsa metsi tsa akhwifa (dilekano tsa metsi). | Selekano sa metsi sa akhwifa sa tlhatlhamano ya nako mo Lefelotshupetsong le le gaufi le le emelang lefelo la lemorago mo tikologong ya tlhabololo e e rileng, k.g.r. lefelo la moepo, lefelo la madirelo le tlhabololo ya temothuo). | Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.5 m/a mo lefelotshupetsong la tiro e e rileng. |
| | | | | Seemo sa metsi a a setseng a a ka fa tlase ga lefatshe (Metsi a a tsenang fa go bapisiwa le a a tswang). | Tshupane ya Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa), kwa ntle ga lefelo la Tiro | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya 65%) mo Lefelotshupetsong. |
| | | | Boleng (Ela tlhoko gore bolengpalo jwa lemorago le le tsholeditsweng tsa dikarolwana tsa botlhokwa tsa haeterokhemikale e ka nna pono ya tlholego mme di tshwanetse go | Boesiti jwa metsi a a ka fa tlase ga lefatshe malebana le kgonagalo ya tshololo ya matlapa a esiti (mo mafelong a a kwa godimo a meepo ya malatlha le di-UCG) | selekano sa pH sa metsi a a ka fa tlase ga lefatshe mo Lefelotshupetsong le le rileng. | Selekano sa pH fa gare ga 6.1 le 8.2 mo Lefelotshupetsong. |
| | | | | Dikotla tse di mo metsing a a mo tlase ga lewatle tse di nang le ditlamorago mo boitekanelong jwa modirisi. | Kokoano ya naetereite (NO3-N) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng (T3) | Naetereite: ≤35 mg/l mo Lefelotshupetsong Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 + 10% (~40 mS/m) – Go ikaegile ka dithutopatlisiso tsa selegae. |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | amogelwa, k.g.r. EC, $NO_3$-N, Cl, $SO_4$ le F). | Matswai a a tlhaologileng mo metsweding ya metsi a a mo tlase ga lefatshe -<br>Go tlhokomela Medupi/ Grootegeluk le dineteweke tse dingwe tsa tlhokomelo tse di amanang le ditlamorago. | Kokoano ya boletswai ya metsi a a mo molapong e tshwanetse go somarelwa go sireletsa seemo sa ikholoji le boitekanelo jwa diphologolo tsotlhe le dijalo tsa metsi: Kgonagalo ya moela wa motlakase (EC) ya metsi a a ka fa tlase ga lefatshe mo Lefelotshupetsong le le rileng (T3). | Kgonagalo ya moela wa motlakase ≤200 mS/m mo Lefelotshupetsong.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 + 10% (~220 mS/m) – Go ikaegile ka dithutopatlisiso tsa selegae. |
| | | | | Karolwana e kgolo ya khemikale e e kailwang e e tlhaologileng mo metsing a a ka fa tlase ga lefatshe. | Kokoano ya Tleloraete (Cl) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng (T3). | Tleloraete: ≤300 mg/l mo Lefelotshupetsong.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 + 10% (~330mS/m) – Go ikaegile ka dithutopatlisiso tsa selegae. |
| | | | | Metso a esiti a moepo (kgotsa ARD) le go go tshela ka iketlo mo metsweding ya metsi e e fa godimo ga lefatshe. | Kokoano ya disalefeite (SO4) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng. (T3) | $SO_4^{-}$ ≤200mg/l mo Lefelotshupetsong.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 + 10% (~220 mg/l) – Go ikaegile ka dithutopatlisiso tsa selegae. |
| | | | | Kokoano ya Foloraete (F) mo metsing a a ka fa tlase ga lefatshe e direlwa badirisi ba fa gae. | Kokoano ya Foloraete (F) mo metsing a a ka fa tlase ga lefatshe e direlwa badirisi ba fa gae. (T3) | Foloraete: ≤2.5 mg/l mo Lefelotshupetsong.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo50 + 10% (~2.7 mg/l) – Go ikaegile ka dithutopatlisiso tsa selegae. |
| | | | Lefelo la Tshireletso | Dilekano sa kolobetso ya akhwifa | Selekano sa metsi se setetswe mafelo a le mararo (3) a a kgaogantsweng ka maemo. | T1–Lefelo la Tiro: Go fela ga selekano sa metsi a a tlhokelwang tiro.<br>T2–Lefelo la Bafa: Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 1.0 m/a.<br>T3–Lemorago kgotsa Lefelotshupetso: Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.5 m/a. |
| | | | | Go ya ka ditlhaloso tsa boleng jwa metsi. | Go setiwa diparametara tsa boleng jwa metsi tsa mafelo a le mararo (3) a a kgaoganngwang ka maemo. | T1–Lefelo la Tiro, dilekano tsa kokoano ka ntlha ya ditlamorago (Phesenthaele ya bo95 ya boleng jwa metsi mo QC):<br>pH: 5.0 go ya go 9.5;<br>$NO_3$–N: 60 mg/l;<br>Boletswai EC: 600 mS/m;<br>Tleloraete: 1500 mg/l;<br>Disalefeite: 800 mg/l; le<br>Foloraete: 6.4 mg/l. |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | | T2–Lefelo la Bafa: Letlelela go fitlha ka Phesenthaele ya bo5 e e tshegediwang ke thutopatlisiso ya lemorago la lefelo la bafa – bolengpalo jwa mmatota jo bo bonweng mo QC A42J:<br>pH: 6.7 go ya go 8.1;<br>$NO_3$–N: 35 mg/l;<br>Boletswai EC: 340 mg/l;<br>Tleloraete: 650 mg/l;<br>Disalefeite: 250 mg/l; le<br>Foloraete: 2.5 mg/l.<br>T3–Lemorago kgotsa Lefelotshupetso: Letlelela go fitlha ka Phesenthaele ya bo50 + 10% mo dikarolwaneng tsa botlhokwa jaaka go kailwe fa godimo (Boleng). |
| 16: Karolo e kgolo ya Mokolo | RU – G16 | 16_5_2 | Bokanakang | Lekanyetsa go tshwarwa ga metsi a a mo godimo fa o ntsha metsi ka didiba tse di borilweng mo diakhwifeng tsa motlhaba wa morwalela tsa alubiale (ga go a tshwanela go nna le tekanyetso ya sekgala). | Dilekano tsa metsi mo teng ga akhwifa: Thapamo ya selekano sa metsi a a ka fa tlase ga lefatshe go ralala akhwifa e e nang le inthakrenyula; le<br><br>Mekgwatlwaelo ya selekano sa metsi a a ka fa tlase ga lefatshe mo diakhwifeng tsa inthakrenyula. | Ga go a letlelelwa keradiente ya metsi a a ka fa tlase ga lefatshe a poelomorago mo lefelong la 500 m mo karolong e kgolo.<br><br>Mekgwatlwaelo ya selekano sa etsi mo go <-1.0 m/a |
| | | | | Seemo sa kamano fa gare ga metswedi ya Swater le Gwater. | Diphopholetso tse di siameng/tse di sa siamang tsa tshalelo ya metsi: Bolumu (Q);<br><br>Go fela ga kelelo mo merathong ya tekanyetso ya kwa metsi a elelang go ya teng. | Ditatlhegelo tsa metsi a bogodimo di tshwanetse go lekana le ditloso tse di letleletsweng mo nokeng (go akaretsa ditatlhegelo tsa mowafalo le pula). |
| | | | | Seemo sa tshalelo ya metsi a ka fa tlase ga lefatshe mo akhwifeng ya inthakrenyula le e e robegileng | Palelo ya Tshupane ya Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga 65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya 65%). |
| | | | Boleng (Ela tlhoko gore bolengpalo jwa lemorago le le tsholeditsweng tsa dikarolwana tsa botlhokwa tsa | Dikotla - Naetereite | Tlhokomelo ya kgwedi le kgwedi kwa diteišeneng tsa tekanyetso tsa DWS.<br><br>Tlhoma kokoano ya naetereite ya “tlhago” ya lemorago mo motsweding wa metsi. | Naetereite: ≤ 0.5 mg/l (Phesenthaele ya bo95) |
| | | | | Matswai a a tlhaologileng mo | Boletswai - Kgonagalo ya moela wa | Kgonagalo ya moela wa motlakase: ≤ 55 |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | haeterokhemikale e ka nna pono ya tlholego mme di tshwanetse go amogelwa, k.g.r. EC, $NO_3$-N, Cl, $SO_4$, le F). | metsweding ya metsi a a mo tlase ga lefatshe - | motlakase<br><br>Tlhoma kokoano ya boletswai jwa tlhago jwa lemorago mo motsweding wa metsi. | mS/m<br>(Phesenthaele ya bo95) |
| | | | | Metsi a Esiti a Moepo (kgotsa AMD) a mefuta ee gaufi ya matlapa a a mo tlase ga lefatshe a a nang le kgonagalo ya go nna le esiti | Dilekano tsa kokoano ya disalefeite (SO4) mo metsing a ka fa tlase ga lefatshe.<br><br>Dira gore go nne le kokoano ya salefeite ya "tlhago" ya lemorago mo motsweding wa metsi. | $SO_4^{-}$ ≤ 80 mg/l.<br>(Phesenthaele ya bo95) |
| | | | Lefelo la Tshireletso | Lekanyetsa go tshwarwa ga metsi a a mo godimo fa o ntsha metsi ka didiba tse di borilweng mo diakhwifeng tsa motlhaba wa morwalela tsa alubiale (ga go a tshwanela go nna le tekanyetso ya sekgala). | Feketara ya Go fela ga Molapo ya akhwifa ya alubiale ya Mokolo, (L). | Lekanyetsa selekano sa tloso ya metsi a sediba se se borilweng/sediba gore se nne ka fa tlase ga 5% ya kelelo mo metsweding ya metsi a mo godimo ga lefatshe (mo lefelong le le rileng la tloso ya metsi). |
| | | | | Ditiro tsa tiriso ya lefatshe di ka nna le ditlamorago mo akhwifeng ya inthakrenyula. | Tekanyetso ya boleng jwa metsi (khudugelo mo motsweding wa metsi a a fa godimo);<br><br>Tekanyetso ya bokanakang jwa metsi (ditlamorago mo metsing a a mo godimo fa go ntshiwa mo akhwifeng ya alubiale. | Tekanyetso ya boleng jwa metsi (1): Kgaoganyo ya malatsi a le (maekherobiale), sekgala fa gare ga tiro le motswedi wa metsi a a fa godimo.<br><br>Tekanyetso ya selekano sa metsi (2): Kgaoganyo ya letsatsi la tshireletso la 365 (tlhaoloso) (L). |

**Lenaneo 32: Maikaelelo a Boleng jwa Motswedi tse di totileng Karolo ya motswedi le Kgaolo ya METSI A A KA FA TLASE GA LEFATSHE mo Dikarolong tsa setlapele mo Dikarolong tse di kopaneng tsa tshekatsheko17b: MATLABAS / LIMPOPO**

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| IUA 17: MATALBAS | RU – G17_b_2 | 17_b_2 | Bokanakang | Go ya tlase ga dilekano tsa metsi tsa akhwifa (dilekano tsa metsi). | Dilekano tsa metsi mo akhwifa;<br><br>Mekgwatlwaelo ya dilekano tsa metsi a a ka fa tlase ga lefatshe. | Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.5 m/a. |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | Seemo sa tshalelo ya metsi a a ka fa tlase ga lefatshe mo akhwifeng;<br><br>Palelo ya Tshupane ya Kgatelelo (Tiriso ya Karolo ya Akhwifa / Retšhatšhe ya Karolo ya Akhwifa) jaaka diphesente. | Tshalelo e e siameng/e e sa siamang ya metsi. | Go tlosiwa ga ngwaga le ngwaga ga go a tshwanela go nna kwa godimo ga65% ga retšhatšhe ya ngwaga le ngwaga ya magareng (k.g.r. SI ya65%). |
| | | | Boleng (Ela tlhoko gore bolengpalo jo bo kwa godimo jwa lemorago jwa dikarolwana tsa botlhokwa sa haeterokhemikale e ka nna pono ya tlhago mme di tshwanetse go amogelwa, K.g.r. EC, $NO_3$-N, Cl, $SO_4$, le F). | Dikotla tse di mo metsing a a mo tlase ga lewatle tse di nang le ditlamorago mo boitekanelong jwa modirisi. | Kokoano ya naetereite (NO3-N) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng. | Naetereite: ≤3.0 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 (~3.3 mg/l). |
| | | | | Matswai a a tlhaologileng mo metsweding ya metsi a a ka fa tlase ga lefatshe - | Boletswai: Kgonagalo ya moela wa motlakase (EC) wa metsi a a ka fa tlase ga lefatshe. | Kgonagalo ya moela wa motlakase ≤140 mS/m<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 +10% (~155 mS/m). |
| | | | | Karolo e kgolo ya khemikale e e kaiwang e e tlhaolositsweng mo metsing a a ka fa tlase ga lefatshe. | Kokoano ya Tleloraete (Cl) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng. | Tleloraete: ≤145 mg/l mo Lefelotshupetsong.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 +10% (~160 mg/l). |
| | | | | Go tlholwa ga metsi a moepo a a nang le esiti go tswa mo matlapeng a a kgonang go nna le esiti; le go thibela go itshela ka iketlo ga mo isagong ga metsi a a mo tlase ga lefatshe mo moepong mo metsweding ya metsi e e mo godimo. | Kokoano ya disalefeite (SO4) mo metsing a a ka fa tlase ga lefatshe mo lefelotshupetsong le le tlhalositsweng. | $SO_4^{-}$ ≤85 mg/l.<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela phesenthaele ya bo 75 +10% (~94 mg/l). |
| | | | | Dikokoano tsa foloraete mo metsing a ka fa tlase ga lefatshe a direlwa badirisi ba fa gae. | Kokoano ya Foloraete (F) mo metsing a a ka fa tlase ga lefatshe e direlwa badirisi ba fa gae. | Foloraete: ≤1.3 mg/l;<br>Tlwaelo ya paka e telele ya ngwaga le ngwaga ga e a tshwanela go atamela Phesenthaele ya bo5 +10% (~1.4 mg/l). |
| | | | | Dilekano sa kolobetso ya akhwifa | Selekano sa metsi se setetswe mafelo a le mararo (3) a a kgaogantsweng ka maemo. | T1–Lefelo la Tiro: Go fela ga selekano sa metsi a a tlhokelwang tiro.<br>T2–Lefelo la Bafa: Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 1.0 m/a.<br>T3–Lemorago kgotsa Lefelotshupetso: Seelo sa kwelotlase ya selekano sa metsi se tshwanetse go nna ka fa tlase ga 0.5 m/a. |
| | | | Lefelo la | Go ya ka ditlhaloso tsa boleng jwa | Go setiwa diparametara tsa boleng jwa | T1–Lefelo la Tiro, dilekano tse di kwa |

| IUA | Karolo ya metsi a ka fa tlase ga lefatshe | RU | Karolo ya karolwana | Maikalelo a Boleng jwa Motswedi | Sekao/Tekanyetso | Tekanyetso ya Dipalo |
|---|---|---|---|---|---|---|
| | | | tshireletso | metsi. | metsi tsa mafelo a le mararo (3) a a kgaoganngwang ka maemo. | godimo ka ntlha ya ditlamorago (go ya ka datasete mo lefelong le le amegileng):<br>pH:;<br>pH: 5.0 go ya go 9.5;<br>$NO_3$–N: 60 mg/l;<br>Boletswai EC: 600 mS/m;<br>Tleloraete: 1500 mg/l;<br>Disalefeite: 800 mg/l; le<br>Foloraete: 6.4 mg/l.<br><br>T2–Lefelo la Bafa: Letlelela go fitlha ka Phesenthaele ya bo5 ya bolengpalo jwa totatota mo QC A41E:<br>pH: 7.2 – 7.8;<br>$NO_3$–N: 8.0 mg/l;<br>Boletswai EC: 200 mg/l;<br>Tleloraete: 300 mg/l;<br>Disalefeite: 170 mg/l; le<br>Foloraete: 1.8 mg/l.<br><br>T3–Lemorago kgotsa Lefelotshupetso: Letlelela go fitlha ka Phesenthaele ya bo50 + 10% mo dikarolwaneng tsa botlhokwa jaaka go kailwe fa godimo (leba Boleng fa godimo). |

# TSEBIŠO KAKARETŠO

**MOLAO WA BOSETŠHABA WA METSI, 1998**
**(MOLAO 36 WA 1998)**

**TLHOMAMISO YA DITLHOPA TSA MOTSWEDI WA METSI LE MAIKAELELO A BOLENG JWA MOTSWEDI WA MADUTISO A MOKOLO, MATLABAS, CROCODILE (WEST) LE MARICO**

Nna ke le, Gugile Nkwinti, Tona ya Metsi le Kgelelolesweng go ya ka karolo 13(1) ya Molao wa Bosetšhaba wa Metsi, 1998 (Molao 36 wa 1998) ke tlhomamisa fano, kitsiso ya ditlhopa tsa metswedi ya metsi le maikaelelo a boleng jwa motswedi a madutiso a Mokolo, Matlabas, Crocodile (West) le Marico.

**RRE GUGILE NKWINTI**
**TONA YA KGORO YA METSI LE KGELELOLESWE**
**LETLHA:** 22/02/2019

## ŠETULE

## TAETŠO YA MAGORO A METHOPO YA MEETSE LE MAIKEMIŠETŠO A BOLENG BJA METHOPO YA KGOBOKETŠO YA MEETSE YA BOGARENG BJA MOKOLO, MATLABAS, CROCODILE (WEST) LE MARICO

### 1. DITLHALOŠO

Mo šetuleng ye, lentšu goba mmolelwana ofe goba ofe o na le tlhalošo ye e swanago le yeo e šomišitšwego Molaong wa Bosetšhaba wa Meetse, ntle le ge tshwaraganyo e laetša ka tsela ye nngwe –

**"Legoro I"** le ra gore ke moo thulaganyong ya magoro a tswalano ya diphedi le tikologo mo methopong ya meetse e feleletšago e le gore maemo kakaretšo a methopo yeo ya meetse e fetotšwe gannyane go tšwa seemong sa yona pele ga tšwelopele;

**"Legoro II"** le ra gore ke moo thulaganyong ya magoro a tswalano ya diphedi le tikologo mo methopong ya meetse e feleletšago e le gore maemo kakaretšo a methopo yeo ya meetse e fetotšwe ka tsela ya magareng go tšwa seemong sa yona pele ga tšwelopele;

**"Legoro III"** le ra gore ke moo thulaganyong ya magoro a tswalano ya diphedi le tikologo mo methopong ya meetse e feleletšago e le gore maemo kakaretšo a methopo yeo ya meetse e fetotšwe kudu go tšwa seemong sa yona pele ga tšwelopele;

**"Legoro la tswalano ya diphedi le tikologo"** e ra seemo sa tswalano ya diphedi le tikologo sa mothopo wa meetse wo o tšweletšago seemo sa tswalano ya diphedi le tikologo sa mothopo woo wa meetse go ya ka phetogo ya diripana tša diphedi tša hlago go tšwa seemong sa tšweletšo ya pele;

**"Dinyakwa tša meetse a tswalano ya diphedi le tikologo"** malebana le methopo ya meetse, e ra bokae le boleng bja meetse a mothopo woo mo legorong le le beilwego la tswalano ya diphedi le tikologo;

**"Yuniti ye kopantšwego ya tekolo"** e ra yuniti ye kopantšwego ya tekolo yeo e laetšago kgoboketšo ya meetse yeo e swanago go ya ka khuetšo ge go lekolwa ditlamorago tsa leago-ekonomi la peakanyo ya maemo a fapafapanego le go begela seemo sa tswalano ya diphedi le tikologo mo kgoboketšwaneng ya meetse;

**"Molao wa Bosetšhaba wa Meetse"** e ra Molao wa Bosetšhaba wa Meetse, 1998 (Molao wa 36 wa 1998);

**"Phesenthaele"** e ra kgonagalo ya go se fete mollwane, e ra gore, mo phesenthaeleng ya bo95 diphesente tše 95 tša dipalopalo di swanetše di be ka tlase ga palo yeo, le mo phesenthaeleng ya bo50 diphesente tše 50 tša dipalopalo di swanetše di be ka tlase ga palo yeo;

**"Seemo sa gabjale sa tswalano ya diphedi le tikologo"** e ra seemo sa ga bjale sa maphelo sa diphedi tše fapafapanego tša methopo, se bapetšwa le seemo sa hlago goba seemo sa tšhupetšo sa kgauswi le seemo sa hlago;

**"Legoro la tswalano ya diphedi le tikologo le hlohleletšwago**" e ra legoro le laetšago nepo ya taolo ya tswalano ya diphedi le tikologo go ya ka magoro a tswalano ya diphedi le tikologo ao a swanetšego go fihlelelwa;

"**Maikemišetšo a boleng bja methopo"** e ra maikemišetšo a boleng bja methopo ao e lego tlhaloso ga mmogo le tekanyetšo ya dipalo tša thutamaphelo, sebopego le dikhemikhale tša

methopo e bohlokwa ka kgoboketšong ya meetse. Ke ditatamente tše hlathollago boleng kakaretšo bja yuniti ya mothopo;

**"Yuniti ya mothopo"** e ra monabo wa noka, mohlaka goba sehlopha sa mehlaka, esetšuware, goba letamo leo e lego gore seemo sa lona sa tswalano ya diphedi le tikologo se dumella gore le be le taetšo ya lona ya dinyakwa tša meetse a tswalano ya diphedi le tikologo goba maikemišetšo a boleng bja methopo gape mellwane ya lona ya lefelo e thalwe. Yuniti ya mothopo ke bonnyane bja yuniti bjo maikemišetšo a boleng bja methopo a tla go šomišwa gona;

**"Legoro la mothopo wa meetse"** e ra taetšo ka molaodi wa methopo ya meetse (Kgoro ya Meetse le Kelelatšhila) ya dimelo tšeo di hlokegago ya methopo ya meetse yeo e fapafapanego.

## 2. TLHALOŠO YA MOTHOPO WA MEETSE

Magoro a methopo ya meetse le maikemišetšo a boleng bja methopo di tšweleditšwe go karolo goba methopo ka moka ya meetse yeo e lego bohlokwa bjalo ka ge go laeditšwe ka mo go latelago:

| | |
|---|---|
| Lefelo la Taolo ya Meetse: | Limpopo North West |
| Lefelo la go Ntšha meetse: | Lefelo la go Ntšha meetse leo le phagamego la A10, A21 to A24, A31, A32, A41 le A42 |
| Noka / Dinoka: | Mananeo a dinoka tša Mokolo, Matlabas, Crocodile (West) le Marico |
| Lefelo la Taolo ya Meetse: | Lefelo la Taolo ya Meetse la Vaal |
| Lefelo la go Ntšha meetse: | D41A Quaternary Drainage Region |
| Noka / Dinoka: | Lenaneo la Noka ya Molopo |

## 3. MAGORO A METHOPO YA MEETSE BJALO KA GE GO NYAKEGA GO YA KA KAROLO 13(1)(a) YA MOLAWANA WA MEETSE WA SETŠHABA WA, 1998

i. Magoro a methopo ya meetse a kgoboketšo ya meetse ya Mokolo, Matlabas, Crocodile (West) le Marico di ngwadilwe Tafolaneng 1 go ya ka palo ya lenaneo ka yuniti yeo e kopantšhitšwego ya (integrated unit of analysis (IUA)), yeo e bontšhitšwego go Seswantšho 1.

ii. Di IUA di tlhophilwe go ya ka tšhomišo ya tšona yeo e dumeletšwego le tšhireletšo go ya ka Legoro I: ka go laetša tšhireletšo ya godimo ya tikologo le tšhomišo ye nnyane; Legoro II leo le laetšago tšhireletšo ya maleba le tšhomišo ya maleba; le Legoro III leo le laetšago tšhomišo ya maleba yeo e swarelelago le tšhomišo ya godimo.

iii. Tafolana 1 e bontša IUA, mothopo wa yona wa meetse le kgoboketšo ya yona ya pekanyo. Kgoboketšo ya yona ya peakanyo e na le bontšhi bja dinoutse tša fisika tšeo di emelago diphihlelelo tša noka goba diyuniti tša mothopo (resource units (RUs). Legoro la tša tikologo leo le tla tlhokomelwago la RU yengwe le yengwe ka gare ga IUA le abilwe.

## 4. MAIKEMIŠETŠO A BOLENG BJA METHOPO YA MEETSE BJALO KA GE GO HLOKEGA GO YA KA KAROLO 13(4)(a)(i)(bb) YA MOLAWANA WA MEETSE WA SETŠHABA, 1998

i. Maikemišetšo a Boleng bja Methopo (Resource Boleng Objectives (RQOs) a tlhalošwa go RU yengwe le yengwe yeo e kgethilwego ya IUA yengwe le yengwe go ya ka bontšhi bja meetse, tikologo le diphedi, le boleng bja meetse.

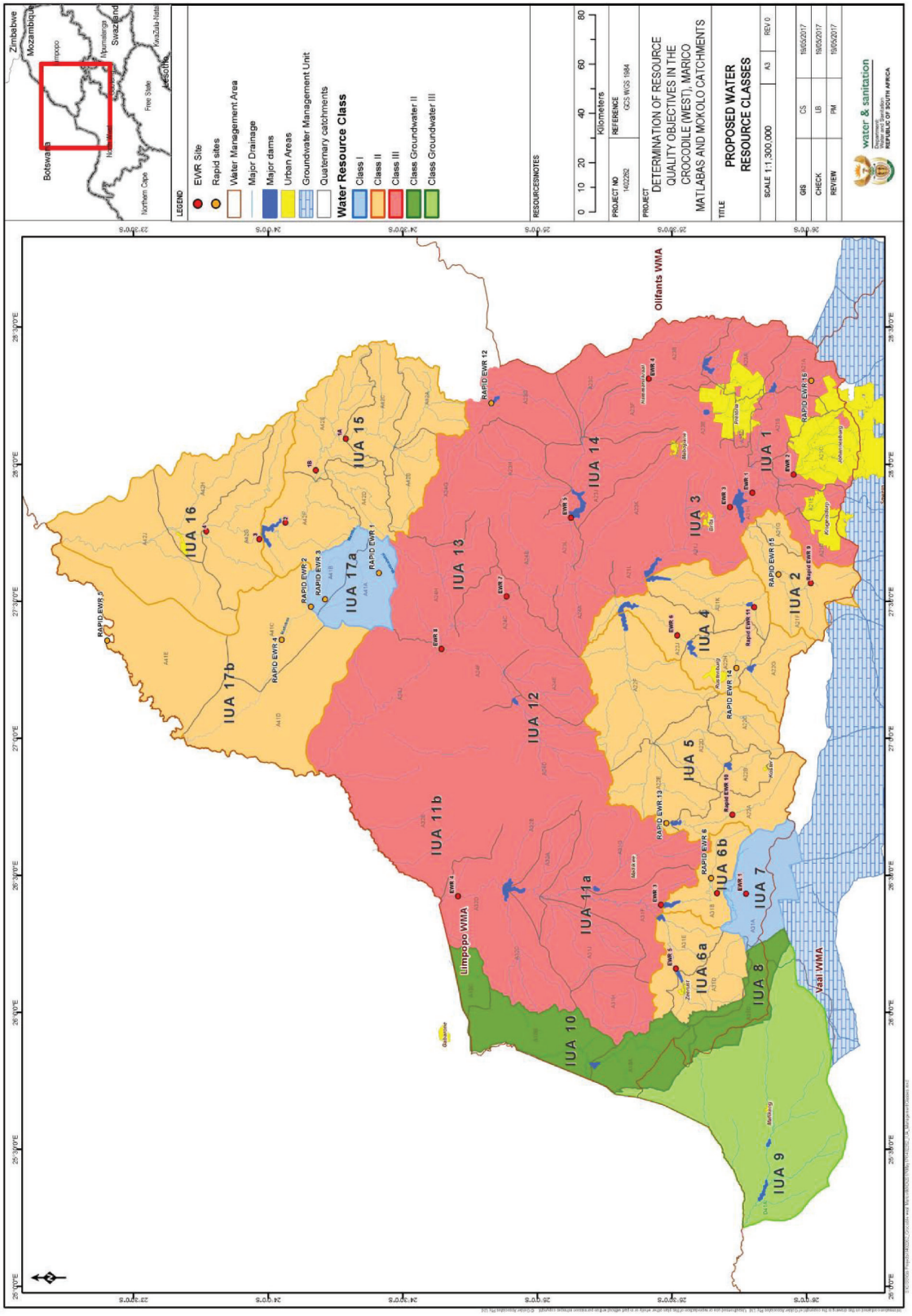
ii. Seswantšho 2 se laetša mellwane ya diRU tša kgoboketšo ya meetse ya Crocodile (West), Marico, Mokolo le Matlabas.

iii. Tafolana ya 2 go iša go ya 20 e aba diRQO tša DINOKA LE MATAMO go diRU tše bohlokwa.

iv. Tafolana 21 e laetša diRQO tša DIHLOPHA LE MANANEO TŠE BOHLOKWA TŠA MEHLAKA go Diyuniti tša Methopo yeo e kgethilwego.

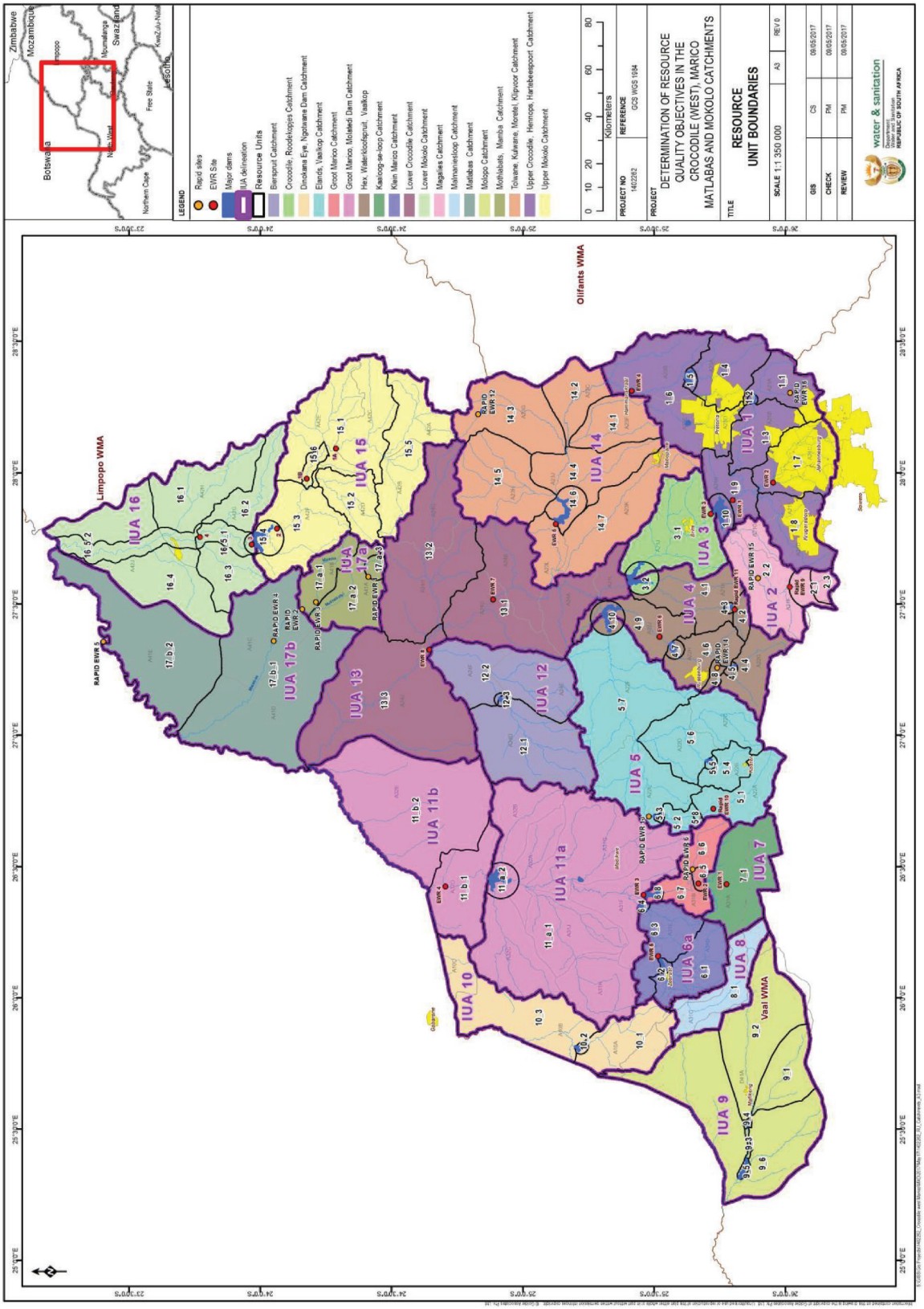
v. Tafolana 22 go iša go Tafolana 32 e laetša diRQO tša meetse a ka fase ga lefase go bohlokwa bja diRU bja Tikologo le diRQO tše itšego.

vi. DiRQO di tla šoma go tloga ka letšatši leo go saenilwego ka fao go tlhamilwego go ya ka Karolo 13(1) ya Molawana wa Meetse wa Setšhaba, 1998, ka ntle le ge go laetšwe ke Tona.




**Seswantšho 1: Mananeo a Mothopo wa Meetse wa Crocodile (West), Marico, Mokolo le Matlabas**

5




**Seswantšho 2: diyuniti tša Mothopo wa Crocodile (West), Marico, Mokolo kgoboketšo ya meetse ya Matlabas**

**6**

**Tafolana 1: Kakaretšo ya Mananeo a Mothopo wa Meetse ka Yuniti ya Kopanyo ya Tshekatsheko le Mehuta ya Ditikologo– Crocodile (West), Marico, Mokolo le kgoboketšo ya meetse ya Matlabas**

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3/a$) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| 1 Upper Crocodile/ Hennops/ Hartbeespoort | III | CROC Lebelo la EWR_16 | A21A | 1_1 | (mothopo) wa Rietvlei | C | 4.788 | 27.83 |
| | | HN1 | A21A | 1_1 | Noka ya Hennops ka godimo ga Letamo la Rietvlei | C | 11.66 | 27.83 |
| | | HN2 | A21B | 1_3 | Sesmylspruit le di tributharisi tša yona e tla kopantšhwa le Hennops | D | - | - |
| | | HN3 | A21C | 1_7 | Modderfonteinspruit e tla kopana le Jukskei | D | - | - |
| | | HN4 | A21C | 1_7 | Klein Jukskei e kopana le Jukskei | D | - | - |
| | | EWR Lefelo CROC_ EWR2 | A21C | 1_7 | Noka ya Jukskei | D | 139.9 | 29.19 |
| | | HN6 | A21D | 1_8 | Bloubankspruit le dinoka tšeo di elelelago ka gare ga noka ye kgolo (tsela yeo meetse a tšwago gona / kopantšho le (Crocodile) | D | - | - |
| | | HN8 | A21H | 1_9 | Swartspruit go iša go Letamo la Hartbeespoort | D | - | - |
| | | EWR CROC_EWR1 | A21 H | 1_9 | Noka ya Crocodile go tšwa go kopantšho ya Jukskei go elelela Letamong la Hartbeespoort | D | 231.05 | 24.07 |
| | | HN11 | A23A | 1_4 | Noka ya Godimo ya Pienaars , Edendalespruit le Dinoka tša Moretlele go iša go Letamo la Roodeplaat | D | - | - |
| | | EWR Lefelo CROC_EWR4 | A23B | 1_6 | Pienaars go tloga go Letamo la Roodeplaat go iša go tsela ya go ntša meetse ya kgoboketšo ya meetse ya lekgetlo la bone ( tsela ya go ntša meetse ya IUA1) | C | 28.2 | 30.81 |
| | | HN13 | A23B | 1_6 | Boekenhoutspruit e tla kopana le Pienaars | C | - | - |
| | | HN14 | A23D | 1_6 | (mothopo) wa Skinnerspruit o tla kopana Apies | D | - | - |
| | | HN15 | A23D, E | 1_6 | (mothopo) wa Apies go iša go Letamo la Bon Accord , ka fase ga letamo la go ntša meetse la IUA1 | D | - | - |
| 2 Magalies | II | CROC Lebelo la _EWR9 | A21F | 2_1 | Magalies ka fase ga Leihlo la Maloney | B | 14.7 | 45.93 |
| | | CROC Lebelo | A21G | 2_2 | Magalies, Klein Magalies, Bloubank | C/D | 21.9 | 21.18 |

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3/a$) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| | | la _EWR15 | | | | | | |
| | | HN18 | A21G, F | 2_2 | Skeerpoort mo tseleng ya go ntša meetse ya IUA2 | C/D | - | - |
| 3 Crocodile/ Roodekopjes | III | HN19 | A21J | 3_1 | Rosespruit kopantšhong ya Crocodile | C/D | - | - |
| | | Lefelo la EWR CROC_EWR3 | A21J | 3_1 | Crocodile go tšwa Letamong la Hartbeespoort go iša go moela wa ka godimo wa Letamo la Roodekopjes | C/D | 143.3 | 25.02 |
| 4 Hex/ Waterkloof-spruit/ Vaalkop | II | CROC lebelo _EWR11 | A21K | 4_2 | Phihlelelo ya godimo ya (mothopo ) wa Sterkstroom go elelela ka gare ga Letamo la Buffelspoort | C | 13.95 | 28.21 |
| | | HN22 | A21K | 4_1 | Sterkstroom go tšwa go Letamo la Buffelskloof go iša go Letamo la Roodekopjes | C | - | - |
| | | HN23 | A22G | 4_4 | (mothopo) wa Hex ya Godimo go iša go Letamo la Olifantsnek, Rooikloofspruit | C | - | - |
| | | CROC lebelo _EWR14 | A22H | 4_8 | Waterkloofspruit e tla kopana le Hex | B/C | 5.469 | 28.27 |
| | | HN25 | A22H | 4_6 | Hex go tšwa go Letamo la Olifantsnek go iša go Letamo la Bospoort , Sandspruit | D | 12.11 | 15.26 |
| | | Lefelo la EWR CROC_EWR6 | A22J | 4_9 | Hex go tšwa go Letamo la Bospoort go iša kelelong ya Letamo la Vaalkop | D | 26.9 | 14.96 |
| 5 Elands/ Vaalkop | II | CROC lebelo _EWR10 | A22A | 5_1 | Diphihlelelo tša (mothopo) wa Elands ya Godimo go iša go Letamo la Swartruggens | B/C | 10.1 | 30.48 |
| | | HN29 | A22A | 5_2 | Elands go tšwa go Letamo la Swartruggens go iša go Letamo la Lindleyspoort | C | 12.87 | 23.99 |
| | | HN30 | A22B | 5_4 | (mothopo) wa Koster ya godimo go iša go Letamo la Koster | C | 2.54 | 22.77 |
| | | HN31 | A22C, A22D | 5_6 | Letamo la Selons, Koedoespruit, Dwarsspruit, le Noka ya fase ya Koster | C | - | - |
| | | CROC lebelo _EWR13 | A22E, A22F | 5_7 | Elands go tšwa go Letamo la Lindleyspoort go iša go Letamo la Vaalkop | C | 18.77 | 21.90 |
| 6b Groot Marico | II | MAR lebelo _EWR6 | A31B | 6_6 | Polkadraaispruit e tla kopana le Marico | B | 9.87 | 49.27 |

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3/a$) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| | | Lefelo la EWR MAR_EWR2 | A31B | 6_5 | Modu wo mogolo wa Groot Marico go iša go moela wa godimo wa Polkadraaispruit | B | 42.08 | 50.26 |
| | | HN63 | A31B | 6_7 | Groot Marico go tšwa go Polkadraaispruit e tla kopana le Letamo la Marico Bosveld | B | 56.92 | 50.61 |
| 6a Klein Marico | II | HN64 | A31D | 6_1 | Malmaniesloop e tla kopana le Klein Marico | C/D | - | - |
| | | HN35 | A31D | 6_1 | Klein Marico le dinoka tše di elelelago ka gare ga noka ye kgolo ya moela wa godimo wa Zeerust | C/D | - | - |
| | | HN65 | A31E | 6_1 | Klein Marico go tšwa go Zeerust go iša go Letamo la Klein Maricopoort | C/D | 16.25 | 14.26 |
| | | Lefelo la EWR MAR_EWR5 | A31E | 6_3 | Klein Marico go tšwa go Letamo la Klein Maricopoort go iša go Letamo la Kromellemboog | C | 16.25 | 11.70 |
| 7 Kaaloog-se-Loop | I | EWR Lefelo MAR_EWR1 | A31A | 7_1 | Leihlo la Marico, Kaaloog-se-Loop, Bokkraal-se-Loop, Ribbokfontein-se-Loop, Rietspruit (leihlo la borwa), Kuilsfontein, Syferfontein, Bronkhorstfontein | B | 10.539 | 76.32 |
| | | HN38 | A31A | 7_1 | Vanstraatenvlei le dinoka tšeo di elelelago ka gare ga noka ye kgolo Kopanyong le Kaaloog-se-Loop, tsela ya go ntša meetse ya IUA7 | B | - | - |
| 8 Malmaniesloop | II* | - | A31C | 8_1 | Lefelo la meetse la Dolomite | B | - | - |
| 9 Molopo | II* | HN66 | D41A | 9_3 | Modu wo mogolo wa noka ya Molopo go tloga go letamo la Modimola go iša go letamo la Disaneng | D | - | - |
| | | HN67 | D41A | 9_2 | Meetse a Molopo a tla elelela ka gare ga letamo la Setumo (Modimola) (lefelo la meetse la dolomite) | D | - | - |
| | | HN39 | D41A | 9_6 | Molopo mo tseleng ya go ntša meetse ya IUA9 | D | - | - |
| 10 Dinokana Eye/Letamo la Ngotwane | III* | HN68 | A10A | 10_1 | Ngotwane go tšwa go Dinokana go iša go Letamo la Ngotwane | D | - | - |

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3$/a) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| 11a Groot Marico/ Letamo la Molatedi | III | Lefelo la EWR Lefelo MAR_EWR3 | A31F, A31G, A32A | 11a_1 | Marico Groot Marico go tšwa go keleleo ya ka ntle ya Letamo la Marico Bosveld go iša go Letamo la Molatedi, dinoka ka moka tšeo di elelelago ka gare ga noka ye kgolo | C/D | 65.083 | 23.62 |
| 11b Groot Marico/ dinoka tšeo di elelelago ka gare ga noka ye kgolo ka dihla | III | Lefelo la EWR MAR_EWR4 | A32D, E | 11b_1 | Marico go tšwa go Letamo la Molatedi go iša go bokopanelong le Limpopo, Rasweu, dinoka tša Maselaje; ditsela tša go ntša meetse tša IUA11b | C | 153.25 | 7.96 |
| 12 Bierspruit | III | - | A24D | 12_1 | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe | C | | |
| | | HN42 | A24E, F | 12_2 | Bierspruit e tla kopana le Crocodile River, Brakspruit, Phufane, Sefatlhane, Lesobeng, Bofule ya fase; tsela ya go ntša meetse ya IUA12. | D | - | - |
| 13 Lower Crocodile | III | HN43 | A24G, A24H | 13_2 | Sand e tla kopantšhwa le Crocodile | B | - | - |
| | | Mafelo a EWR CROC_EWR7 | A21L, A24A-C, A24H | 13_1 | Kelelo ya ka ntle ya Noka ya Crocodile ya letamo la Roodekopjes go iša go kelelo ya godimo ya kopanyo ya Noka ya Sand, le dinoka tšeo di elelelago ka gare ga noka ye kgolo ya Sleepfonteinspruit, Klipspruit | D | 463.4 | 13.9 |
| | | EWR Lefelo CROC_EWR8 | A24J | 13_3 | Lower Crocodile go tšwa go kopantšho ya Bierspruit go kopantšhwa le Limpopo, tsela ya go ntša meetse ya IUA13 | D | 565.16 | 7.48 |
| 14 Tolwane/ Kulwane/ Moretele/ Klipvoor | III | CROC Lebelo la _EWR12 | A23G | 14_3 | Noka ya Plat | C/D | 4.864 | 23.08 |
| | | - | A23F | 14_1 | Noka ya Apies, noka yeo e elelelago ka gare ga noka ye kgolo ya Tshwane | D | | |
| | | - | A23C | 14_2 | Noka ya Pienaars go tšwa go kopanyo ya Boekenshout go iša go kopantšho ya Noka ya Apies | C | | |
| | | | A23J | 14_4 | Noka ya Moretele (Pienaars) go tšwa go kopantšho ya noka ya Plat go iša Letamong la Klipvoor , Kutswane go iša Letamong la | C | | |

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3$/a) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| | | | | | Klipvoor | | | |
| | | EWR Lefelo CROC_EWR5 | A23J A23J, A23L | 14_7 | Moretele (Pienaars) e tla kopantšhwa le Crocodile, tsela ya go ntša meetse ya IUA14 | D | 113.0 | 11.82 |
| | | HN49 | A23K | 14_7 | Tolwane to e tla kopantšhwa le Moretele | C/D | - | - |
| 15 Mokolo wa Godimo | II | HN50 | A42A | 15_5 | (mothopo) wa Sand o tla kopantšhwa le Grootspruit | C | - | - |
| | | HN51 | A42B | 15_5 | (mothopo) wa Grootspruit o tla kopantšhwa le Sand | D | 27.8 | 21.73 |
| | | EWR Lefelo MOK_EWR1a | A42C | 15_1 | Mokolo o tla kopantšhwa le Dwars | C/D | 84.84 | 16.79 |
| | | EWR Lefelo MOK_EWR1b | A42E | 15_6 | Mokolo o tla kopantšhwa le Sterkstroom | B/C | 135.03 | 13.6 |
| | | HN54 | A42D | 15_2 | (mothopo) wa Sterkstroom o tla kopantšhwa le Mokolo, | B | 43.45 | 52.63 |
| | | EWR Lefelo MOK_EWR2 | A42F | 15_4 | Mokolo River go A42F e tla elelela ka gare ga Letamo la Mokolo , | B/C | 196.2 | 11.7 |
| | | EWR Lefelo MOK_EWR3 | A42G | 15_4 | Letamo la Mokolo go iša go seripa sa godimo sa A42G (10km ya moela wa fase wa letamo) | B/C | 213.99 | 8.65 |
| 16 Mokolo wa Fase | II | - | A42H karolwana ya (south eastern) | 16_1 | Noka ya Tambotie | B | | |
| | | - | A42G | 16_2 | Poer-se-Loop | B | | |
| | | - | A42J le mašaledi a A42H | 16_4 | Sandloop | C | | |
| | | EWR Lefelo MOK_EWR4 | A42G | 16_5_1 | Modu wo mogolo wa Mokolo - Mokolo go tloga fase go EWR3 go ya go Tambotie e tla kopantšhwa le | C | 253.3 | 12.3 |
| | | HN58 | A42H, A42J | 16_5_2 | Modu wo mogolo wa Mokolo – go tloga go Tambotie e tla kopantšhwa le go iša go Limpopo | C | - | - |
| 17a Mothlabatsi/ Mamba | I | HN59 | A41A | 17a_3 | Headwaters Mothlabatsi (Matlabas-Zyn-Kloof, peatlands) | A | 5.23 | 57.07 |
| | | MAT Lebelo la _EWR3 | A41B | 17a_1 | Mamba e tla kopantšhwa le Mothlabatsi | B/C | 9.54 | 35.49 |

| IUA | Lenaneo la Mothopo wa Meetse | Leina la Noute | Kgoboketšo ya meetse ya lekgetlo la bone | Yuniti ya Mothopo | Leina la Noka | Legoro la Tikologo yeo e tla tlhokomelwago | Palo ya go Nošetšo ya Ngwaga ( dimilione tše $m^3$/a) | EWR bjalo ka % ya Palo ya hlago ya go goga meetse ka ngwaga |
|---|---|---|---|---|---|---|---|---|
| | | MAT Lebelo la _EWR2 | A41B | 17a_2 | Matlabas/Motlhabatsi e tla kopantšhwa le (tsela ya go ntša meetse ya IUA) | B/C | 32.80 | 33.23 |
| 17b Matlabas | II | MAT Lebelo la _EWR4 | A41C | 17b_1 | Matlabas | B | 35.58 | 33.42 |
| | | HN62 | A41C, D | 17b_1 | Matlabas e tla kopantšhwa le Limpopo, tsela ya go ntša meetse ya IUA17b | B | - | - |

***Meetse-a-ka-fase-ga-lefase***

**Tafolana 2: Dipono tša Boleng bja Mothopo wa DINOKA LE MATAMO ke Diyuniti tše bohlokwa tša Mothopo go Tshekatsheko ya Yuniti ya pele yeo e kopantšhitšwego: UPPER CROCODILE/HENNOPS/HARTEBEESPOORT**

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tlhokomelo ya kelelo ya fase ($m^3$/s) | Kelelo ya komelelo ya fase ($m^3$/s) |
| 1: UPPER CROCODILE/HENNOPS/HARTEBEESPOORT | III | Upper Hennops le Rietvlei Rivers ( kelelo ya ka gare ga letamo la Rietvlei) (A21A) | 1_1 | D | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le kelelo ya komelelo : Noka ya Hennops go A2H090 ka gare ga A21A NMAR = $11.66 \times 10^6 m^3$ REC=C legoro<br><br>Tlhokomelo ya dikelelo tša fase le kelelo ya komelelo di swanetše go lebeledišiswa go thekga lenaneo la tša dilo tša ka meetseng le bašomiši ba moela wa fase. | Dikelelo tšeo di sa swanelago - tšeo di nyakwago ka morago di tla kopantšhwa le Rietvlei le dinoka tša Hennops Rivers<br><br>Tlhokomelo ya kelelo le kelelo ya komeleloTlhokomelo ya dikelelo le tshepedišo ya komelelo<br><br>Tlhokomelo ya noka ya Hennops ka tekolo ya diphedi go A2H090) | Oct | 0.041 | 0.007 |
| | | | | | | | | | | Nov | 0.054 | 0.007 |
| | | | | | | | | | | Dec | 0.056 | 0.010 |
| | | | | | | | | | | Jan | 0.078 | 0.017 |
| | | | | | | | | | | Feb | 0.100 | 0.015 |
| | | | | | | | | | | Mar | 0.087 | 0.017 |
| | | | | | | | | | | Apr | 0.072 | 0.014 |
| | | | | | | | | | | May | 0.065 | 0.013 |
| | | | | | | | | | | Jun | 0.064 | 0.017 |
| | | | | | | | | | | Jul | 0.059 | 0.016 |
| | | | | | | | | | | Aug | 0.054 | 0.013 |
| | | | | | | | | | | Sep | 0.048 | 0.007 |
| | | | | | Boleng | Didinutriente | Kelelo yeo e tsenago ya motswako wa dinutriente e swanetše go kaonafatšwa go tšwetšapele bophelo | Othofofeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.060 dimillikramo/lithara (mg/l) (50th phesenthaele) | | |
| | | | | | | | | Naetrotšene yeo e tologilego yeo e se nago le khapone (DIN) bjalo ka Naetrotšene | ≤1.25 dimillikramo/lithara (mg/l) (50th phesenthaele) | | |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bja diphedi tša ka fase ga meetse le go netefatša gore legoro la diphedi le tikologo le a fihlelelwa.<br><br>Tekanyetšo ya tirišo ya motswako e swanetše go dirwa ka kopantšho ya tekanyetšo ya nutriente ya kgoboketšo ya meetse | Naetreiti ($NO_3^-$) & Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimillikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo yeo e tsenago ya motswako wa letswai e swanetše go tlhokomelwa goba go kaonafatšwa go thekga diphedi le tikologo ya dilo tša ka fase ga meetse le dinyakwa tša boleng bja meetse bja bašomiši ba meetse. | Tshwaro ya Mohlagase (EC) | ≤ 55 milisimense/mmitha (mS/m) (95th phesenthaele) Hennops ka godimo e tla kopantšhwa le Rietvlei |
| | | | | | | | | | ≤ 70 milisimense/mmitha (mS/m) (95th phesenthaele) ka fase tla kopantšhwa le |
| | | | | | | | | Salfeiti ($SO_4$) | ≤ 80 dimilikramo/lithara (mg/l) 95th phesenthaele) |
| | | | | | | | | Sodiamo (Na) | ≤ 70 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene go swanetše go fokotša kotsi ya maphelo a batho | *Eskheri*šia kholi (*E. coli*) | Dipalo tše 130 /100 dimillilithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | pH e swanetše go tlhokomelwa maemong a bjale. | Phapaphapano ya pH | 6.5 (5th phesenthaele) le 9.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo go tlhatha maemo a bjale a kelolo ya ka gare e ya tlhokega | Kgobokano ya diela | Phapano ya 10% go tšwa go bokamorago bja motswako e dumeletšwe |
| | | | | | | | Maemo a oksitšene yeo e moyafetšego a swanetše go kaonafatšwa go | Oksitšene yeo e moyafetšego | 6-7 dimilikramo/lithara (mg/l) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | thekga maemo a tikologo le diphedi tša ka re ga meetse. | | |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go ba mpholo go diphedi tša ka gare ga meetse le go bea maphelo a batho kotsing.<br><br>(go tla kgonthišišwa dibolaya-dikhunkhwane) | Amonia bjalo ka N | ≤ 0.0725 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.105 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Liti (Pb) ye bothata | ≤ 0.0095 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤ 0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Glaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosulufene | 0.13 maekhrokramo/lithara (ug/l) |
| | | | | | | | | Makhura le kirisi | 2.5 mg/l |
| | | | | | | | | Ditšweletšwa tša kalafo tšeo di hlotšwego ke dihomoune | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Tikologo | Kelelo yeo e tsenago | Bofase bja lebelo la kelelo ya diphedi tšeo di gobalago ga bonolo bo swanetše go fihlelelwa. | Dikagare tša nepagalo ya tikologo, Tshekatsheko ya mokgwa wa tiragalo yeo e diregago ka lebelo ya tikologo le Mokgwa wa Mmotlolo le Mmmotlo (RHAMM) | Nepagalo ya kelelo ya ka gare ya legoro la tswalano ya diphedi le Tikologo = C ≥ 62% |
| | | | | | | Tikologo ya monola | Taolo ya diphedi tšeo di sa tlwaelegago e swanetše go tlholwa. Dimela tša monoleng di swanetše go tlhokomelwa ka legoro la C la | Dikagare tša Nepagalo ya Tikologo, Tshekatsheko ya Dikagare tša Phetolo ya Dimela | Legoro la tswalano ya diphedi le tikologo la VEGRAI = C ≥ 62%<br>Monola IHI = C ≥ 62% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tikologo. | | |
| | | | | | Thuta phedi | Dihlapi | Tikologo ya dihlapi e swanetše go hlokomelwa ka legoro la tikologo la C. Lebelo la kelelo leo le amantšhwago le dinyakwa tša diihla leo le hlokegago go *BMAR, AURA le CPRE* | Tshekatsheko ya Dikagare tša Phetolo ya dihlapi (FRAI). Go swanetše go elwa šedi dihla. | Legoro la tswalano ya diphedi le tikologo la dihlapi = C<br>FRAI ≥ 62% |
| | | | | | | Diphedi tša ka gare ga meetse tše dikgolo tšeo di hlokago lerapo la mokokotlo | Kgobokantšho ya Diphoofolo tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa go maemo ao a fetotšwego goba ao a kaonafaditšwego. | Tshekatsheko ya dikagare le phetolo ya diphoofolo tšeo di hlokago lerapo la mokokotlo le Bešene ya bohlano ya Lenaneo la go Lokela la Afrika-Borwa (SASS5). | Legoro la tswalano ya diphedi le tikologo la MIRAI C ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 4.8 |
| | | | | | | Thutaphedi ya diphedi tša ka fase ga meetse | Tshwanelo ya bophara bja noka ye go šoma bjalo ka tikologo le tsejana ya go huduga ya nonyane ya go phela ka meetseng le setšhaba sa diamuši di swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. | Dinonyane tšeo di phelago ka gare ga meetse/ sebontšhi sa diphedi tšeo di amušago. | Tlhama kemedi ya diphedi tša dinonyane (mehuta le dipalo tša setšhaba go šoma bjalo ka dibontšhi). Go na le tlhokego ya gore ditekanyetšo tša dipalo tša bolumu ya diphoofolo/ dinonyane go ya ka tshedimošo yeo e hweditšwego/ yeo elego gona. |
| | | Letamo la Rietvlei (A21A) | 1_2 | | Bontšhi | Maemo a matamo | Letamo le swanetše go laolwa go tšhireletša mešomo ya tswalano ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Go | Maemo a fase ao a sepetšago a tlhokega matamong | Melao ya tshepedišo ka mo go nyakegago<br>Maemo ao a lekanego go tšwetšapele tswalano ya diphedi tša ka gare ga meetse le tikologo (15-18%). |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tšweletša le go mpshafatša melao ya tshepedišo ya matamo go tšwetšapele maemo a makaone a matamo go netefatša gore tswalano ya diphedi tša ka gare ga meetse le tikologo di tlhokometšwe. | | |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo le dinyakwa tša boleng bja bašomiši ba meetse letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale goba bokaone. | Othofosfeiti | ≤ 0.025 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa palomoka ya fosforase o swanetše go kaonafatšwa go tšwetšapele bophelo bja tswalano ya diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go kaonafatšwa bjalo ka lenaneo leo le humilego ka dimenerale | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa | Palomoka ya Amonia | ≤ 0.0725 mg/L N 95th |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | palomoka ya Amonia o swanetše go tlhokomelwa go tšwetšapele bophelo bja tswalano ya diphedi le tikologo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go kaonafatšwa bjalo ka lenaneo leo le humilego ka dimenerale. | bjalo ka N | phesenthaele |
| | | | | | | | Motswako wa palomoka ya nitraete le naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja tswalano ya diphedi le tikologo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go kaonafatšwa bjalo ka lenaneo leo le humilego ka dimenerale. | Nitraete le Naetreite | ≤ 1.00 mg/L N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai le le lego ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo ba tswalano ya diphedi le tikologo le boleng bja dinyakwa tša meetse tša bašomiši ba moela wa fase. | Tshwaro ya Mohlagase | ≤ 70 mS/m<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai le le lego ka gare ga | Salefeiti | ≤ 80 mg/ℓ<br>95th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | letamo o swanetše go tlhokomelwa go thekga tswalano ya diphedi le tikologo le dinyakwa tša boleng bja meetse bja bašomiši ba moela wa fase. | | |
| | | | | | | | Motswako wa letswai le le lego ka gare ga letamo o swanetše go tlhokomelwa go thekga tswalano ya diphedi le tikologo le dinyakwa tša boleng bja meetse bja bašomiši ba moela wa fase. | Sodiamo | ≤ 70 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Diphathotšene di swanetše go tlhokomelwa maemong ao a boloketšego batho. | *Eskheri*šia kholi | Dipalo tše ≤ 130 /100 millilithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo. | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Kgonthišišo yeo e okeditšwego ya palo ≥0.4 m | Kgobokanyo ya diela | 95th phesenthaele ya fase |
| | | | | | | | Phetogo yeo elego maleba | Themphereitšhara | Ga go na phetogo yeo e oketšegago ya 2 °C godimo goba fase |
| | | | | | | | Maemo a oksitšene ka gare ga lenaneo a swanetše go tlhokomela lenaneo la tswalano ya diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 7.0 mg/L $O_2$<br>95th phesenthaele |
| | | | | | | Mepholo | Letamo le swanetše go tlhokomelwa go fokotša tšweletšo ya | Saenopaktheria | Saenopaktheria yeo e atilego ka motswako wa Chl wo olego godimo go feta 30µg/ℓ e swanetše |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mpholo wa disaenopaktheria | | go bolokwa go 20% nakong ye ntšhi. |
| | | | | | | | Meetse a noka ga a swanela go ba mpholo go diphedi tša ka gare ga meetse goba go di bea kotsing | Dibolaya-dikhunkhwane | Sianaete:≤ 110 µg/ℓ<br>Endosalfene:≤ 20 µg/ℓ<br>Atrazine:≤ 100 µg/ℓ<br>95th phesenthaele |
| | | | | | | | Meetse ao a bolokilwego ga a swanela go ba kotsi go tšwelopelo yeo e swarelelago ya diphoofolo le batho. | Ditšweletšwa tša kalafo tšeo di tlholago ke dihomouni | 17ß-oestradiol: ≤ 1 µg/ℓ |
| | | | | | Tikologo | Tikologo ya Letamo | Go laola mothopo wa meetse wa tlhokomelo ya phapaphapano ya tswalano ya diphedi tša ka fase ga meetse le tikologo (kelelo ya ka gare, diphedi tšeo di phelago ka gare ga meetse le tšeo di tlholwago ke dilwana tšeo di phelago, mafelo a monola) go boloka, Tlhokomela, go tsošološa le go tlhama mothaladi wa lebopo wa maitirelo le mafelo a monola. Mafelo a hlago a monola a swanetše go bolokwa ka mo go ka kgonegago go netefaletša tikologo yeo e swanelago. | Bophelo bja dibjalo tšeo di golago monoleng | 80% kapešo ya dibjalo tšeo di golago monoleng |
| | | Hennops go | 1_3 | | Bolen | Dinutrientsee | Motswako wa kelelo | Othofosfeiti ($PO_4^-$) bjalo | ≤ 0.125 dimilikramo/lithara (mg/l) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | tšwa kelelong ya Letamo la Rietvlei go ya go A21H Sesmylspruit, Kaalspruit le Olifantspruit (A21B) | | | g | | yeo e tsenago ya dinutriente o swanetše go kaonafatšwa go tšwetšapele tswalano ya diphedi tša ka gare ga meetse le tikologo le go netefatša legoro leo le laetšwego la tikologo le gore dinyakwa tša bašomiši ba meetse di a fihlelelwa. | ka fosforase | (50th phesenthaele) |
| | | | | | | | | Naetrotšene yeo e moyafetšego yeo e se nago khapone | ≤ 3.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Nitraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Diphathotšene tša matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go kaonafatšwa go fihlelela legoro la tswalano ya diphedi le tikologo yeo e nyakegago le dinyakwa tša boleng bja bašomiši ba meetse. Dituetšo tšeo elego tša naga le ditšhila tša meetse di swanetše go laolwa go tšhireletša mothopo. | Tshwaro ya Mohlagase (EC) | ≤ 85 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 70 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | Go ba gona ga diphathotšene go swanetše go fokotša kotsi maphelong a batho. | *Eskheri*šia kholi | Dipalo tše 130/100 tša dimililithara (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ditekanyetšong tšeo di kgethilwego go thekga tikologo ya meetse le dinyakwa | Bontšhi bja pH | Phapaphapano ya pH 7.5 (5th phesenthaele) - 9.2 (95th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tša bašomiši ba meetse. | | |
| | | | | | | Mepholo | Mathomo a tshekatsheko go tšweletša maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a tlhokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |
| | | | | | | | Maemo a oksitšeni yeo e moyafetšego a swanetše go kaonafatšwa go thekga tswalano ya diphedi tša ka gare ga meetse le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) |
| | | | | | | | Metswako ya mepholo ga ya swanela go ba mpholo go diphedi tša ka gare ga meetse le go ba kotsi maphelong a batho. | Amonia bjalo ka N | ≤ 0.1 dimilikramo/lithara (mg/l) 95th phesenthaele) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.150 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone(Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.013 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤ 0.0075 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mankhozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Tlaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosalfene | 0.13 dimakhrokramo/lithara (ug/l) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapapapano ya tikologo e swanetše go tlhokomelwa go legoro la tša tikologo la D goba go | Dikagare tša Maemo a Tikologo,Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mokgwa wa Mmotlolo | Legoro la Botshephedi bja Tikologo la ≥ D ≥ 42% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | kaonafatšwa. Bophara bja lebelo la kelelo ya diphedi tšeo di gobalago ga bonolo (*AURA* le *CPRE) di a tlhokega*. | Mmotlolo (RHAMM) | |
| | | | | | | Tikologo ya monola | Tsenelo ya dilo tše di šele e a tlhokega. Dibjalo tša monoleng di swanetše go kaonafatšwa go tloga go legoro la E la tša tikologo go iša go legoro la D. | Dikagare tša Botshephedi bja Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | Legoro la tša tikologo la VEGRAI = D ≥ 42%<br>Dimela tša monoleng IHI = D ≥ 42% |
| | | | | | Diphedi | Dihlapi | Lefelo la dihlapi le swanetše go kaonafatšwa go tšwa go legoro la bjale la Dihlapi la E go ya go legoro la D. Lebelo la kelelo leo le amantšhitšwego le dinyakwa tša dihla tšeo di nyakegago go *BMAR* le *BMAT*. | Dikagare tša tshekatsheko ya dipoelo tša dihlapi (FRAI) | FRAI e swanetše go lekolwa ka ngwaga go tlhokomela kgatlhanong le legoro leo le laetšwego la tša tikologo la D.<br><br>FRAI ≥ 42% |
| | | | | | | | Kopantšho ya diphoofolo tša ka meetseng tša go tlhoka lerapo la mokokotlo e swanetše go tlhokomelwa mo legorong la D la tša tikologo goba go kaonafatšwa. | Dipoelo tša Dikagare tša Tshekatsheko ya Diphedi tšeo di tlhokago lerapo la mokokotlo le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 55<br>ASPT ≥ 4.2 |
| | | Noka ya Upper Pienaars, Edendalespruit le Dinoka tša Moretele go ya go Roodeplaat | 1_4 | | | Dinutriente | Motswako wa Kelelolo ya ka gare ya dinutriente o swanetše go kaonafatšwa go | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.125 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Naetrotšene yeo e moyafetšego yeo e senago khapone (DIN) bjalo ka N | ≤1.25 dimilikramo/lithara (mg/l) (50th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | (A23A) | | | | | tšwetšapele bophelo bja tša tikologo ya diphedi tša ka gare ga meetse le go netefatša gore legoro leo le laetšwego la tša tikologo le diphedi le dinyakwa tša boleng bja bašomiši ba meetse di a fihlelelwa. Taolo ya dinutriente yeo e tlhokegago go kaonafatša maemo a boleng bja kelelo ya ka gare ya meetse. | Naetrotšene | |
| | | | | | | | | Natreiti ($NO_3^-$) le Nitraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Moela wa ka gare wa motswako wa letswai o swanetše go tlhokomelwa go thekga tša tikologo le diphedi tša ka gare ga meetse le boleng bja dinyakwa tša bašomiši ba meetse. | Tshwaro ya Mohlagase (EC) | ≤ 65 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti ($SO_4$) | ≤ 50 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Kloraete (Cl) | ≤ 50 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše bobe le ditlamorago tše dinnyane go maphelo a batho. | *Eskheri*šia kholi | Dipalo tše 130/100 millilithara (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ditekanyetšong tšeo di laetšwego go thekga tša tikologo le diphedi le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) le 9.0 (95th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare ga kgobokano ya seela e a tlhokega. | Kgobokano ya seela | 10% ya phapaphapano ya bokamorago bja motswako e dumeletšwe. |
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go kaonafatšwa go thekga tša diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go ba mpholo go diphedi tša ka gare ga meetse le go bea maphelo a batho kotsing ( yeo e tologilego) | Amonia bjalo ka N | ≤ 0.0725 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.007 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤ 0.0075 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Floraete (F) | ≤ 2.54 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Benzene | ≤0.01 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Toluene | ≤0.7 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ditšweletšwa tša kalafo tseo di tlhotšego ke dihomouni | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Tikologo | Moela wa ka gare | Khwetšagalo ya Tikologo ya dihlapi le diphedi tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo di | Dikagare tša Tshephagalo ya Tikologo , Mokgwa wa Tshekatsheko ya Tikologo le Mokgwa wa Mmotlolo le Mmotlo | Tshephagalo ya Moela wa ka gare wa legoro la tša y = D ≥ 42% (A2HART-KAMEE le A2PIEN-BAVIA) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | swanetše go tlhokomelwa go tšwetšapele phapaphapano ya diphedi. Legoro la dibjalo tšeo di tlhokegago go thekga *BANO.* | (RHAMM) | |
| | | | | | | Tikologo ya monola | Taolo ya tsenelo ya dilo tše di šele tšeo di tlhokegago. Dibjalo tša monoleng di swanetše go kaonafatšwa go tloga go legoro la E la diphedi le tikologo go iša go legoro D. | Dikagare tša Tshephagalo ya Tikologo, Dipoelo tša Dikagare tša Tshekatsheko ya Dibjalo | Legoro la tša tikologo le diphedi la VEGRAI = D ≥ 42%<br>Monola IHI = D ≥ 42%<br>(A2HART-KAMEE le A2PIEN-BAVIA) |
| | | | | | Diphedi | Malele | Kopantšho ya malele e swanetše e tlhokomelwe mo maemong ao a fetotšwego goba ao a kaonafaditšwego. | Dikagare tša tšhilafatšo ye e itšego | Legoro la tša tikologo le diphedi<br>Legoro la malele a tikologo le diphedi = D ≥ 42%<br>(go bobedi bja REMP Lefelo A2HART-KAMEE le A2PIEN-BAVIA) |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopantšho ya Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa go legoro D la tša tikologo le diphedi goba go kaonafatšwa. | Dikagare tša Dipoelo tša Tshekatsheko ya Diphedi tša ka meetseng tšeo di tlhokago lerapo la mokokotlo le Karolo ya bohlano ya go Nweša ya Afrika-Borwa (SASS5). | Legoro tša tikologo la MIRAI = D ≥ 42%<br>Lefelo la REMP go A2PIEN-BAVIA:<br>SASS ≥ 60<br>ASPT ≥ 3.8<br><br>Lefelo la REMP A2HART-KAMEE:<br>SASS ≥ 60<br>ASPT ≥ 3.8 |
| | | Letamo la Roodeplaat | 1_5 | | Bontšhi | Maemo a matamo | Letamo le swanetše go laolwa go tšhireletša mešomo le bašomiši ba moela wa fase. Go tlhama le go godiša melao ya tshepedišo gore letamo le | Maemo a fase a tshepedišo a a tlhokega go letamo | Melao ya tshepedišo ka mo go tlhokegago.<br>Maemo a go tšwetšapele tswalano ya diphedi tša ka gare ga meetse le tikologo (15-18%). |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tšwetšepele maemo a makaone a go netefatšago gore phapaphapano ya tikologo le diphedi e a tlhokomelwa. Ditšhila tša letamo di swanetše go kopana le kelelo ya fase ya dinyakwa tša kelelo ya tša tikologo le diphedi. | | |
| | | | | | Bolen g | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja tša tikologo le diphedi le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka maemo a lenaneo leo le humilego ka dimenerale. Kgolo ya lepolomo la 'Hyacinth' e swanetše go laolwa. Lenaneo la go laola go lebagana le morwalo wa ditšhila le a hlokega. | Othofosfeiti | ≤ 0.025 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa palomoka ya fosforase o swanetše go kaonafatšwa go tšwetšapele bophelo bja tša tikologo le diphedi le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | lenaneo leo le humilego ka dimenerale. | | |
| | | | | | | | Motswako wa nitreiti le naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Nitraete le Naetreiti | ≤ 1.00 mg/ℓ N<br>95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga bophelo bja diphedi tša ka gare ga meetse le tikologo le boleng bja dinyakwa tša meetse tša bašomiši ba moela wa fase. | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga bophelo bja diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba meetse a moela wa fase. | Salfeiti | ≤ 80 mg/ℓ<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go | | ≤ 70 mg/ℓ<br>95th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | thekga bophelo bja diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba meetse a moela wa fase. | | |
| | | | | | | Phathotšene | Phathotšene e swanetše go tlhokomelwa maemong ao a boloketšwego tšhomišo ya batho. | *Eskheri*šia kholi | Palo ya ≤ 130 /100 millilithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Meetse a swanetše go dumelelwa gore a šomišetšwe boitapološo. | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Koketšo ya kgonthišišišo ka palo ya ≥0.4 m | Kgobokano ya seela | 95th phesenthaele ya fase |
| | | | | | | | Phetogo ya maleba | Themphereitšha | Go se ke gwa feta 2 °C ya koketšo ya phetogo ya fase le ya godimo |
| | | | | | | | Maemo a oksitšene ka gare ga lenaneo a swanetše go tlhokomela lenaneo la diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 7.0 mg/L $O_2$<br>95th phesenthaele |
| | | | | | | Mepholo | Letamo le swanetše go laolwa go fokotša tšweletšo ya mpholo wa saenopaktheria | Saenopaktheria | Go ata ga saenopaktheria ka motswako wa Chl wo olego godimo go feta 30µg/ℓ go swanetše go bolokwa ka fase ga 20% ya nako. |
| | | | | | | | Meetse ao a bolokilwego ga a swanela go ba kotsi go tšwetšopele ya batho le diphoofolo. | Ditšweletšwa tša kalafo tšeo di tlhotšego ke dihomouni | 17ß-oestradiol:<br>≤ 1 µg/ℓ |
| | | | | | Tikologo | Tikologo ya letamo | Go laola mothopo wa meetse wa tlhokomelo ya phapanophapano ya diphedi tša ka gare ga meetse le tikologo | Bophelo bja dibjalo tša monoleng | Kapešo ya dibjalo tša monoleng ya 70% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (kelelo ya ka gare, dilo tšeo di tšweletšago ke diphedi, diphedi tšeo di phelago mo go nago le monolana, mafelo a monola). Boloka, tlhokomela, tsošološa le go tšweletša lebopo la maitirelo le mafelo a monola. Lefelo la monola la hlago le swanetše go bolokwa ka fao go kgonegago go netefaletša tikologo ya maleba. | | | | |
| | | Upper reaches_ Apies, Skinner-spruit le kelelo ya ka ntle ya Noka ya Pienaars go tloga go Letamo la Roodeplaat (A23B, A23D, A23E) | 1_6 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya EWR ya fase le kelelo ya komelelo: s: Noka ya Pienaars go CROC_EWR4 ka A23B<br>NMAR = $28.20 \times 10^6 m^3$<br>Legoro la REC=C<br>Tlhokomelo ya kelelo ya fase le kelelo ya komelelo e swanetše go fihlelelwa gore dinyakwa tša dikelelo tša tikologo di fihlelelwe go thekga maemo a mabotse a diphedi le tikologo le bašomiši. | Tlhokomelo ya kelelo yeo e sa hlamegago gabotse le kelelo ya komelelo.<br>.<br>EWR ya Lefelo leo le lego magareng la bone go Noka ya Pienaars (tlhokomelo go A2H006) | | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.104 | 0.063 |
| | | | | | | | | | Nov | 0.136 | 0.081 |
| | | | | | | | | | Dec | 0.146 | 0.086 |
| | | | | | | | | | Jan | 0.211 | 0.122 |
| | | | | | | | | | Feb | 0.242 | 0.140 |
| | | | | | | | | | Mar | 0.208 | 0.119 |
| | | | | | | | | | Apr | 0.174 | 0.102 |
| | | | | | | | | | May | 0.144 | 0.085 |
| | | | | | | | | | Jun | 0.133 | 0.080 |
| | | | | | | | | | Jul | 0.120 | 0.072 |
| | | | | | | | | | Aug | 0.111 | 0.067 |
| | | | | | | | | | Sep | 0.103 | 0.063 |
| | | | | | | | | | Oct | 0.104 | 0.063 |
| | | | | | | | | | Nov | 0.136 | 0.081 |
| | | | | | | Dikelelo tša godimo | Kelelo ya godimo ya EWR:<br>Noka ya Pienaars go CROC_EWR4 ka | Mafula (lebelela lemetletšo A go dintlha ka ga mafula) | | Dikelelo tša godimo ($m^3/s$) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.210 | |
| | | | | | | | | | Dec | 0.339 | |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A23B<br>NMAR = $28.20 \times 10^6 m^3$<br>Legoro la REC=C<br><br>Kelelo ya godimo e swanetše go fihlelelwa gore dinyakwa tša kelelo ya tikologo di fihlelelwe go thekga maemo a mabotse a diphedi le tikologo. | EWR ya magareng ya lefelo la bone go Noka ya Pienaars (tlhokomelo go A2H006) | Jan | 0.203 |
| | | | | | | | | | Feb | 0.56 |
| | | | | | | | | | Mar | 0.203 |
| | | | | | | | | | Apr | 0 |
| | | | | | | | | | May | 0 |
| | | | | | | | | | Jun | 0 |
| | | | | | | | | | Jul | 0 |
| | | | | | | | | | Aug | 0 |
| | | | | | | | | | Sep | 0 |
| | | | | | Boleng | Dinutriente | Motswako wa kelelo ya ka gare wa dinutriente o swanetše go kaonafatšwa go tšwetšapele diphedi tša ka gare ga meetse le tikologo le go netefatša gore legoro leo le laetšwego la diphedi le tikologo le a fihlelewa. Metswako ga ya swanela go dumelelwa gore e be ka maatla. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.5 dimilikramo/lithara (mg/l) (50th phesenthaele) Apies | |
| | | | | | | | | | ≤ 0.09 dimilikramo/lithara (mg/l) (50th phesenthaele) Pienaars | |
| | | | | | | | | | ≤ 0.05 dimilikramo/lithara (mg/l) (50th phesenthaele) Skinnerspruit | |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 3.0 dimilikramo/lithara (50th phesenthaele) Skinnerspruit and Apies | |
| | | | | | | | | | ≤ 1.0 dimilikramo/lithara (mg/l) (50th phesenthaele) Pienaars | |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai wa kelelo ya ka gare o swanetše go tlhokomelwa maemong ao a amogelegago a go thekga bophelo bja diphedi tša ka gare ga meetse le tikologo le boleng bja bašomiši ba meetse. | Tshwaro ya Mohlagase (EC) | ≤ 55 milisimense/mmitha (mS/m) (95thphesenthaele) Pienaars River | |
| | | | | | | | | | ≤ 70 milisimense/mmitha (mS/m) (95thphesenthaele) Apies River | |
| | | | | | | | | Salfeiti ($SO_4$) | ≤ 70 dimilikramo/lithara (95th phesenthaele) | |
| | | | | | | | | Sodiamo (Na) | ≤ 50 dimilikramo/lithara (95th phesenthaele) | |
| | | | | | | Phathotšene | Bogona bja | *Eskheria kholi* (*E.kholi*) | Dipalo tše 130 /100 millilithara | |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | phathotšene bo swanetše go fokotša kotsi maphelong a batho. | | (95th phesenthaele) | | |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ditekanyetšong tšeo di tlhalošitšwego go thekga diphedi tša ka gare ga meetse le tikologo le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 9.0 (95th phesenthaele) | | |
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare kgobokano ya seela e a tlhokega. | Kgobokano ya seela | A 10% ya phapaphapano go tšwa bokamoragong bja motswako e dumeletšwe. | | |
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go kaonafatšwa go thekga diphedi tša ka gare ga meetse le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) | | |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go ba maemong ao a lego kotsi go diphedi tša ka gare ga meetse le maphelong a batho. | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) | | |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) | | |
| | | | | | | | | Klaefoseiti | 0.7 dimilikramo/lithara (mg/l) | | |
| | | | | | | | | Endosulfan | 0.13 maekhrokramo/lithara (ug/l) | | |
| | | Jukskei, Klein Jukskei, Modderfonteins pruit (A21C) | 1_7 | | Bontšhi | Dikelelo tša Fase | Tlhokomelo ya fase le dikelelo tša komelelo tša EWR: Noka ya Jukskei go CROC_EWR2 ka A21C PMAR = 139.9x10$^6$m$^3$ | Dikelelo tšeo di sego maleba<br><br>Dikelelo tša fase le dikelelo tša komelelo EWR ya Lefelo la bobedi la gare go Jukskei River | ——— | Tlhokomelo ya dikelelo tša fase (m$^3$/s) | Dikelelo tša komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 0.725 | 0.725 |
| | | | | | | | | | Nov | 0.775 | 0.775 |
| | | | | | | | | | Dec | 0.770 | 0.770 |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Legoro la REC=D<br><br>Dinyakwa tša meetse a tša diphedi le tikologo (Poloko) e swanetše go fihlelelwa gore tshepedišo ya dinyakwa tša tikologo e fihlelelwe go thekga maemo a mabotse a diphedi le tikologo le bašomiši. | (tlhokomelo go A2H023/ A2H044) | Jan | 0.814 | 0.814 |
| | | | | | | | | | Feb | 0.936 | 0.936 |
| | | | | | | | | | Mar | 0.845 | 0.845 |
| | | | | | | | | | Apr | 0.839 | 0.839 |
| | | | | | | | | | May | 0.795 | 0.795 |
| | | | | | | | | | Jun | 0.815 | 0.815 |
| | | | | | | | | | Jul | 0.785 | 0.785 |
| | | | | | | | | | Aug | 0.774 | 0.774 |
| | | | | | | | | | Sep | 0.762 | 0.762 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše kaonafatšwa go tšweletša bophelo bja diphedi le tikologo le go netefaletša legoro la tša diphedi le tikologo yeo e laetšwego le bo bona gore boleng bja bašomiši ba meetse bo a fihlelelwa. Taolo ya dinutriente yeo e nyakegago go kaonafatša maemo a bjale le go netefatša tšwetšopele ya lenaneo. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.5 dimilikramo/lithara (mg/l) (50th phesenthaele) ( tekanyo ya dipalo ya nakwana )<br>≤ 0.125 dimilikramo/lithara (mg/l) (50th phesenthaele)<br>( tekanyo ya dipalo ya lebaka le le telele) | | |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) | | |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa go thekga diphedi tša ka gare ga meetse le tikologo le boleng bja dinyakwa tša | Tshwaro ya Mohlagase (EC) | ≤ 65 milisimense/mmitha (mS/m) (95th phesenthaele) | | |
| | | | | | | | | Salfeiti ($SO_4$) | ≤ 70 dimilikramo/lithara (mg/l) (95th phesenthaele) | | |
| | | | | | | | | Sodiamo (Na) | ≤ 70 dimilikramo/lithara (mg/l) (95th phesenthaele) | | |
| | | | | | | | | Kloraete | ≤ 60 dimilikramo/lithara (mg/l) (95th phesenthaele) | | |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bašomiši ba meetse. | | |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa mo ditekanyetšong tšeo di hlalošitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 9.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go kaonafatšwa go thekga diphedi tša ka gare ga meetse le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) |
| | | | | | | Mepholo | Metswako wa mepholo ga ya swanela go ba kotsi go diphedi tša ka gare ga meetse goba go ba kotsi maphelong a batho. | Amonia bjalo ka N | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.3 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤0.013 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤0.0075 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Klaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosulfene | 0.13 maekhrokramo/lithara (ug/l) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go kaonafatšwa go tšwa go legoro E la diphedi le tikologo go iša go legoro la D. Maemo a lenaneo la diphedi le tikologo a swanetši go kaonafatšwa. | Dikagare tša Maemo a Tikologo | Kelelo ya ka gare ya Maemo a Tikologo EC = D ≥ 42% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa go legoro C la tša tikologo. Taolo ya dibjalo tše di šele e a tlhokega. | Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go kaonafatšwa go tloga go legoro la E la diphedi le tikologo go iša go legoro la D, go netefaletša go ba gona ga diphedi tša *BMAR* le *BMOT* (tshepedišo ya diphedi tšeo di ithekgilego ka tše dingwe). Bofase bja kelelo bo swaneše go ba gona go thekga bogona bja tikologo ya *TSPA, CGAR, BANO, BMAR* le *BMOT* | Dikagare tša Dipoelo tša Tshekatsheko ya Dihlapi (FRAI) | Legoro la diphedi le tikologo ya = D<br>FRAI ≥ 42% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa mo go legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tšeo di hlokago lerapo la mokokotlo le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | Legoro la diphedi le tikologo la = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(EWR2, A2JUKS-DIENR) |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokemelwa mo legorong la D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tšhilafatšo ye e itšego | Taeathomo EC ≥ 42%<br>A2JUKS-DIENR |
| | | Diphihlelelo tša Godimo tša Noka ya Crocodile le Bloubank spruit (A21D, A21E) | 1_8 | | Bolen g | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele diphedi tša ka gare ga meetse le tikologo le go netefatša legoro leo le laetšwego la tša tikologo le diphedi le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.125 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa maemong a bjale a boleng. Taolo ya dituetšo le ditšweletšo tša bokamoso. | Tshwaro ya Mohlagase (EC) | Moela wa godimo wa Crocodile Bloubankspruit o tla kopantšhwa le :<br>≤ 45 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | Maemo a motswako wa letswai a godimo | | Bloubankspruit:<br>≤ 85 milisimense/mmitha (mS/m) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | kudu. Kelelo ya ka gare ya motswako wa letswai e swanetše go kaonafatšwa go tlhokomela diphedi tša ka fase ga meetse ka maemo ao a swanelago le go thekga boleng bja dinyakwa tša bašomiši ba meetse. | | (95th phesenthaele) |
| | | | | | | | | Salfeiti ($SO_4$) | Crocodile upstream Bloubankspruit e tla kopantšhwa le ≤ 40 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | | Bloubankspruit: ≤ 200 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 millilithara (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa mo ditekanyetšong tšeo di bontšhitšwego go thekga lenaneo la diphedi tša ka meetseng le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | Mepholo | Motswako wa mepholo o swanetše go tlhokomelwa maemong ao a sego kotsi go diphedi tša ka gare ga meetse le go ba kotsi maphelong a batho. | Saenaete | ≤ 0.110 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Yureniamo (U) (238) | ≤ 0.03 dimilikramo/lithara (95th phesenthaele |
| | | | | | | | | Aseniki (As) | ≤ 0.130 dimilikramo/lithara (95th phesenthaele |
| | | | | | | | | Krose α | 0.42 Bq/lithara |
| | | | | | | | | Krose β | 0.42 Bq/lithara |
| | | | | | | | | Aluminiamo Al) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.3 dimilikramo/lithara (mg/l) (95th phesenthaele) |

CONTINUES ON PAGE 514 - PART 5

# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

**PART 5 OF 6**



ISSN 1682-5843

9 771682 584003 42775

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.0095 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤ 0.0075 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | Tikologo | Moela wa ka gare | Phapaphapano ya tikologo e swanetše go kaonafatšwa go tlhokomela legoro D la diphedi le tikologo. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Tikologo ya Lebelo le Mmotlolo (RHAMM) | Kelelo ya ka gare ya Maemo a Tikologo EC = D ≥ 42% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa go legoro D la tša tikologo. Dibjalo tša mothalotheong di swanetše go kaonafatšwa. Taolo ya tsenelo ya dimela tše di šele le tsosološo ya lefelo la mothalotheong di a hlokega. Tikologo yeo e lekanyeditšwego e a hlokega. Tsošološo ya lefelo la monoleng e a hlokega go thekga diphedi tšeo di dulago lefelong leo nkego le na le meetse (dinonyane). | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo (VEGRAI) | VEGRAI EC = D ≥ 42% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go laolwa go legoro D leo le laetšwego la Diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI) | Legoro la tša diphedi le tikologo = D<br>FRAI ≥ 42% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dinyakwa tša tikologo tša *BMOT* (dibjalo) le lefelo leo dimela di golago go lona le kelelo ya *CPRE* e swanetše go fihlelelwa. | | |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tšeo di lhokago mokokotlo e swanetše go tlhokomelwa go legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo le Karolo ya bohlano le Lenaneo la go Nweša la Afrika-Borwa (SASS5). | Legoro la tša diphedi le tikologo la MIRAI = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0<br>(A2CROC-ELAND) |
| | | Noka ya Crocodile go tšwa go Jukskei e tla kopantšhwa le go ya go Letamo la Hartbeespoort (A21H) | 1_9 | | Bolen g | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi tša ka gare ga meetse le go netefatša gore legoro leo le laetšwego la tša diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse bo a fihlelewa. Taolo ya nutriente yeo e hlokegago go kaonafatša maemo a bjale le go netefatša tšwetšopele ya lenaneo. . | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.20 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 2.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa go | Tshwaro ya Mohlagase (EC) | ≤ 75 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 60 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | thekga diphedi tša ka gare ga meetse le tikologo le dinyakwa tša boleng bja bašomiši ba meetse. | Tloraete | ≤ 60 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 75 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa mo ditekanyetšong tšeo di laetšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) le 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a nyakega. | Kgobokano ya seela | Phaphapano ya 10% go tšwa go bokamorago bja motswako bo dumeletšwe. |
| | | | | | | Mepholo | Metswako ya mepholo e swanetše go tlhokomelwa maemong ao a sego kotsi go diphedi tša ka gare ga meetse le go ba kotsi maphelong a batho. | Saenaete | ≤ 0.110 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Yureniamo (U) (238) | ≤ 0.03 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Krose α | 0.42 Bq/litharas |
| | | | | | | | | Krose β | 0.42 Bq/litharas |
| | | | | | | | | AluminiamoAl) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.013 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye | ≤ 0.0075 dimilikramo/lithara (mg/l) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | bothata | (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Cobalt (Co) | ≤ 0.05 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Ga go na tšwelopele ya phokotšego ya kelelo ya ka gare ya tikologo e swanetše go direga phaphaphapanong ya tikologo yeo e swanetšego go kaonafatšwa go tšwa legorong la E la tša diphedi le tikologo go ya go legoro la D. | Dikagare tša Maemo a Tikologo, dikagare tša tshekatsheko ya Tikologo | Kelelo ya ka gare ya Maemo a tikologo EC = D ≥ 42% |
| | | | | | | Tikologo ya monola | Boloka, tlhokomela, tsošološa le go lokela mananeo a maitirelo ao a nago le mohola mo lebopong le lefelong la monola. Taolo ya Tsenelo ya dilo tše di šele e a hlokega. Dibjalo tša monoleng di swanetše go tlhokomelwa maemong a legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša maemo a tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | VEGRAI EC = D ≥ 42% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa legorong la D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Dipoelo tša Tshekatsheko ya Dihlapi (FRAI) | Legoro la tikologo ya dihlapi = D<br>FRAI ≥ 42% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tikologo le boleng bja meetse di hloka go kaonafatšwa go *CFLA* le kelelo e swanetše lekanela kelelo yeo e sa ikemetšego. *BMAR, BPOL, CPRE* | | |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka gare ga meetse e swanetše go tlhokomelwa go maemo ao a fetotšwego kudu goba ao a kaonafaditšwego. | Dikagare tša Tshekatsheko ya Dipoelo tša diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 50<br>ASPT ≥ 3.8<br>(go EWR1 = A2CROC-HARTB) |
| | | | | | | Diphedi tšeo di dulago lefelong leo nkego le na le meetse. | Tšwetšopele ya kotlollo ya noka ye e šoma bjalo ka tikologo le khudugo ya tsejana ya nonyane ya meetseng le setšhaba sa diamuši se swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. | Dinonyane tša ka meetseng/ sebontšhi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyane ya meetseng le kemedi ya diamuši mo nokeng. Go na le hlokego ya go beakantša tatelano ya RQO ya kgobokano ya diphoofolo/ dinonyane go ba tshedimošo yeo e lego gona/ yeo e kgobokantšhitšwego. |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa go phetogo ye kgolo ya maemo goba go kaonafatšwa. | Dikagare tša Tšhilafatšo ye e itšego | Taeathomo EC = D ≥ 42%<br>(at EWR1 = A2CROC-HARTB) |
| | | Letamo la Hartbeespoort | 1_10 | | Bontšhi | Maemo a matamo | Matamo a swanetše go laolwa go tšhireletša mešomo ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Go | Maemo ao a lekanetšego a tshepedišo ao a nyakegago matamong. | Maemo a tshepedišo a melao bjalo ka mo go hlokegago. Maemo ao a lego a mannyane go tšwetšapele diphedi tša ka gare ga meetse le tikologo (15-18%). |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tšweletša le go tlhama melao ya tshepedišo ya letamo, go tšwetšapele maemo a makaone a matamo, go netefatša gore phapaphapano ya diphedi tša ka gare ga meetse e tlhokometšwe. Ditšhila tša matamo di hlokega go kopana kelelong ya fase ya dinyakwa tša diphedi le tikologo. Ditšhila tša matamo di hlokega go kopana le Kelelo ya fase ya dinyakwa tša diphedi le tikologo. | | |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Othofosfeiti | ≤ 0.050 mg/ℓ<br>95th phesenthaele |
| | | | | | | | Motswako wa palomoka ya fosforase o swanetše go kaonafatšwa go tšwetšwapele bophelo bja diphedi le tikologo le boleng bja dinyakwa tša | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | | |
| | | | | | | | Motswako wa palomoka ya Amonia bjalo ka N o swanetše go kaonafatšwa go tšwetšapele diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Palomoka ya Amonia | ≤ 00725 mg/L N 95th phesenthaele |
| | | | | | | | Motswako wa Nitreiti le Naetreiti e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Naetreiti le Nitreiti | ≤ 1.00 mg/L N 95th phesenthaele |
| | | | | | | Boleng bja dilo tšeo di kgahlišago | Boleng bja dilo tšeo di kgahlišago bo swanetše go laolwa go thekga tšhomišo ya boithabišo le tša boeti. | Ditšhila, teprisi, malele, mafoka a meetseng | E tla tšweletšwa |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go | Tshwaro ya Mohlagase | ≤ 85 mS/m 95th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tlhokomelwa go thekga dinyakwa tša boleng bja bašomiši ba moela wa fase. | | |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga diphedi le tikogolo le boleng bja dinyakwa tša bašomiši ba moela wa fase. | Salfeiti | ≤ 100 mg/L<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo go thekga diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba moela wa fase. | Tloraete | ≤ 50 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Phathotšene e swanetše go tlhokomelwa mo maemong ao a bolokegetši tšhomišo ya batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130 /100 millilithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Bašomiši ba meetse ba swanetše go amogelega go tšhomišo ya tša boithabišo. | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Kgonthišišo yeo e okeditšwego | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele |
| | | | | | | | Phetogo ye e lekanego | Themphereitšhara | Ga go swanela go feta 2 °C godimo le fase |
| | | | | | | | Maemo a oksitšene lenaneong a swanetše go tlhokomela lenaneo la diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 7.0 mg/L $O_2$<br>95th phesenthaele |
| | | | | | | Mepholo | Letamo le swanetše go tlhokomelwa go | Saenopakteria | Go ata ga seanopaktheria ka motswako wa Chl wo olego |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | fokotša tšwetšopele ya saenopaktheria | | godimo go feta 30µg/ℓ o swanetše go ba ka fase ga 20% ya noka. |
| | | | | | | | Meetse ao a bolokilwego ga a swanela go ba mpholo go diphedi tša ka meetseng goba go ba kotsi maphelong a batho. | Dilaola-dikhunkhwane | saenaete: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>95th phesenthaele |
| | | | | | | | Meetse ao a bolokilwego ga a swanela go ba kotsi go diphoofolo goba tšwetšopelo yeo e swarelelago ya batho. | Ditšweletšwa tša kalafo tšeo di hlotšwego ke dihomouni | 17ß-oestradiol:<br>≤ 1 µg/ℓ |

**Tafolana 3: Boleng bja Dipono tša Mothopo wa DINOKA LE MATAMO go mohola wa Diyuniti tša Mothopo go Tshekatsheko ya bobedi ya Kopantšho ya Yuniti: MAGALIES**

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tlhokomelo ya dikelelo tša fase tša ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| 2: MAGALIES | II | Maloneys Eye (A21F) | 2_1 | C | Bontšhi | Kelelo ya fase | Tlhokomelo ya fase ya EWR le kelelo ya komelelo:<br>Noka ya Magalies go CROC_EWR9 in A21F<br>NMAR = $14.68 \times 10^6 m^3$<br>Legoro la REC=B<br><br>Tlhokomelo ya dikelelo tša fase e swanetše go fihlelelwa go thekga diphedi tša ka gare ga meetse le bašomiši ba moela wa fase. | Dikelelo tšeo di sego gabotse<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>(Iebelo la EWR la lefelo la bosenyane la Tlhokomelo ya Noka ya Magalies go A2H010) | Oct | 0.211 | 0.211 |
| | | | | | | | | | | Nov | 0.216 | 0.216 |
| | | | | | | | | | | Dec | 0.211 | 0.211 |
| | | | | | | | | | | Jan | 0.212 | 0.212 |
| | | | | | | | | | | Feb | 0.224 | 0.224 |
| | | | | | | | | | | Mar | 0.206 | 0.206 |
| | | | | | | | | | | Apr | 0.212 | 0.212 |
| | | | | | | | | | | May | 0.208 | 0.208 |
| | | | | | | | | | | Jun | 0.214 | 0.214 |
| | | | | | | | | | | Jul | 0.210 | 0.210 |
| | | | | | | | | | | Aug | 0.211 | 0.211 |
| | | | | | | | | | | Sep | 0.217 | 0.217 |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dinutriente | Kalelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi tša ka gare ga meetse le go netefatša gore legoro la diphedi le tikologo leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.020 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa maemong a bjale go netefaletša botshephegi goba mothopo. | Tshwaro ya Mohlagase | ≤ 30 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga boa swanela go ba kotsi maphelong a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 millilithara (ml) (95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapamo ya pH e swanetše go tlhokomelwa mo ditekanyetšong tšeo di laetšwego go thekga diphedi tša ka fase ga meetse le dinyakwa tša bašomiši ba meetse. | Phapahapano ya pH | 6.5 (5th phesenthaele) and 8.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapano ya 10% go tšwa go bokamorago bja motswako e dumeletšwe. |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo le tšwetšopele di swanetše go tlhokomelwa legorong la B leo le laetšwego. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM) | Maemo a Kelelo ya ka gare ya Tikologo EC = B ≥ 82% (lebelo la EWR 9) |
| | | | | | | Tikologo ya monoleng | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro la B la diphedi le tikologo leo le laetšwego. | Dikagare tša Dipoelo tša Tshekatsheko ya Maemo a Tikologo | VEGRAI EC = B ≥ 82% (lebeloEWR 9) |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa go legoro B la diphedi le tikologo go netefaletša bogona bja dihlapi tše di sorolwana *(BPOL), AURA, CPRE, BMOT* | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI) | Legoro la diphedi le tikologo ya dihlapi = B<br>FRAI ≥ 82%<br>Kgoboketša diphedi tše e ka bago tše lesome ka metsotso ye 20 ya nyakišišo ka tshwantšhetšo ya metsotso ye 20 ya tekanyo ya 50+ CPRE le 5 BMOT<br>(lebelo la EWR Lefelo 9 = REMP Lefelo A2MAGA-MALON) |
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo di swanetše go tlhokomelwa go maemo a hlago goba go kaonafatšwa | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>(lebelo la EWR Lefelo 9 = REMP Lefelo A2MAGA-MALON) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša lefelong leo nkego le na le meetse | Tšwetšopele ya kotlollo ya noka ye go šoma bjalo ka tikologo ya nonyana ya ka meetseng le ditšhaba tša diamuši di swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. | Nonyana ya ka meetseng/ sebontšhi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyana ya ka meetseng le kemedi ya diamuši mo phitlhelellong ya noka. Go na le tlhokego ya go beakanya tatelano ya RQO goba tekanyo ya bolumu ya diphoofolo/dinonyane go ya ka tshedimošo yeo elego gona/ yeo e kgobakeditšwego. |
| | | Noka ya Magalies, Klein Magalies, Bloubank, Dinoka tša Skeerpoort (A21F) | 2_2 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le kelelo ya komelelo: Noka ya Magalies go CROC_EWR15 in A21F<br>NMAR = 21.899x10$^6$m$^3$<br>Legoro la REC=C/D<br><br>Tlhokomelo ya kelelo ya fase le kelelo ya komelelo di swanetše go hwetšwa go thekga diphedi tša ka gare ga meetse le bašomiši ba moela wa fase. | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le dikelelo tša komelelo (Lebelo la Lefelo CROC_EWR 15 go Noka ya Magalies<br><br>Go tlhokomela ditšhila nakong ya nyakišišo ya thutaphelo | Tlhokomelo ya dikelelo tša fase (m$^3$/s) / Tshepedišo ya komelelo (m$^3$/s)<br>Oct: 0.042 / 0.015<br>Nov: 0.044 / 0.016<br>Dec: 0.052 / 0.019<br>Jan: 0.100 / 0.035<br>Feb: 0.163 / 0.031<br>Mar: 0.151 / 0.045<br>Apr: 0.111 / 0.039<br>May: 0.080 / 0.028<br>Jun: 0.066 / 0.023<br>Jul: 0.057 / 0.020<br>Aug: 0.051 / 0.018<br>Sep: 0.045 / 0.016 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya dinutriente e swanetše go kaonafatšwa go tšwetšapele diphedi tša ka gare ga meetse le go netefaletša gore legoro leo le laetšwego la diphedi le a fihlelelwa. | Othofosfeiti ($PO_4^-$)bjalo ka Fosforase | ≤ 0.090 dimilikramo/lithara (mg/l) (50$^{th}$ phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50$^{th}$ phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa go maemo a bjale go netefaletša tšhireletšo ya mothopo wa meetse. | Tshwaro ya Mohlagase (EC) | ≤ 40 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 15 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tleloraete | ≤ 15 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga boa swanela go ba kotsi go maphelo a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 millilithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ditekanyetšong tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) le 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatshekong ya mothalotheo go tšweletša maemo a bjale a kelelo ya ka gare kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go fihlelewa go thekga diphedi tša ka gare ga meetse. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) |
| | | | | | | Mepholo | Metswako ya mepholo e swanetše go tlhokomelwa maemong ao a sego kotsi go diphedi tša ka gare ga meetse le go ba kotsi maphelong a batho | Amonia bjalo ka N | ≤ 0.072 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.062 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.006 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤ 0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Nikheletle (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Tlaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosulfene | 0.13 maekhrokramo/lithara (ug/l) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše tlhokomelwa legorong la C/D la diphedi le tikologo. Dibjalo tše dibotse le leraga le le nnyane go karolo ya moela di swanetše go tlhokomelwa. | Dikagare tša Maemo a Tikologo, Lebelo la Tshekatsheko ya Mokgwa wa Tikologo le Mmotlolo (RHAMM) | Maemo a kelelo ya ka gare ya tikologo EC = C/D ≥ 58% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa mo legorong la C/D la diphedi le tikologo. Taolo ya Tsenelo ya dilo tše di šele e swanetše go dirwa le go tšhireletšwa go lefelo la monola le swanetše go kaonafatšwa. Lefelo leo go sa tseniwego go lona le swanetše go laolwa. Tsenelo ya dimela tše dišele e swanetše go laolwa. | Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | VEGRAI EC = C/D ≥ 58% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa go legoro la C/D la diphedi. Go netefaletša dibontšhi tša sebontšhi. Kelelo e swanetše go akaretša diphedi. | Dikagare tša Tshekatsheko ya Dipoelo tša dihlapi (FRAI). | Legoro la tikologo ya dihlapi = C/D<br>FRAI ≥ 58%<br>Kgoboketša tekanyo ya 8 spp. Ka metsotso ye 20min ya boiteko bja tshwantšhetšo. Sebontšhi sa diphedi tša dihlapi tše di serolwana *(BPOL), AURA, CPRE , BMOT*<br><br>(lefelo la Lower Skeerpoort A2SKEE-R560B – tšhišinyo ye mphsa;<br>Lebelo la Magalies EWR 15 – reach A21F-01168) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphoofolo tša g hloka lerapo la mokokotlo | Upper Skeerpoort (A2SKEE-UITKO):<br>Kopanyo ya diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa ka maemo a hlago goba go kaonafatšwa (legoro B la diphedi le tikologo).<br>Lower Skeerpoort (A2SKEE-R560B): le Noka ya Magalies (CROC_ EWR 15):<br>Kopanyo ya diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa ka maemoa oa a fetotšwego goba a kaonafaditšwego (legoro C la diphedi le tikologo). | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka metseng tšeo di hlokago lerapo la mokokotlo le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | Lefelo la Upper Skeerpoort: A2SKEE-UITKO;<br>MIRAI EC = B ≥ 82%<br>SASS ≥ 200<br>ASPT ≥ 6.5<br><br>Skeerpoort sa fase A2SKEE-R560B se šišintše lefelo le le swa le L ebelo la Noka ya Magalies EWR 15 – reach A21F-01168;<br><br>MIRAI EC = C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |
| | | | | | | Diphedi tša lefelong leo nkego le na le meetse a mannyane | Tshwanelo ya koketšo ya noka ya go šoma bjalo ka tikologo ya nonyana ya ka meetseng le setšhaba sa diamuši di swanetše go tlhokomelwa ka taola ya maleba ya tikologo. | Dinonyana tša ka gare ga meetse/ sebontšhi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšahba sa dinonyana tša ka gare ga meetse le kemedi ya diamuši mo phihlelelong ya noka. Go na le hlokego ya tatelano ya RQO ya motswako wa diphoofolo/ dinonyana go ya ka tshedimošo yeo e lego gona/ yeo e kgobokeditšwego. |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa ka maemo ao a fetotšwego goba go kaonafatšwa. | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC = C ≥ 62% |
| | | Lefelo la Borwa bja Bohlabela la kgoboketšo ya meetse | 2_3 | | Bontšhi | Dikelelo tša fase | Hlaloša Meetse a ka fase ga lefase diRQO | Dikelelo tšeo di sego maleba | Meetse a ka fase ga lefase ao a hlotšwego ke lenaneo (ditolomaete) karolo ya Steenkoppies go meetse ao a ntšhitšwego<br><65% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | la Rietspruit<br><br>A21F | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele diphedi tša ka gare ga meetse. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.010 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.05 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa go netefaletša tšhireletšo ya mothopo. | Tshwaro ya Mohlagase (EC) | ≤ 20 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 10 dimilikramo/lithara (95th phesenthaele) |

**Tafolana 4: Boleng bja Dipono tša Mothopo wa DINOKA LE MATAMO go diYuniti tša Mothopo wa Tshekatsheko ya Uniti yeo e Kopantšhitšwego ya boraro: CROCODILE / ROODEKOPJES**

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3: CROCODILE/ROODEKOPJES | III | Kelelo ya ka ntle ya Noka ya Crocodile go tšwa go Letamo la Hartebeespoort go iša go kelelo ya ka gare ya Letamo la Roodekopjes, Rosespruit, Ramogatla leKareespruit (A21J) | 3_1 | C/D | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le kelelo ya komelelo:<br>Noka ya Crocodile go CROC_EWR3 in A21J<br>NMAR = 143.3x10$^6$m$^3$<br>Legoro la REC=C/D<br><br>Tlhokomelo ya dikelelo tša fase le dikelelo tša komelelo di swanetše go fihlelelwa go thekga diphedi tša ka gare ga meetse le bašomiši ba moela wa fase. | Dikelelo tšeo di sego maleba<br><br>Tlhokomelo ya dikelelo le kelelo ya komelelo<br><br>( lefelo la gare la EWR go tlhokomelo ya Noka ya Crocodile go A2H083) | | Tlhokomelo ya Dikelelo tša fase (m$^3$/s) | Dikelelo tša komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 1.425 | 1.446 |
| | | | | | | | | | Nov | 1.591 | 1.607 |
| | | | | | | | | | Dec | 1.690 | 1.703 |
| | | | | | | | | | Jan | 1.993 | 1.995 |
| | | | | | | | | | Feb | 2.276 | 2.267 |
| | | | | | | | | | Mar | 2.290 | 2.279 |
| | | | | | | | | | Apr | 2.022 | 2.024 |
| | | | | | | | | | May | 1.870 | 1.878 |
| | | | | | | | | | Jun | 1.765 | 1.776 |
| | | | | | | | | | Jul | 1.679 | 1.690 |
| | | | | | | | | | Aug | 1.564 | 1.580 |
| | | | | | | | | | Sep | 1.441 | 1.462 |
| | | | | | | Dikelelo tša godimo | EWR dikelelo tša godimo:<br>Noka ya Crocodile go CROC_EWR3 in A21J<br>NMAR = 143.3x10$^6$m$^3$<br>Legoro la REC=C/D | Mafula<br><br>Kelelo ya godimo yeo gape e hlalošwago bjalo ka dinyakwa tša mafula a ma tee go ya ka bogolo le nako (lebelela lemetletšo A) | | Dikelelo tša godimo (m$^3$/s) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 1.717 | |
| | | | | | | | | | Dec | 2.942 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 6.191 | |
| | | | | | | | | | Mar | 1.668 | |
| | | | | | | | | | Apr | 0 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 1.729 | |
| | | | | | Boleng | Dinutrientse | Motswako wa kelelo ya ka gare ya dinutriente o swanetše go kaonafatšwa go tšwetšapele diphedi tša | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50$^{th}$ phesenthaele) | | |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ka gare ga meetse. | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go hlokomelwa maemong a bjale go netefatša tšhireletšo ya mothopo le tšwetšopele ya mothopo. | Tshwaro ya Mohlagase (EC) | ≤ 75 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 90 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 60 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tleloraete | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga boa swanela go ba kotsi maphelong a batho. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 millilithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ka ditekanyetšo tše di itšego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) le 8.5 (95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjalo a kelelo ya ka gare kgobokano ya seela e a hlokega | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe. |
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go fihlelelwa go thekga diphedi tša ka gare ga meetse. | Oksitšeni yeo e moyafetšego | ≥ 6 dimilikramo/lithara (mg/l) |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go ba kotsi maphelong a diphedi tša ka gare ga meetse le maphelong a batho. | Amonia bjalo ka N | ≤ 0.0725 dimilikramo/lithara (mg/l)<br>(95th phesenthaele) |
| | | | | | | | | AluminiamoAl) | ≤ 0.105 dimilikramo/lithara (mg/l)<br>(95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l)<br>(95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l)<br>(95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ya bothata | ≤ 0.005 dimilikramo/lithara (mg/l)<br>(95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Khopha (Cu) ya bothata | ≤ 0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤ 0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Tlaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosulfan | 0.13 maekhrokramo/lithara (ug/l) |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go kaonafatšwa go tloga go legoro D la diphedi le tikologo go iša go legoro la C/D. Phapaphapano ya go ama tshepedišo ya kelelo le tikologo yeo e ithekgilego ka diphedi. Tshepedišo e swanetše go lekanela kelelo yeo e ithekgilego ka sehlopha sa diphedi. | Dikagare tša Maemo a Tikologo, Tshekatsheko Mokgwa wa ya Lebelo la Tikologo le Mmotlolo (RHAMM), Tshekatsheko ya Dikagare tša Tikologo | Kelelo ya ka gare Maemo a Tikologo EC = C/D ≥ 58% |
| | | | | | | Tikologo ya monola | Dimela tša monoleng di swanetše go tlhokomelwa go legoro la C/D la diphedi le tikologo goba go kaonafatšwa. Tsenelo ya dimela tšeo di sa tlwaelegago e swanetše go laolwa le ditšwetšopele lefelong la monola di swanetše go thibelwa. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | VEGRAI EC = C/D ≥ 58%. Thibela tšwetšopelele ya lefelo la monola. |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go kaonafatšwa go tšwa go legoro D la diphedi le tikologo go iša go legoro la C/D. Ditlha tšeo di laotšwego tšeo di hlokegago go sepetša tshepedišo ya dihlapi tšeo di gobalago ga bonolo. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi FRAI) | Legoro la tikologo ya Dihlapi = C/D<br>FRAI ≥ 58%<br><br>Sebontšhi sa diphedi go *(Crocodile River): AJOH, le go ithekga ka kelelo BMAR, CPRE* |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo e swanetše go tlhokomelwa go legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša diphoofolo tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.0 |
| | | | | | | Diphedi tša lefelo leo nkego le na le meetse a mannyane | Tshwanelo ya koketšo ya noka ya go šoma bjalo ka tikologo ya nonyana ya ka gare ga meetse le setšhaba sa diamuši se swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. Tikologo ya monola e swanetše go kaonafatšwa. | Dinonyane tša ka meetseng/ Sebontšhi sa diamuši. | Tshekatsheko ya mothalotheo e swanetše go dirwa go tšweletša setšhaba sa nonyana ya ka gare ga meetse le kemedi ya diamuši mo phitlhelelong ya noka. Go a hlokega go dira tatelano ya RQO ya motswako wa diphoofolo/dinonyana go ya ka tshedimošo ye e kgobokeditšwego/ yeo e lego gona. |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa go legoro la D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tšhilafatšo tše di itšego. | Taeathomo EC = D ≥ 42% |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Roodekopjes (A21J) | 3_2 | | Bontšhi | Maemo a matamo | Letamo le swanetše go laolwa go tšhireletša mošomo wa diphedi le tikologo gotee le bašomiši ba moela wa fase. Tšweletša le go mphsafatša melao ya tshepedišo ya letamo go tšwetšapele maemo a makaone a matamo go netefatša gore bontšhi bja diphedi tša ka meetseng bo tlhokometšwe. Letamo le swanetše go laolwa go tšhireletša diphedi le tikologo ditšhila tša letamo di swanetše go kopana kelelong ya fase ya dinyakwa tša tshepedišo. | Maemo ao a lekanetšego a tshepedišo ya letamo | Melao ya tshepedišo bjalo kage e le gona le.<br><br>Bonnyane bja maemo a go tšwetšapele diphedi tša ka gare ga meetse le tikologo (15-18%). |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go tšwetšapele bophelo bja diphedi le tikologo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka lenaneo la letsha. | Othofosfeiti | ≤ 0.050 mg/ℓ<br>95th phesenthaele |
| | | | | | | | Motswako wa palomoka ya fosforase o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo le dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la letsha . | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th phesenthaele |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Motswako wa nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphefi le tikologo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka lenaneo la letsha. | Naetreiti le Nitreiti | ≤ 0.70 mg/L N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga bophelo bja diphedi le tikologo le dinyakwa tša boleng bja bašomiši ba moela wa fase wa meetse. | Tshwaro ya Mohlagase | ≤ 70 mS/m<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga diphedi le tikologo le boleng bja dinywakwa tša bašomiši ba moela wa fase. | Salfeiti | ≤ 85 mg/L<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go tlhokomelwa go thekga diphedi le tikologo le boleng bja dinyakwa tša bašomiši ba moela wa fase. | Sodiamo | ≤ 70 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Phathotšene e swanetše go tlhokomelwa maemong ao a bolokegilego a tšhomišo ya batho. | *Eskheria kholi* (*E.coli*) | Dipalo tša 130 /100 millilithara (ml)<br>(95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphetogophetogo tša Lenaneo | Tšhomišo ya meetse e swanetše go dumelelwa go dira boithabišo. | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Kgonthišišo yeo e okeditšwego | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele |
| | | | | | | | Tekanyo ya phetogo | Themphereitšhara | Ga se gwa swanela go fetiša 2 °C ya koketšo ya phetogo ya fase le godimo |
| | | | | | | | Maemo a oksitšene a swanetše go tlhokomela maemo a diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 7.0 mg/L O2<br>95th phesenthaele |
| | | | | | | Mepholo | Letamo le swanetše go laolwa go fokotša tšwetšopele ya mpholo wa saenopaktheriya | Saenopaktheriya | Go ata ga Saenopaktheriya ka motswako wa Chl *a wa swanela go ba ka godimo ga* 30µg/ℓ Saenopaktheriya e swanetše go bolokwa ka fase ga 20% ya. |

**Tafolana 5: Boleng bja Dipono tša Mothopo wa DINOKA LE MATAMO ke Diyuniti tše bohlokwa tša Mothopo go Tshekatsheko ya bone ya Yuniti yeo e Kopantšwego: HEX / WATERKLOOFSPRUIT / VAALKOP**

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| HEX/WATERKLOOFSPRUIT/ | II | Kelelo ya ka ntle ya Sterkstroom go tšwa go Letamo la Buffelspoort go ya go Kelelo ya ka gare ya | 4_1 | C | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go fihlelelwa go tšwetšapele diphedi tša ka gare ga meetse le go netefatša gore legoro leo le laetšwego la diphedi le tikologo le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Roodekopjes, kgoboketšo ya meetse ya kotara ya Maretwane, Tshukutswe – kgoboketšo ya meetse ya gare le ya fase ga letamo ya A21K | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše go fihlelela bophelo bja diphedi tša ka gare ga meetse le go netefatša gore legoro la diphedi le tikologo le a fihlelelwa. | Tshwaro ya Mohlagase (EC) | ≤ 70 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go beya maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 millilithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo go tšweletša maemo a bjale a Kelelo ya ka gare ga kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% go tšwa go bokamorago bja motsako e dumeletšwe. |
| | | | | | | Mepholo | Metswako ya mepholo e swanetše go tlhokomelwa maemong ao a sego kotsi go diphedi tša ka gare ga meetse le go ba kotsi maphelong a batho. | Amonia bjalo ka N | ≤ 0.0725 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | AluminiamoAl) | ≤ 0.062 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khroniamo (IV) | ≤ 0.0675 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | Iena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lliti (Pb) ye bothata | ≤0.005 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro la C la diphedi le tikologo. Maemo a tikologo, boleng bja meetse le maemo a kelelo a swanetše go tlhokomelwa. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM), Dikagare tša Tshekatsheko ya Tikologo | Kelelo ya ka gare ya maemo a tikologo E= C ≥ 62% |
| | | | | | | Tikologo ya monola | Taolo ya dibjalo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Taolo ya ditsenelo tšeo di sa tlwaelegago e swanetše go dirišwa. | Dikagare tša Maemo a Tikologo Maemo , dikagare tša Tshekatsheko ya Dipoelo tša dibjalo | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro C/D la diphedi le tikologo. Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go laola kgahlanong le legoro leo le laetšwego la tikologo le diphedi. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = C/D<br>FRAI ≥ 58%<br>Kgoboketša diphedi tše tshela ka metsotso ye 20 ya maiteko a go bontša. Sebontšhi sa diphedi sa *BMOT*<br><br>(Lefelo A2STER-MAMOG) |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng e swanetše go tlhokomelwa ka legoro D la tikologo le diphedi goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa ka maemo ao a fetotšwego kudu goba ao a kaonafaditšwego. | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC = D ≥ 42% |
| | | Diphihleleo tša godimo tša Sterkstroom go iša go kelelo ya ka gare ya letamo la Buffelspoort (A21K kokotletšo ya meetse ya gare le ya ka godimo ga letamo) | 4_2 | | Bontšhi | Dikelelo tša fase | Hlokomelo ya EWR ya fase le kelelo ya komelelo:<br>Sterkstroom go CROC_EWR11 ka A21K<br>NMAR = $14.0 \times 10^6 m^3$<br>Legoro la REC=C<br>Tšhireletšo yeo e lekanego ya Kelelo ya ka gare yeo e hlokegago (e swanetše go tlhokomelwa go thekga diphedi).<br>Taolo ya mediro ya naga e a hlokega. | Dikelelo tšeo di sa swanelago<br><br>Hlokomelo ya kelelo le kelelo ya komelelo Lebelo la lefelo 11 la EWR go Sterkstroom (tlhokomelo go A2H053) | |

| | Tlhokomelo ya Dikelelo tša fase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
|---|---|---|
| Oct | 0.078 | 0.033 |
| Nov | 0.083 | 0.035 |
| Dec | 0.086 | 0.036 |
| Jan | 0.094 | 0.039 |
| Feb | 0.113 | 0.047 |
| Mar | 0.104 | 0.043 |
| Apr | 0.101 | 0.042 |
| May | 0.09 | 0.038 |
| Jun | 0.09 | 0.038 |
| Jul | 0.085 | 0.036 |
| Aug | 0.082 | 0.035 |
| Sep | 0.082 | 0.035 |

| IUA | lena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjalo ka ge go laeditšwe e swanetše go fihlelelwa go tšwetšapele diphedi tša ka gare ga meetse le tikologo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.010 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai bjalo ka ge go bontšhitšwe e swanetše go fihlelelwa go maemo ao a laeditšwego a swanetše go fihlellelwa go tšwetšapele diphedi tša ka gare ga meetse le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Tshwaro ya Mohlagase (EC) | ≤ 55 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro la diphedi le tikologo la B/C. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = B/C ≥ 78% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro la diphedi le tikologo ya B/C. Tsenelo ya dilo tšeo di sa tlwaelegago e swanetše go laolwa. . | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dibjalo | VEGRAI EC = B/C ≥ 78% |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Tshekatsheko ya setšhaba sa dihlapi e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go tšhireletša kgahlanong le legoro leo le laetšwego. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = C<br>FRAI ≥ 62%<br>Kgoboketša diphedi tše tshela ka metsotso ye 20 ya sebontšhi sa go tshwantšhiša diphedi-tshepedišo ya diphedi tšeo di gobalago ga bonolo, *AURA*, *BMOT* (Sterkstroom go CROC_EWR11 in A21K) |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.7<br>(Sterkstroom go CROC_EWR11 ka A21K) |
| | | Letamo la Buffelspoort (A21K) | 4_3 | | Bontšhi | Maemo a matamo | Letamo le swanetše go laolwa go tšhireletša **me**šomo le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya go tšwetšapele maemo a matamo go netefatša gore phapaphapano ya diphedi e tlhomemetšwe. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjale ka ge e hwetšagala. Maemo a gare a go tšwetšapele diphedi tša ka gare ga meetse (15-18%). |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi gammogo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki. | Othofosfeiti | ≤ 0.015 mg/ℓ<br>50th phesenthaele |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki. | Naetreiti le Nitreiti | ≤ 0.50 mg/L N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | Upper Hex river go iša go Letamo la Olifantsnek, Rooikloofspruit (A22G) | 4_4 | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjale ka ge go laeditšwe e swanetše go fihlelelwa go tšwetšapele diphedi tša ka meetseng le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.015 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti ($NO_3^-$) le Naetreiti ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Maemo a kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše go fihlelewa go tšwetšapele bophelo bja diphedi le tikologo | Tshwaro ya Mohlagase | ≤ 55 milisimense/mmitha (mS/m)<br>(95th phesenthaele) |

| IUA | lena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | gammogo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Sodiamo | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 40 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapahapano ya tikologo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Kelelo e swanetše go lekanela go thekga diphedi le sehlopha sa diphedi gammogo le tikologo. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = C ≥ 62% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Tsenelo e šele e swanetše go tlhokomelwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo, Maemo a Tikologo | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go tlhokomela kgahlanong le legoro C leo le laetšwego la diphedi. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = C<br>FRAI ≥ 62%<br><br>Kgoboketša diBMOT tše 20 ka metsotso ye 20 ya tshwantšhetšo. |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | Diphoofolo tša ka meetseng tša go hloka mokokotlo EC= C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.8 |
| | | Letamo la Olifantsnek (A22G) | 4_5 | | Bontšhi | Maemo a letamo | Letamo le swanetše go laolwa go tšhireletša mešomo gammogo le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya letamo le maemo a makaone a matamo go netefatša gore phapaphapano ya diphedi le tikologo e a tlhokomelwa. Ditšhila tša letamo di hloka go kopana go moela wa fase wa dinyakwa tša kelelo tša tikologo. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjalo ka ge e hwetšagala.<br><br>Maemo a gare a go tšwetšapele diphedi le tikologo tša ka gare ga meetse (15-18%) |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. | Othofosfeiti | ≤ 0.015 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki | Naetreiti le Nitreiti | ≤ 0.50 mg/L N<br>95th phesenthaele |

| IUA | lena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |
| | | Noka ya Hex go tloga go Letamo la Olifantsnek, go iša go kelelo ya ka gare ya Letamo la Bospoort, Sandspruit (A22H) | 4_6 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo<br><br>Noka Hex (go karolo ye mphsa ya W-) go A22H<br>NMAR = $12.11 \times 10^6 m^3$<br>Legoro la<br><br>Tlhokomelo ya dikelelo tša fase le tshepedišo ya komelelo di swanetše go fihlelewa gore dikelelo tša tikologo di fihlelelwe go thekga maemo a mabotse a diphedi le bašomiši. | Dikelelo tšeo di sa swanelago<br><br>**Tlhokomelo ya dikelelo le tshepedišo ya komelelo**<br><br>(Nouti ya Noka ya Hex ya moela wa Letamo la Olifantsnek. Ka tlhokomelo ya karolo ye mpsha ya W ya letamo. | |
| | | | | | | | | | |
| | | | | | Boleng | Dinutriente | Motswako wa kelelo ya ka gare ya dinutriente o swanetše go kaonafatšwa go tšwetšapele diphedi tša ka gare ga meetse gore le boleng bja dinyakwa tša | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.125 dimilikramo/lithara (mg/l) (50th phesenthaele) |

| | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
|---|---|---|
| Oct | 0.013 | 0.011 |
| Nov | 0.014 | 0.012 |
| Dec | 0.015 | 0.013 |
| Jan | 0.019 | 0.016 |
| Feb | 0.028 | 0.023 |
| Mar | 0.026 | 0.022 |
| Apr | 0.020 | 0.017 |
| May | 0.017 | 0.015 |
| Jun | 0.017 | 0.014 |
| Jul | 0.015 | 0.013 |
| Aug | 0.014 | 0.012 |
| Sep | 0.014 | 0.012 |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bašomiši ba meetse bo a fihlelelwa. Taolo ya dinutrientse e hlokega go netefatša gore lenaneo le tšwetšwapele go legoro la bjale la E go fihla go legoro la D. | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 1.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Maemo a motswako wa letswai a godimo kudu. Kelelo ya ka gare ya motswako wa letswai e swanetše go kaonafatšwa go thekga diphedi tša ka meetseng le dinyakwa tša boleng bja bašomiši ba meetse. Boleng bja meetse bo swanetše go kaonafatšwa go tšwetšapele maemo a legoro la E go iša go D. | Tshwaro ya Mohlagase | ≤ 85 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |
| | | | | | | Mepholo | Metswako ya mepholo e swanetše go tlhokomelwa maemong ao a sego kotsi go diphedi tša ka gare ga meetse le maphelong a batho. | Amonia bjalo ka N | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | AluminiamoAl) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.3 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤0.0095 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Atrazine | ≤0.078 dimilikramo/lithara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimilikramo/lithara (mg/l) |
| | | | | | | | | Tlaefoseiti | 0.7 dimilikramo/lithara (mg/l) |
| | | | | | | | | Endosulfan | 0.13 maekhrokramo/lithara (ug/l) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go kaonafatšwa go tloga go legoro D la diphedi le tikologo go thekga palomoka ya maemo a lenaneo la diphedi le tikologo. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = C ≥ 62% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro D la diphedi le tikologo. | Dikagare tša Maemo a Tikologo | VEGRAI EC = D ≥ 42% |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro D la diphedi le tikologo goba go kaonafatšwa. Kelelo e swanetše go ba yeo e lekantšwego ya diphedi tšeo di ithekgilego ka tše dingwe. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = D<br>FRAI ≥ 42% |
| | | | | | | Diphedi tša lefelong leo nkego le na le monola. | Tshwanelo ya koketšo ya noka go šoma bjalo ka tikologo ya nonyana ya ka meetseng le setšhaba sa diamuši se swanetše go tlhokomelwa ka taolo ya meleba ya tikologo. Lefelo la monoleng le swanetše go kaonafatšwa. . | Dinonyana tša ka meetseng/ Sešupi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyana ya ka meetseng le kemedi ya diamuši mo phihlelelong ya noka. Go na le hlokego ya go bea tatelano ya RQO ya motswako wa diphoofolo/dinonyana go ya ka tshedimošo yeo elego gona goba yeo e kgobokeditšwego. |
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br><br>(LefeloA2HEX-PAARD) |
| | | Letamo la Bospoort (A22H) | 4_7 | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi gammogo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Othofosfeiti | ≤ 0.5 mg/ℓ<br>50th phesenthaele |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Palomoka ya motswako wa fosforase e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego dimenerale. | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo leo le humilego ka dimenerale. | Naetreiti le Nitreiti | ≤ 1.00 mg/L N<br>95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 85 mS/m<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Sodiamo | ≤ 100 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo | pH | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Koketšo ya kgonthišišo ka palo. | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele |

| IUA | Iena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mepholo | Letamo le swanetše go laolwa go fokotša tšwetšopele ya mpholo wa mapolomo a saenopaktheriya | Saenopaktheriya | Go ata ga Saenopaktheriya ka motswako wa ka godimo ga 30µg/ℓ go swanetše go bolokwa ka fase ga 20% ya noka. |
| | | Waterkloofspruit (A22H) | 4_8 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo Waterkloofspruit go CROC_EWR14 ka A22H NMAR = $5.469 \times 10^6 m^3$ Legoro la REC=B/C<br><br>Tlhokomelo ya dikelelo tša fase le tshepedišo ya komelelo di swanetše go fihlelewa gore dikelelo tša tikologo di fihlelelwe go thekga maemo a mabotse a diphedi le bašomiši. | Dikelelo tšeo di sa swanelago **Tlhokomelo ya dikelelo le tshepedišo ya komelelo**<br><br>Lebelo la EWR Lefelo 14 go Waterkloofspruit (tlhokomelo go A2H038) | |
| | | | | | | | | | Tlhokomelo ya dikelelo tša fase ($m^3/s$) / Tshepedišo ya komelelo ($m^3/s$)<br>Oct: 0.028 / 0.010<br>Nov: 0.027 / 0.010<br>Dec: 0.028 / 0.010<br>Jan: 0.035 / 0.013<br>Feb: 0.039 / 0.014<br>Mar: 0.038 / 0.014<br>Apr: 0.035 / 0.013<br>May: 0.033 / 0.012<br>Jun: 0.033 / 0.012<br>Jul: 0.031 / 0.011<br>Aug: 0.03 / 0.011<br>Sep: 0.03 / 0.010 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi tša ka meetseng le go netefatša gore legoro la diphedi leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.025 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.25 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa ka maemo a bjale go netefatša tšhireletšo ye botse ya maemo a diphedi goba mothopo. | Tshwaro ya Mohlagase | ≤ 20 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 10 dimilikramo/lithara (95th phesenthaele) |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tloraete | ≤ 10 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro B la diphedi le tikologo. | Dikagare tša Maemo a Tikologo, Mokgwa wa Tshekatsheko ya Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = B ≥ 82% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro B la diphedi le tikologo. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro B/C la diphedi le tikologo. Lefelo la ka godimo la moela wa meetse le swanetše go tšhireletšwa go ya ka bogona bja moela wa godimo wa *TSPA*. FRAI e swanetše go swarwa go laola kgahlanong le legoro la bjale | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = B/C<br>FRAI ≥ 78%<br>Tshwantšhetšo ya diBMOT tše 20 ka metsotso ye 20 ya go swantšhetša |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša lefelong la monola | Tshwanelo ya koketšo ya noka go šoma bjalo ka tikologo ya nonyana ya ka meetseng le setšhaba sa diamuši e swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. Lefelo la monoleng le swanetše go kaonafatšwa. . | Dinonyana tša ka meetseng/ Sešupi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyana ya ka meetseng le kemedi ya diamuši mo phihlelelong ya noka. Go na le hlokego ya go bea tatelano ya RQO ya motswako wa diphoofolo/dinonyana go ya ka tshedimošo yeo elego g. |
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka gare ga meetse tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC =C ≥ 62%<br>SASS ≥ 150<br>ASPT ≥ 6.0 |
| | | Kelolo ya ka ntle ya Noka ya Hex, Letamo la Bospoort go iša go kelelo ya ka gare ya letamo la Vaalkop (A22J) | 4_9 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo ya Nako ya<br>Hex ka CROC_EWR6 in A22J<br>NMAR = 26.9x10$^{6}$m$^{3}$<br>Legoro la<br><br>Tlhokomelo ya dikelelo tša fase le tshepedišo ya komelelo le swanetše go fihlelelwa go thekga maemo a mabotse a diphedi le bašomiši. | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le tshepedišo ya komelelo<br><br>Tshenelelo ya EWR Lefelo 6 go Letamo la Hex (hlokomelo ya A2H094) | |

| | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
|---|---|---|
| Oct | 0.024 | 0.015 |
| Nov | 0.026 | 0.023 |
| Dec | 0.035 | 0.022 |
| Jan | 0.052 | 0.022 |
| Feb | 0.093 | 0.070 |
| Mar | 0.084 | 0.067 |
| Apr | 0.055 | 0.054 |
| May | 0.039 | 0.039 |
| Jun | 0.035 | 0.035 |
| Jul | 0.030 | 0.030 |
| Aug | 0.028 | 0.028 |
| Sep | 0.025 | 0.023 |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dinutriente | Motswako wa kelelo ya ka gare ya dinutriente o swanetše go kaonafatšwa go tšwetšapele diphedi tša ka gare ga meetse gore le boleng bja dinyakwa tša bašomiši ba meetse bo a fihlelelwa. Taolo ya dinutriente e hlokega go netefatša gore lenaneo le tšwetšwa pele go kaonafatša maemo go tloga go E go iša go D. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 2.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Maemo a motswako wa letswai a godimo kudu. Kelelo ya ka gare ya motswako wa letswai e swanetše go kaonafatšwa go thekga diphedi tša ka meetseng le dinyakwa tša boleng bja bašomiši ba meetse. Boleng bja meetse bo swanetše go kaonafatšwa go tšwetšapele maemo go tloga go E go iša go D. | Tshwaro ya Mohlagase | ≤ 85 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga boa swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe |
| | | | | | | Mepholo | Metswako ya mepholo e swanetše go tlhokomelwa go ba maemong ao a sego kotsi go | Ammonia | ≤ 0.007 dimilikramo/lithara (mg/l) (95th phesenthaele) |

| IUA | lena neo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | diphedi tša ka gare ga meetse le maphelong a batho. | AluminiamoAl) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤0.3 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤0.0095 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Khopha (Cu) ye bothata | ≤0.0073 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Nikhele (Ni) | ≤0.07 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro D la diphedi le tikologo goba go kaonafatšwa. Phapaphapano ya tikologo ya kelelo le dibjalo tšeo di gobalago ga bonolo tša mathoko gammogo le sehlopha sa diphedi di swanetše go fihlelelwa. | Dikagare tša Maemo a Tikologo, Tshekatsheko ya Mokgwa wa Lebelo la Tikologo le Mmotlolo | Kelelo ya ka gare Tikologo Maemo EC = D ≥ 42% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi go ba maemong a makaone. Tšhireletšo ya tikologo e a hlokega. Ditšwetšopele go lefelo la monola di swanetše go laolwa. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dibjalo | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go laola kgahlanong le legoro D leo le laetšwego. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi ( FRAI) | Legoro la tikologo ya dihlapi = D FRAI ≥ 42% |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo di swanetše go tshwarelelwa go legoro la D goba e kaonafatšwe | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 70<br>ASPT ≥ 4.2<br>REMP Lefelo A2HEXR-ROOIW |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa ka legoro D la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC = D ≥ 42% |
| | | Letamo la Vaalkop<br><br>Le phihlelelo ya fase ya Elands Pele e e tla kopantšhwa le Crocodile (A22J) | 4_10 | | Bontšhi | Maemo a letamo | Letamo le swanetše go laolwa go tšhireletša mešomo ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya letamo go tšwetšapele maemo a makaone a matamo go netefatša gore phapaphapano ya diphedi e tlhokometšwe.<br>Ditšhila tša letamo di hlokega go kopana moeleng wa fase wa dinyakwa tša tshepedišo ya diphedi le tikologo. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjalo ka ge e hwetšagala.<br><br>Maemo a gare a go tšwetšapele diphedi le tikologo tša ka gare ga meetse (15-18%) |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. | Othofosfeiti | ≤ 0.05 mg/ℓ<br>50th phesenthaele |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Palomoka ya motswako wa fosforase e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka lenaneo la letsha. | Palomoka ya fosforase | ≤ 0.055 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki | Naetreiti le Nitreiti | ≤ 0.70 mg/L N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Salfeiti, | ≤ 100 mg/ℓ<br>95th phesenthaele |
| | | | | | | | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tloraete | ≤ 100 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogopheto go tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo | Ph | 6.5 – 9.0<br>95th phesenthaele |

| IUA | lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Kgonthišišo yeo e okeditšwego | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele |
| | | | | | | | Diphetogo tša magareng | Themphereitšhara | Ga se gwa swanela go feta 2 °C ya koketšo ya phetogo ya fase le ya godimo |
| | | | | | | | Maemo a oksitšeni ka gare ga lenaneo a swanetše go tlhokomela lenaneo la diphedi le tikologo. | Oksitšeni yeo e moyafetšego | ≥ 7.0 mg/L O2<br>95th phesenthaele |
| | | | | | | Mepholo | Letamo le swanetše go laolwa go fokotša tšwetšopele ya mpholo wa mapolomo a saenopaktheria | Saenopaktheriya | Go ata ga Saenopaktheriya ka motswako wa Chl *a* yaka godimo ga 30µg/ℓ o swanetše go bolokwa ka fase ga 20% ya nako ye ntšhi. |
| | | | | | Tikologo | Tikologo ya Letamo | Go laola mothopo wa meetse wa tlhokomelo ya phapaphapano ya diphedi tša ka meetseng (kelelo ya ka gare, dilo tšeo di hlolago ke diphedi tša ka meetseng, le mafelo a monola)<br>Boloka, tlhokomela, tsošološa, le go tšweletša lebopo la maitirelo gammogo le mafelo a monola. Lefelo la monola la hlago le swanetše go bolokwa ka mo go ka kgonegago go netefaletša tikologo ya maleba. | Bophelo bja dibjalo tša monoleng | Kapešo ya 70% ya dibjalo tša monoleng |
| | | | | | Diphedi | Dihlapi | Phapaphapano le bontšhi bja dihlapi di swanetše go tlhokomelwa | Phapaphapano le bontšhi bja dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka tshekatsheko ya dithuto tša maphelo. Ditahlegelo tšeo di swanetšego di swanetše go tšweletšwa. Ditebanyo tša dihlapi di swanetše go tšweletšwa. |
| | | | | | | Pherifaethone/ Faethoplankthone | Metswako ya Chl a e swanetše go tlhokomelwa ka maemo a letsha. | Chl *a* | 11-20µg/ℓ<br>50th phesenthaele |

**Tafolana 6: Boleng bja Dipono tša Mothopo wa DINOKA ka mehola ya diYuniti tša Mothopo ka gare ga Kopantšho ya Tshekatsheko ya Yuniti ya bohlano: ELANDS / VAALKOP**

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5: ELANDS/VAALKOP | II | Diphihlelelo tša godimo tša Elands go iša go Letamo la Swartruggen<br><br>A22A Karolwana ya South Eastern | 5_1 | C | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo<br>Noka ya Elands go CROC_EWR10 ka A22A<br>NMAR = $10.1 \times 10^6 m^3$<br>Legoro la REC=B/C<br><br>Tlhokomelo ya dikelelo tša fase le tshepedišo ya komelelo di swanetše go fihlelelwa go thekga diphedi tša ka meeetseng le bašomiši ba moela wa fase | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le tshepedišo ya komelelo.<br><br>Lebelo la EWR Lefelo 10 go Noka ya Elands (tlhokomelo ya ditshekatsheko tša thutaphedi) | | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.038 | 0.015 |
| | | | | | | | | | Nov | 0.045 | 0.012 |
| | | | | | | | | | Dec | 0.050 | 0.011 |
| | | | | | | | | | Jan | 0.070 | 0.026 |
| | | | | | | | | | Feb | 0.094 | 0.031 |
| | | | | | | | | | Mar | 0.091 | 0.019 |
| | | | | | | | | | Apr | 0.073 | 0.015 |
| | | | | | | | | | May | 0.056 | 0.015 |
| | | | | | | | | | Jun | 0.051 | 0.019 |
| | | | | | | | | | Jul | 0.046 | 0.017 |
| | | | | | | | | | Aug | 0.042 | 0.016 |
| | | | | | | | | | Sep | 0.039 | 0.015 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjale ka ge go laeditšwe e swanetše go fitlhelelwa go tšwetšapele diphedi tša ka meetseng le go netefatša gore legoro leo le laetšwego le a fihlelelwa | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.025 dimilikramo/lithara (mg/l) (50th phesenthaele) | | |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) | | |
| | | | | | | Matswai | Maemo a kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše | Tshwaro ya Mohlagase | ≤ 55 milisimense/mmitha (mS/m) (95th phesenthaele) | | |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | go fihlelewa go tšwetšapele bophelo bja diphedi le tikologo gammogo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Salfeiti | ≤ 30 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 9.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. Ditekanyetšo di swanetše go hlalošwa go laola ditutuetšo tša mothopo lenaneo la moepo. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe. Ditekanyetšo di swanetše go tšweletšwa. |
| | | | | | | | Maemo a Oksitšeni yeo e moyafetšego a swanetše go kaonafatšwa go thekga diphedi tša ka gare ga meetse. | Oksitšeni yeo e moyafetšego | 6-7 dimilikramo/lithara (mg/l) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Phapaphapano ya tikologo ya dibjalo tšeo di gobalago ga bonolo tša mathoko e swanetše go tlhokomelwa | Dikagare tša Maemo a Tikologo, Tshekatsheko ya Mokgwa wa Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = C ≥ 62% |
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Tšhireletšo ya tikologo ya monola e a hlokega. Ditšwetšopele tša lefelo la monola di swanetše go laolwa. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go tlhokomela kgahlanong le legoro leo le laetšwego. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi ( FRAI) | Legoro la tikologo ya dihlapi = C<br>FRAI ≥ 62%<br>Bontša diBMOT tše 20 ka metsotso ye 20 ya tshwantšhetšo |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la maemo a diphedi goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 155<br>ASPT ≥ 5.5 |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomela ka legoro C la diphedi goba go kaonafatšwa | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC ≥ 62% | | |
| | | Elands downstream Letamo la Swartruggens go ya go Letamo la Lindleyspoort (A22A) | 5_2 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo ya Noka ya Elands go A2H107 ka A22A<br>NMAR = 12.87x10$^6$m$^3$<br>Legoro la REC=C<br><br>Tlhokomelo ya dikelelo tša fase le tshepedišo ya komelelo e swanetše go fihlelelwa go thekga diphedi tša ka meetseng le bašomiši ba moela wa fase. | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le tshepedišo ya komelelo<br>Tlhokomelo ya Noka ya Elands go A2H107 | | Tlhokomelo ya dikelelo tša fase (m$^3$/s) | Tshepedišo ya komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 0.030 | 0.016 |
| | | | | | | | | | Nov | 0.037 | 0.014 |
| | | | | | | | | | Dec | 0.044 | 0.013 |
| | | | | | | | | | Jan | 0.063 | 0.028 |
| | | | | | | | | | Feb | 0.083 | 0.009 |
| | | | | | | | | | Mar | 0.081 | 0.018 |
| | | | | | | | | | Apr | 0.064 | 0.016 |
| | | | | | | | | | May | 0.047 | 0.018 |
| | | | | | | | | | Jun | 0.042 | 0.019 |
| | | | | | | | | | Jul | 0.036 | 0.018 |
| | | | | | | | | | Aug | 0.033 | 0.018 |
| | | | | | | | | | Sep | 0.030 | 0.016 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjale ka ge go laeditšwe e swanetše go fihlelelwa go tšwetšapele diphedi tša ka meetseng le go netefatša gore legoro leo le laetšwego le a fihlelelwa. Taolo ya meetse a ditšhila e a hlokega. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50$^{th}$ phesenthaele) | | |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50$^{th}$ phesenthaele) | | |
| | | | | | | Matswai | Maemo a kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše go fihlelewa go tšwetšapele bophelo | Tshwaro ya Mohlagase | ≤ 55 milisimense/mmitha (mS/m) (95$^{th}$ phesenthaele) | | |
| | | | | | | | | Salfeiti | ≤ 80 dimilikramo/lithara (95$^{th}$ phesenthaele) | | |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bja diphedi le tikologo gammogo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. Taolo ya ditutuetšo tša naga le ditšhila tša WWTW di a hlokega. | Tloraete | ≤ 40 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene ga bja swanela go bea maphelo a batho kotsing. | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 9.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe. Go swanetše go tšweletšwa ditekanyetšo. |
| | | | | | | | Maemo a Oksitšene yeo e moyafetšego a swanetše go kaonafatšwa go thekga diphedi tša ka gare ga meetse le tikologo. | Oksitšeni yeo e moyafetšego | 6-7 dimilikramo/lithara (mg/l) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa. | Dikagare tša Maemo a Tikologo, Tshekatsheko ya Mokgwa wa Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare ya Maemo a Tikologo EC = C ≥ 62% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba maemo a ma kaone. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Diphedi tša lefelong leo nkego le na le monola. | Kgonego ya koketšo ya letamo le e šoma bjalo ka tikologo ya nonyana ya ka meetseng le setšhaba sa diamuši se swanetše go tlhokomelwa ka taolo ya maleba ya tikologo. | Dinonyana tša ka meetseng/ Sešupi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyana ya ka meetseng le kemedi ya diamuši mo phihlelelong ya noka. Go na le hlokego ya go bea tatelano ya RQO ya motswako wa diphoofolo/dinonyana go ya ka tshedimošo yeo elego gona. |
| | | | | | | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la maemo a diphedi goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | EC ya Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.3 |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa ka legoro C/D la tikologo le diphedi goba go kaonafatšwa | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC ≥ 58% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | **Letamo la Lindleyspoort (A22A)** | **5_3** | | Bontšhi | Maemo a letamo | Letamo le swanetše go laolwa go tšhireletša mešomo ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya letamo go tšwetšapele maemo a makaone a matamo go netefatša gore phapaphapano ya diphedi e tlhokometšwe. Ditšhila tša letamo di a hlokega go kopana moeleng wa fase wa dinyakwa tša tshepedišo ya diphedi le tikologo. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjalo ka ge e hwetšagala.<br><br>Maemo a gare a go tšwetšapele diphedi le tikologo tša ka gare ga meetse (15-18%) |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. | Othofosfeitis, | ≤ 0.015 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Palomoka ya motswako wa fosforase e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka lenaneo la letsha. | Palomoka ya fosforase | ≤ 0.055 mg/ℓ<br>50th phesenthaele |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le dinyakwa tša boleng bja bašomiši ba meetse. letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki | Naetreiti le Nitreiti | ≤ 0.70 mg/L N 95th phesenthaele | | |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele | | |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) | | |
| | | | | | | Diphetogophetogo tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo | pH | 6.5 – 9.0<br>95th phesenthaele | | |
| | | | | | | | Kgonthišišo yeo e okeditšwego | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele | | |
| | | Bogodimo bja Noka ya Koster go iša go Letamo la Koster (A22B) | 5_4 | | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo<br>Noka ya Koster go A2H036 ka A22B<br>NMAR = $2.54 \times 10^6 m^3$<br>Legoro la REC=C<br>The Tlhokomelo ya dikelelo tša fase and Tshepedišo ya | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le tshepedišo ya komelelo<br><br>Tlhokomelo ya Noka ya Koster go | ——— | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.006 | 0.002 |
| | | | | | | | | | Nov | 0.004 | 0.002 |
| | | | | | | | | | Dec | 0.006 | 0.001 |
| | | | | | | | | | Jan | 0.009 | 0.004 |

| IUA | Lena neo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | komelelo e swanetše go fihlelelwa go thekga diphedi tša ka meetseng le bašomiši ba moela wa fase. | A2H036 | Feb | 0.020 | 0.005 |
| | | | | | | | | | Mar | 0.032 | 0.006 |
| | | | | | | | | | Apr | 0.031 | 0.007 |
| | | | | | | | | | May | 0.018 | 0.006 |
| | | | | | | | | | Jun | 0.015 | 0.006 |
| | | | | | | | | | Jul | 0.012 | 0.005 |
| | | | | | | | | | Aug | 0.010 | 0.004 |
| | | | | | | | | | Sep | 0.008 | 0.003 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi tša ka meetseng le go netefatša gore legoro la diphedi leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.025 dimilikramo/lithara (mg/l) (50th phesenthaele) | | |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.05 dimilikramo/lithara (50th phesenthaele) | | |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa ka maemo a bjale go netefatša tšhireletšo ye botse ya maemo a diphedi goba mothopo. | Tshwaro ya Mohlagase | ≤ 30 milisimense/mmitha (mS/m) (95th phesenthaele) | | |
| | | | | | | | | Sodiamo | ≤ 20 dimilikramo/lithara (95th phesenthaele) | | |
| | | | | | | | | Salfeiti | ≤ 20 dimilikramo/lithara (95th phesenthaele) | | |
| | | | | | | | | Tloraete | ≤ 20 dimilikramo/lithara (95th phesenthaele) | | |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E. coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) | | |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.0 (5th phesenthaele) and 8.5 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe .Ditekanyetšo di swanetše go tšweletšwa. |
| | | | | | | | Maemo a Oksitšene yeo e moyafetšego a swanetše go kaonafatšwa go thekga diphedi tša ka gare ga meetse le tikologo. | Oksitšeni yeo e moyafetšego | 6-7 dimilikramo/lithara (mg/l) |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go ba kotsi go diphedi tša ka gare ga meetse le maphelong a batho. | Ditšweletšwa tša kalafo tšeo di hlolago ke dihomouni | 17ß-oestradiol: ≤ 0.001 mglℓ |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Dikelelo di swanetše go lekanela go thekga dikemedi tša diphedi. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = C<br>FRAI ≥ 62%<br>Bontša diBMOT tše 20 ka metsotso ye 20 ya tshwantšhetšo |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la maemo a diphedi goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 70<br>ASPT ≥ 4.2 |
| | | Noka ya Selons, Koedoespruit, Dwarsspruit, Noka ya Koster ya fase (A22C, A22D) | 5_6 | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente e swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi tša ka meetseng le go netefatša gore legoro la diphedi leo le laetšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Kelelo ya ka gare ya motswako wa letswai e swanetše go tlhokomelwa go boloka maemo a bjale le diphedi tša ka meetseng ka gare ga legoro leo le laetšwego gore le fihlelelwe. | Tshwaro ya Mohlagase | ≤ 30 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 20 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 20 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E. coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.0 (5th phesenthaele) and 8.5 (95th phesenthaele) | | |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe Ditekanyetšo di swanetše go tšweletšwa. | | |
| | | Noka ya Elands kelelo ya ka ntle Letamo la Lindleyspoort go iša go keleo ya ka gare ya Letamo la Vaalkop, Brakkloofspruit, Roosspruit, Sandspruit Mankwe. Leragane, Molapongwamongana (A22E, A22F) | 5_7 | | Bontšhi | | | Tloraete | ≤ 20 dimilikramo/lithara (95th phesenthaele) | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
| | | | | | | | | | | 0.038 | 0.011 |
| | | | | | | | | | Nov | 0.048 | 0.014 |
| | | | | | | | | | Dec | 0.057 | 0.016 |
| | | | | | | | | | Jan | 0.081 | 0.023 |
| | | | | | | | | | Feb | 0.107 | 0.012 |
| | | | | | | | | | Mar | 0.105 | 0.027 |
| | | | | | | | | | Apr | 0.082 | 0.023 |
| | | | | | | | | | May | 0.06 | 0.017 |
| | | | | | | | | | Jun | 0.054 | 0.016 |
| | | | | | | | | | Jul | 0.047 | 0.014 |
| | | | | | | | | | Aug | 0.042 | 0.012 |
| | | | | | | | | | Sep | 0.038 | 0.011 |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dinutriente | Maemo a dinutriente tša godimo a swanetše go fokotšwa go fihlelela dinyakwa tša diphedi tša ka meetseng. Metswako e swanetše e fokotšwe go fihlelela legoro C leo le laetšwego. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 2.0 dimilikramo/lithara (50th phesenthaele) |
| | | | | | | Matswai | Maemo a motswako wa letswai a godimo kudu. Kelelo ya ka gare motswako wa letswai e swanetše go kaonafatšwa go thekga maemo a diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. Boleng bja dinyakwa tša meetse bo swanetše go kaonafatšwa go legoro la diphedi le tikologo la C. | Tshwaro ya Mohlagase | ≤ 85 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 100 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 120 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E. coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse.. | Phapaphapano ya pH | 6.0 (5th phesenthaele) and 9.0 (95th phesenthaele) |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe Ditekanyetšo di swanetše go tšweletšwa. |
| | | | | | | Mepholo | Metswako ya mepholo ga ya swanela go bea diphedi tša ka gare ga meetse le batho kotsing. | AluminiamoAl) | ≤ 0.1 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Ayone (Fe) | ≤ 0.3 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Lliti (Pb) ye bothata | ≤ 0.0095 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | | | | Zinc (Zn) | ≤ 0.002 dimilikramo/lithara (mg/l) (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba bokaone. Go bohlokwa go tlhokomela dibjalo tša mathoko le kelelo ya ka gare ya lefelo leo dimela di golago go lona (Mananeo a bofase bja kelelo) ya dihlapi le phapaphapano ya diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo. | Dikagare tša Maemo a Tikologo, Tshekatsheko ya Mokgwa wa Lebelo la Tikologo le Mmotlolo | Kelelo ya ka gare Tikologo Maemo EC = C ≥ 62% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi le tikologo. Taolo ya dimela tšeo di sa tlwaelegago e a hlokega. Tšwetšopeleo ya lefeolo la monola e swanetše go lekanyetšwa. | Dikagare tša Maemo a Tikologo, Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = C ≥ 70% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro D la diphedi le tikologo bjalo ka mo go swanelago goba bokaone. Tshekatsheko ya setšhaba sa dihlapi e swanetše go swarwa ka ngwaga go tlhokomela kgahlanong le legoro leo laetšwego la diphedi le tikologo. | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi (FRAI). | Legoro la tikologo ya dihlapi = D<br>FRAI ≥ 42%<br>Kgoboketša tekanyo ya diphedi tše nne ka metsotso ye 20 ya tshwantšhetšo |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo e swanetše go tlhokomelwa ka legoro C la maemo a diphedi goba go kaonafatšwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 110<br>ASPT ≥ 4.5 |
| | | | | | | Ditaeathomo | Kopanyo ya Taeathomo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa | Dikagare tša Tšhilafatšo tše di itšego | Taeathomo EC ≥ 62% |

| IUA | Lenaneo | Noka | Mothopo wa Yuniti | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphedi tša lefelong leo nkego le na le meetse | Kgonego ya kokoetšo ya letamo le e šoma bjalo ka tikologo ya nonyana ya ka meetseng le setšhaba sa diamuši se swanetše go tlhokomelwa ka taolo ya tikologo. | Dinonyana tša ka meetseng/ Sešupi sa diamuši | Tshekatsheko ya mothalotheo e swanetše go swarwa go tšweletša setšhaba sa nonyana ya ka meetseng le kemedi ya diamuši mo phihlelelong ya noka. Go na le hlokego ya go bea tatelano ya RQO ya motswako wa diphoofolo/dinonyana go ya ka tshedimošo yeo elego gona. |

**Tafolana 7: Boleng bja Dipono tša Mothopo wa DINOKA LE MATAMO ka bohlokwa bja DiYuniti tša Mothopo tšeo di kopantšhitšwego tša Tshekatsheko ya 6a: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tlhokomelo ya dikelelo tša fase ($m^3/s$) | Tshepedišo ya komelelo ($m^3/s$) |
| 6a: KLEIN MARICO/KROMELLEMBOOG | II | Upper Klein Marico go elelela go, Klein Maricopoort Dam, Rhenosterspruit, Malmaniesloop, Kareespruit (A31D) | 6_1 | B/C | Bontšhi | Dikelelo tša fase | Tlhokomelo ya fase ya EWR le tshepedišo ya komelelo Noka ya Klein Marico River ka godimo ga kelelo ya Letamo la Klein Maricopoort go A31D<br>NMAR = $16.25 \times 10^6 m^3$<br>Legoro la REC=C/D<br><br>The Tlhokomelo ya dikelelo tša fase and Tshepedišo ya komelelo e swanetše go fihlelelwa go thekga diphedi tša ka meetseng le bašomiši ba moela wa fase. | Dikelelo tšeo di sa swanelago<br><br>Tlhokomelo ya dikelelo le tshepedišo ya komelelo<br><br>Tlhokomelo ya Noka ya Klein Marico ka tshekatsheko ya thutapedi | Oct | 0.038 | 0.035 |
| | | | | | | | | | | Nov | 0.039 | 0.036 |
| | | | | | | | | | | Dec | 0.039 | 0.036 |
| | | | | | | | | | | Jan | 0.041 | 0.038 |
| | | | | | | | | | | Feb | 0.048 | 0.045 |
| | | | | | | | | | | Mar | 0.044 | 0.040 |
| | | | | | | | | | | Apr | 0.045 | 0.041 |
| | | | | | | | | | | May | 0.042 | 0.039 |
| | | | | | | | | | | Jun | 0.043 | 0.039 |
| | | | | | | | | | | Jul | 0.041 | 0.038 |
| | | | | | | | | | | Aug | 0.040 | 0.037 |
| | | | | | | | | | | Sep | 0.041 | 0.037 |
| | | | | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjale ka ge go laeditšwe e swanetše go fihlelelwa go tšwetšapele diphedi tša ka meetseng le go netefatša gore legoro leo le laetšwego le a fihlelelwa | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50th phesenthaele) | | |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.5 dimilikramo/lithara (50th phesenthaele) | | |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Maemo a kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše go fihlelewa go tšwetšapele bophelo bja diphedi le tikologo gammogo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Tshwaro ya Mohlagase | ≤ 55 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | | | Salfeiti | ≤ 80 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Tloraete | ≤ 40 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | | | Sodiamo | ≤ 70 dimilikramo/lithara (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E. coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.0 (5th phesenthaele) and 9.0 (95th phesenthaele) |
| | | | | | | | Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe Ditekanyetšo di swanetše go tšweletšwa. |
| | | | | | | Mepholo | Motswako wa mepholo ga ya swanela go bea maphelo a batho le diphedi tša ka gare ga meetse kotsing. | Fluoraete | ≤ 2.5 dimilikramo/lithara (95th phesenthaele) |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro C/D la diphedi le tikologo. Tlhokomelo ya dibjalo tša mathoko le lefelo leo dimela di golago go lona ya moela wa ka gare (lebelo la bofase bja mananeo) a dihlapi le phapaphapano ya diphoofolo tša ka meetesng tšeo di hlokago lerapo la mokokotlo. | Dikagare tša Maemo a Tikologo, Tshekatsheko ya Mokgwa wa Lebelo la Tikologo le Mmotlolo (RHAMM) | Kelelo ya ka gare Tikologo Maemo EC = C/D ≥ 58% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go kaonafatšwa go tloga go legoro D la diphedi le tikologo go iša go legoro C/D. Taolo ya dimela tšeo di sa tlwaelegago e swanetše go tšweletšwa. Taolo ya lefelo la monoleng e swanetše go tšweletšwa. Tšweletšo ya lefelo la monoleng e swanetše go lekanyetšwa le go laolwa. | Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = C/D ≥ 58% |
| | | Letamo la Klein Maricopoort (A31D) | 6_2 | | Bontšhi | Maemo a letamo | Letamo le swanetše go laolwa go tšhireletša mešomo ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya letamo go tšwetšapele maemo a makaone a matamo go netefatša gore phapaphapano ya diphedi e tlhokometšwe.<br>Ditšhila tša letamo di hlokega go kopana moeleng wa fase wa dinyakwa tša tshepedišo ya diphedi le tikologo. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjalo ka ge e hwetšagala.<br><br>Maemo a gare a go tšwetšapele diphedi le tikologo tša ka gare ga meetse(15-18%) |
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba meetse. | Othofosfeitis | ≤ 0.025 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Palomoka ya motswako wa fosforase e swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le tikologo gammogo le dinyakwa tša boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa ka lenaneo la letsha. | Palomoka ya fosforase | ≤ 0.050 mg/ℓ<br>50th phesenthaele |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Motswako wa Nitreiti le Naetreiti o swanetše go kaonafatšwa go tšwetšapele bophelo bja diphedi le dinyakwa tša boleng bja bašomiši ba meetse. letamo le swanetše go tlhokomelwa bjalo ka lenaneo la mesotrofiki | Naetreiti le Nitreiti | ≤ 0.70 mg/L N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 65 mS/m<br>95th phesenthaele |
| | | | | | | | | Tloraete | ≤ 40 mg/ℓ<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* | ≤ 10 Dipalo tše 130/100µℓ<br>95th phesenthaele |
| | | | | | | Diphetogophetogo tša Lenaneo | Meetse a swanetše go dumelelwa go šomišetšwa boitapološo | Ph | 6.5 – 9.0<br>95th phesenthaele |
| | | | | | | | Kgonthišišo yeo e okeditšwego ka dipalopalo | Kgobokano ya seela | ≥0.4 m<br>5th phesenthaele |
| | | Klein Marico moela wa fase wa Letamo la Klein Maricopoort go iša go Letamo la Kromellenboog, Wilgeboomspruit (A31E) | 6_3 | | Boleng | Dinutriente | Kelelo ya ka gare ya motswako wa dinutriente bjale ka ge go laeditšwe e swanetše go fihlelelwa go tšwetšapele diphedi tša ka meetseng le go netefatša gore legoro leo le laetšwego le a fihlelelwa | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.050 dimilikramo/lithara (mg/l) (50th phesenthaele) |
| | | | | | | | | Nitreiti (NO3-) le Naereiti (NO2-) bjalo ka Naetrotšene | ≤ 0.7 dimilikramo/lithara (50th phesenthaele) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Maemo a kelelo ya ka gare ya motswako wa letswai bjalo ka ge go laeditšwe e swanetše go fihlelewa go tšwetšapele bophelo bja diphedi le tikologo gammogo le go netefatša gore legoro leo le laetšwego le a fihlelelwa. | Tshwaro ya Mohlagase | ≤ 65 milisimense/mmitha (mS/m) (95th phesenthaele) |
| | | | | | | Phathotšene | Bogona bja phathotšene bo swanetše go fokotša kotsi maphelong a batho. | *Eskheria kholi* (*E. coli*) | Dipalo tše 130/100 tša dimililithara (ml) (95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa go ditekanyetšo tšeo di bontšhitšwego go thekga diphedi tša ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th phesenthaele) and 9.0 (95th phesenthaele) |
| | | | | | | | Mašaledi a ditšhila a swanetše go laolwa ka taolo ya tšhomišo ya naga. Tshekatsheko ya mothalotheo yeo e tšweletšago maemo a bjale a kelelo ya ka gare ya kgobokano ya seela e a hlokega. | Kgobokano ya seela | Phapaphapano ya 10% ya bokamorago bja motswako e dumeletšwe Ditekanyetšo di swanetše go tšweletšwa. |
| | | | | | Tikologo | Kelelo ya ka gare | Phapaphapano ya tikologo e swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba le le kaone go feta leo. Tlhokomela dibjalo tša mathoko le kelelo ya ka gare ya lefelo leo dimela di golago go lona (lebelo la bofase bja mananeo) a dihlapi le phapaphapano yadiphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo. | Dikagare tša Maemo a Tikologo | Kelelo ya ka gare Tikologo Maemo EC =C ≥ 62% |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tikologo ya monola | Dibjalo tša monoleng di swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba le le kaone. | Dikagare tša Tshekatsheko ya Dipoelo tša Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Diphedi | Dihlapi | Setšhaba sa dihlapi se swanetše go tlhokomelwa ka legoro C la diphedi le tikologo goba go kaonafatšwa. . | Dikagare tša Tshekatsheko ya Dipoelo tša Dihlapi ( FRAI) | Legoro la tikologo ya dihlapi = C<br>FRAI ≥ 62%<br>Kgoboketša diphedi tše hlano ka metsotso ye 20 ya tshwantšhetšo |
| | | | | | | Diphedi tša ka meetseng tšeo di hlokago lerapo la mokokotlo | Kopanyo ya diphoofolo tša ka meetseng tša go hloka mokokotlo di swanetše go beiwa go legoro la D la tikologo goba go le kaonafaditšwe | Dikagare tša Tshekatsheko ya Dipoelo tša Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo, le Karolo ya bohlano ya Lenaneo la go Nweša la Afrika-Borwa (SASS5). | Diphoofolo tša ka meetseng tšeo di hlokago lerapo la mokokotlo tša<br>EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.0 |
| | | Letamo la Kromellenboog (A31E) | 6_4 | | Bontšhi | Maemo a letamo | Letamo le swanetše go laolwa go tšhireletša mešomo ya diphedi le tikologo gotee le bašomiši ba moela wa fase. Tšweletša melao ya tshepedišo ya letamo go tšwetšapele maemo a makaone a matamo go netefatša gore phapaphapano ya diphedi e tlhokometšwe.<br>Ditšhila tša letamo di tlhokega go kopana moeleng wa fase wa dinyakwa tša tshepedišo ya diphedi le tikologo. | Maemo ao a lekanego a tshepedišo ya letamo a a hlokega | Melao ya tshepedišo bjalo ka ge e hwetšagala.<br><br>Maemo a gare a go tšwetšapele diphedi le tikologo tša ka gare ga meetse (15-18%) |

| IUA | Lenaneo | Noka | Yuniti ya Mothopo | Legoro la Tikologo | Karolo | Karolwana | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Dinutriente | Motswako wa othofosfeiti o swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi le tikologo le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la letsha. | Othofosfeiti | ≤ 0.015 mg/ℓ<br>50th phesenthaele |
| | | | | | | | Motswako wa palomoka ya fosforase o swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi le tikologo le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la letsha. | Palomoka ya fosforase | ≤ 0.025 mg/ℓ<br>50 th phesenthaele |
| | | | | | | | Motswako wa Nitreiti & Naetreiti o swanetše go tlhokomelwa go tšwetšapele bophelo bja diphedi le tikologo le boleng bja bašomiši ba meetse. Letamo le swanetše go tlhokomelwa bjalo ka lenaneo la letsha. | Naetreiti le Nitreiti | ≤ 0.70 mg/ℓ N 95th phesenthaele |
| | | | | | | Matswai | Motswako wa letswai ka gare ga letamo o swanetše go kaonafatšwa go thekga bophelo bja diphedi le tikologo gammogo le boleng bja dinyakwa tša bašomiši ba moela wa fase | Tshwaro ya Mohlagase | ≤ 55 mS/m<br>95th phesenthaele |
| | | | | | | Phathotšene | Pathotšene e swanetše go tlhokomelwa maemong ao a bolokegetšego tšhomišo ya batho | *Eskheria kholi* (*E.coli*) | Dipalo tše 130/100 tša dimililithara (ml)<br>(95th phesenthaele) |
| | | | | | | Diphetogophetogo tša Lenaneo | Phapaphapano ya pH e swanetše go tlhokomelwa ditekanyetšong tšeo di bontšitšwego go thekga diphedi tša ka gare ga meetse ka gare ga letamo. | pH | 6.5 – 9.0<br>95th phesenthaele |

**Tafolana 8: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya 6b: LETAMO LA GROOT MARICO / MARICO BOSVELD**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6b:LETAMO LA GROOT MARICO/MARICO BOSVELD | II | Groot Marico main stem upstream to Polkadraaispruit confluence (A31B) | 6_5 | B | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Groot Marico go la MAR_EWR2 in A31B<br>NMAR = 42.08x10$^6$m$^3$<br>Legoro la REC=B<br><br>Dikelelo tša tlase tša tlhokomelo le dikelelo tša komelelo di swanetše gore di amogelwe go thekga tswalano ya diphedi le tikologo ya tšona y meetse le bašomiši ba kelelo ya noka ya tlase. | Dikelelo tša Motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>Tlhokomelo ya Noka ya Groot Marico mafelong a mafša a kgauswi le EWR2 ao a rerilwego | | Dikelelo tša tlase tša tlhokomelo (m$^3$/s) | Dikelelo tša komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 0.510 | 0.268 |
| | | | | | | | | | Nov | 0.540 | 0.283 |
| | | | | | | | | | Dec | 0.560 | 0.291 |
| | | | | | | | | | Jan | 0.620 | 0.319 |
| | | | | | | | | | Feb | 0.710 | 0.364 |
| | | | | | | | | | Mar | 0.637 | 0.327 |
| | | | | | | | | | Apr | 0.628 | 0.324 |
| | | | | | | | | | May | 0.584 | 0.302 |
| | | | | | | | | | Jun | 0.588 | 0.305 |
| | | | | | | | | | Jul | 0.557 | 0.290 |
| | | | | | | | | | Aug | 0.547 | 0.285 |
| | | | | | | | | | Sep | 0.546 | 0.285 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo tše itšego e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi l tikologo ya tšona ya meetse le go netefatša gore legoro leo le beeleditšwego le a fihlelelwa. | Othofosfeiti (Orthophosphate ($PO_4^-$) bjalo ka Fosforase | ≤ 0.020 dimillikramo/litara (mg/l) (50$^{th}$ percentile) | | |
| | | | | | | | | Naetreiti (Nitrate ($NO_3^-$) le Naetraete (Nitrite ($NO_2^-$) bjalo ka Naeterotšene | ≤ 0.5 dimillikramo/litara (50$^{th}$ persente) | | |
| | | | | | | Matswai | Maemo a Letswai la gare ga noka a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara Mohlagase | ≤ 30 milliSiemens/metara (mS/m) (95$^{th}$ persente) | | |
| | | | | | | | | Salfeiti (Sulphate) | ≤ 10 dimillikramo/litara (95$^{th}$ persente) | | |
| | | | | | | | | Tloraete (Chloride) | ≤ 10 dimillikramo/litara (95$^{th}$ persente) | | |
| | | | | | | | | Sodiamo (Sodium) | ≤ 10 dimillikramo/litara (95$^{th}$ persente) | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene go swanetše gore go be le kotsi ya tlase godimo ga bophelo bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Diphapaphapano tša Sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga dipeelano tša yona tšeo di beeleditšwego go thekga tswalano ya diphedi le tikologo ya tšona ya gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.8 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli mabapi le go bontšha go se bonagale gare ga noka e hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Tekanyetšo e swanetše gore e bontšhwe. |
| | | | | | | | Maemo a oksetšene ao a tlošitšwego a swanetše gore a kaonafatšwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo tološitšwego | ≥ 7 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go bea bophelo bja batho le diphedi tša ka gare ga meetse kotsing.. | Aluminiamo (Aluminium (Al) | ≤ 0.062 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Manganese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Iron (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) ya go tia | ≤ 0.0057 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha ya go tia(Copper (Cu) | ≤ 0.0048 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Nickel (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Khopalete (Cobalt (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zinki (Zinc (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga noka | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona goba seemo se se kaone. Tlhokomelo ya dimela le didirišwa tša ka gare ga meetse (magoro a bogolo bja belosithi) ya tswalano ya diphedi le tikologo ya tšona ya hlapi le dimakroinbetheporeiti. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kguswi le meetse di swanetše gore di hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha (Biota) | Hlapi | Sestšhaba sa dihlapi se swanetše gore se hlokomelwe legorng la B la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e direge ka ngwaga mabapi le hlokomelo ya kgahlanong le legoro la tswalano ya diphedi le tikologo ya tšona. Madulo le kelelo di swanetše gore di lekanetše mehuta yeo e ithekgilego ka kelelo. | Intekse ya Tlhahlobo y Karabo ya Hlapi (Fish Response Assessment Index (FRAI). | Legoro la Tswalano ya Diphedi l Tikologo ya Tswalano ya Dihlapi = B<br>FRAI ≥ 82%<br>Mohlala 20 *BMOT*, 30 *CPRE* le 15 *AURA go matsapa a mohlala wa diminete t*še 20. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dimakoinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya Dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la A/B la tswalano y diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo y Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.5<br>(Site EWR 2 = A3GMAR-KOEDO) |
| | | | | | | Diathome | Kgoboketšo ya di taeathomo e swanetše gore e hlokomelwe ka gare ga seemo sa hlago se se golo. | Intekse ya Tšhilafatšo ye e Itšego | Di taeathomo EC ≥ 88% |
| | | Polkadraaispruit (A31B) | 6_6 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dkelelo tša tlase le komelelo:<br>Polkadraaispruit go la MAR_EWR6 go A31B<br>NMAR = $9.866 \times 10^6 m^3$<br>Legoro la REC=B<br><br>Dikelelo tša tlase tša tlhokomelo le dikelelo tša komelelo di swanetše gore di amogelwe go thekga tswalano ya diphedi le tikologo ya tšona y meetse le bašomiši ba kelelo ya noka ya tlase. | Dikelelo tša Motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>Tlhokomelo ya ditšhila tša Polkadraaispruit ka nako ya dinyakišišo tša payolotši | |
| | | | | | | | | | Dikelelo tša tlase tša tlhokomelo ($m^3/s$) / Dikelelo tša komelelo ($m^3/s$)<br>Oct: 0.088 / 0.000<br>Nov: 0.099 / 0.003<br>Dec: 0.113 / 0.003<br>Jan: 0.138 / 0.024<br>Feb: 0.157 / 0.010<br>Mar: 0.130 / 0.007<br>Apr: 0.118 / 0.005<br>May: 0.104 / 0.003<br>Jun: 0.105 / 0.002<br>Jul: 0.098 / 0.000<br>Aug: 0.095 / 0.000<br>Sep: 0.095 / 0.000 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo tše itšego e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya meetse le go netefatša gore | Othofosfeiti (Orthophosphate ($PO_4^-$) bjalo ka fosforase ( Phosphorus ) | ≤ 0.020 dimillikramo/litara (mg/l) (50th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | legoro leo le beeleditšwego le a fihlelelwa. | Naetreiti (Nitrate ($NO_3^-$) le Naetraete (Nitrite ($NO_2^-$) bjalo ka Naetrotšene ( Nitrogen) | ≤ 0.5 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a Letswai la ka gare ga noka a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 30 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salfaete (Sulphate) | ≤ 10 dimillikrama/litara (95th persente) |
| | | | | | | | | Tloraete (Chloride) | ≤ 10 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo (Sodium) | ≤ 10 dimillikramo/litara (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene go swanetše gore go be le kotsi ya tlase godimo ga bophelo bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga dipeelano tša yona tšeo di beeleditšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.8 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli mabapi le go bontšha go se bonagale ka gare ga noka e hlokega. | Thupidithi | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swatše gore di bontšhwe. |
| | | | | | | | Maemo a oksetšene ao a tološitšwego a swanetše gore a kaonafatšwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 7 milligrams/litre (mg/l) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la A. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Instream Habitat Integrity EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B la tswalano ya diphedi. Tšhireletšo ya madulo a kgauswi le meetse e a hlokega. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Sestšhaba sa dihlapi se swanetše gore se hlokomelwe legorng la B/C la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e direge ka ngwaga mabapi le tlhokomelo ya kgahlanong le legoro la tswalano ya diphedi le tikologo ya tšona. Madulo le kelelo di swanetše gore di lekanetše mehuta yeo e ithekgilego ka kelelo. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi la dihlapi = B/C<br>FRAI ≥ 78% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Di makroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya Dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 155<br>ASPT ≥ 6.0 | | |
| | | Groot Marico go tloga Polkadraaisprui t confluence go iša leporogong la N4 (A31B) | 6_7 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Groot Marico mmileng wa leporogo la tsela ya N4 A31B<br>NMAR = $56.92 \times 10^6 m^3$<br>Legoro la REC=B<br>Dikelelo tša tlase tša tlhokomelo le dikelelo tša komelelo di swanetše gore di amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya meetse le bašomiši ba kelelo ya noka ya tlase. | Dikelelo tša<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya ditšhila tša Noka ya Groot Marico ka nako ya dinyakišišo tša payolotši | | Dikelelo tša tlase tša tlhokomelo ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.649 | 0.345 |
| | | | | | | | | | Nov | 0.704 | 0.372 |
| | | | | | | | | | Dec | 0.762 | 0.398 |
| | | | | | | | | | Jan | 0.890 | 0.458 |
| | | | | | | | | | Feb | 1.030 | 0.513 |
| | | | | | | | | | Mar | 0.908 | 0.466 |
| | | | | | | | | | Apr | 0.864 | 0.447 |
| | | | | | | | | | May | 0.783 | 0.408 |
| | | | | | | | | | Jun | 0.779 | 0.407 |
| | | | | | | | | | Jul | 0.730 | 0.383 |
| | | | | | | | | | Aug | 0.709 | 0.373 |
| | | | | | | | | | Sep | 0.701 | 0.370 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo ka gare ga meetse e swanetše gore e kaonafatšwe go hlokomela | Othofosfeiti bjalo ka fosforase($PO_4^-$) | ≤ 0.025 dimillikramo/litara (mg/l) (50th persente) | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse, ka gare ga legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona go thekga bašomišo ba kelelo ya tlase. Tahlo ya meetse a ditšhila e swanetše gore e laolwe go šireletša potego ya tswalano ya diphedi le tikologo ya tšona. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naeterotšene | ≤ 0.7 milligrams/litre (50th percentile) |
| | | | | | | Matswai | Maemo a Letswai la ka gare ga meetse le swanetše gore le kaonafatšwe go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse mabapi le legoro la tswalano ya diphedi le tikologo ya tšona le go thekga bašomiši ba kelelo ya tlase. Tahlo ya meetse a ditšhila e tšhomišo ya mabu e swanetše gore e laolwe go šireletša potego ya tswalano ya diphedi le tikologo ya tšona. | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salaete | ≤ 50 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete | ≤ 40 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 50 dimillikramo/litre (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go bea bophelo bja batho kotsing. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga dipeetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalotheo mabapi le go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Thubidithi | Phapaphapano ya 10% go tloga phatlalatšong ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di botšhwe. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a kaonafatšwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 7 dimilikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Phatlalatšo ya ditšhilafatši ga se ya swanela go bea bophelo bja batho le diphedi tša gare ga meetse kotsing. | Aluminiamo (Al) | ≤ 0.062 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ione (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha (Cu) ya go tia | ≤ 0.0048 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C la tswalano ya diphedi letikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le motele (Index of Habitat Integrity, Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a kgauswi le meetse EC = C ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la C/D la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga mabapi le kgahlanong le legoro la tswalano ya diphedi le tikologo ya tšona yeo e beleditšwego. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le ikologo ya tšona ya Hlapi = C/D<br>FRAI ≥ 58%<br>Go bontša mohuta wo o itšego wa *BMOT, AURA, CPRE, AMOS* |
| | | | | | | Dimakroinbethepoeiti tša ka gare ga meetse | Kgoboketšo ya di makroinbetheporeiti e swanetše gore e hlokomelwe ka seemo la bjale sa legoro la B la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = B ≥ 82%<br>SASS ≥ 210<br>ASPT ≥ 6.2<br><br>(Lefelo A3GMAR-WONDE) |
| | | | | | | Diathomo | Kgoboketšo ya diathomo e swanetše gore e hlokomelwe ka gare ga seemo se segolo sa hlago. | Intekse ya Tšhilafatšo ye e itšego | Diathomo EC = A/B ≥ 88%<br><br>(Lefelo A3GMAR-WONDE) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Marico Bosveld (A31B) | 6_8 | | Bokae | Boemo bja letamo | Letamo le swanetše gore le laolwe go šireletša mošomo wa tswalano ya diphedi le tikologo ya tšona gammogo le bašomiši ba kelelo ya tlase. Go tšweletša le go tsošološa melao ya go šoma ya letamo go hlokomela maemo a letamo mabapi le go netefatša gore phapaphapano ya tswalano ya diphedi le tikologo ya tšona e a hlokomelwa. Go a hlokega gore matamo a ntšhe go fihlelela dikelelo tša kelelo ya tlase tša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona. | Boemo bjo bo nnyane bjoo bo hlokegago mabapi le go šoma ga letamo | Melao ya tshepedišo ka ge e šomišwa ka gona.<br><br>Boemo bjo bo nnyane bja go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse (15-18%). |
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse.Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Diothofosfeiti | ≤ 0.015 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya palomoka ya fosforase e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Palomoka ya fosforase | ≤ 0.025 mg/ℓ<br>50th persente |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano y Diphedi le Tikologo ya Tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phatlalatšo ya naetreiti le naetraete e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Naetraete le Naetreiti | ≤ 0.70 mg/ℓ N 95th persente |
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 35 mS/m<br>95th persente |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) ($95^{th}$ persente) |
| | | | | | | Phapapha pano ya sesteme | Meetse a swanetše gore a amogelwe mabapi le tšhomišo ya boitapološo. | pH | 6.5 – 9.0<br>95th persente |

**Tafola 9: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 7: KAALOOG-SE-LOOP**

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi leikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontšha | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7: KAALOOG SE-LOOP | I | Marico Eye,<br><br>Kaaloog-se-Loop, | 7_1 | B | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Kaaloog-se-Loop go la MAR_EWR1 in A31A | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo. | | Dikelelo tša tlase tša tlhokomelo ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi leikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bokkraal se Loop<br>Rietspruit<br>Ribbokfontein-se-Loop<br>Rietfontein<br>Bronkhorstfontein<br>Zyferfontein (Kuilfontein) Syferfontein<br>(A31A) | | | | | NMAR = 10.539x10$^{6}$m$^{3}$<br>Legoro la REC=B<br>Dikelelo tša tlase tša tlhokomelo le dikelelo tša komelelo di swanetše gore di amogelwe go thekga tswalano ya diphedi le tikologo ya tšona y meetse le bašomiši ba kelelo ya noka ya tlase. | Tlhokomelo ya go lahla mafelong a mafša a kgauswi le EWR2 ka nako ya ditlhahlobo tša payolotši le kelelo ya tlase lefelong le le mpša leo le rerilwego. | Oct | 0.244 | 0.159 |
| | | | | | | | | | Nov | 0.252 | 0.164 |
| | | | | | | | | | Dec | 0.245 | 0.160 |
| | | | | | | | | | Jan | 0.250 | 0.162 |
| | | | | | | | | | Feb | 0.280 | 0.182 |
| | | | | | | | | | Mar | 0.254 | 0.165 |
| | | | | | | | | | Apr | 0.262 | 0.170 |
| | | | | | | | | | May | 0.253 | 0.164 |
| | | | | | | | | | Jun | 0.261 | 0.170 |
| | | | | | | | | | Jul | 0.252 | 0.164 |
| | | | | | | | | | Aug | 0.252 | 0.163 |
| | | | | | | | | | Sep | 0.257 | 0.167 |
| | | | | | Boleng | Matswai | Seemo sa meetse a Pristine se swanetše gore se hlokomelwe. Ga go na phuhlamo khwalithing ya meetse yeo e swanetšego go direga. Letswai la ka gare ga meetse le swanetše gore le hlokomelwe go netefatša gore tswalano ya diphedi le tikologo ya tšona le potego ya mothopo ga di fetoge. | Go swara mohlagase | ≤ 50 milliSiemens/mitara (mS/m)<br>(95$^{th}$ persente) | | |
| | | | | | Habitate | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona goba seemo se se kaone. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa | Potego ya madulo a gare ga meetse EC = B ≥ 25% | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi leikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona goba seemo se se kaone. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro la tswalano ya diphedi le tikologo ya tšona leo le beeletšwego. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI). | Legoro la Tswalano ya diphedi le tikologo ya tšona la Hlapi = B FRAI ≥ 82% |
| | | | | | | Di inbetheporeiti tša gare ga meetse | Kgoboketšo ya di makroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la A/B la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo y Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = A/B ≥ 88%<br>SASS ≥ 220<br>ASPT ≥ 6.4<br><br>(Lefelo A3KAAL-RIETS) |
| | | | | | | Dithaeathomo | Kgoboketšo ya dithaeathomo e swanetše gore e hlokomelwe ka gare ga seemo se se golo sa hlago ka hlago. | Intekse ya Tšhilafatšo ye itšego | Di taeathomo EC ≥ 88% |

**Tafolana 10: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 8: MALMANIESLOOP**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya Diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontšha | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| **8: MALMANIESLOOP** | **III** | **Malmanies-loop (A31C)** | **8_1** | **-** | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go hlokomela khwalithi ya meetse yeo e lego gona seemong sa tswalano ya diphedi le tikologo ya tšona. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.025 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Letswai la ka gare ga meetse le swanetše gore le hlokomelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go hlokomela khwalithi ya meetse yeo e lego gona seemong sa tswalano ya diphedi le tikologo ya tšona. | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare gare ga meetse le go šomiša dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya Diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhahlobo ya mothalotheo go bontša semo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphpano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | Madulo | Dimela tša Monola | Lebela Menola ya di RQO, madulo ke karolo ya sesteme ya monola. | | |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la C la tswalano ya diphedi goba seemong se se kaone. Tlahlobo ya setšhaba a dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela legoro la tswalano ya diphedi le tikologo ya tšona leo le beeletšwego. Go laola le go ntša mehuta ya dihlapi yeo e sa nyakegego MSAL. Go thibela phatlalatšo ya mehuta ya dihlapi. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya Diphedi le Tikologo ya Tšona la Hlapi = C<br>FRAI ≥ 62%<br>Sample 10 *BMOT* in 20min sample effort |

**Tafolana 11: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 9: MOLOPO**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 9: MOLOPO | II | Bodibe eye<br>D41A (Polfonteinspruit le Lotlhakane | 9_1 | C | Lebelela di RQO tša metse a ka tlase ga mabu | | | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontšha | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | tributary catchment area) | | | | | | | |
| | | Molopo Eye, Grootfontein Eye, Molopo headwaters to inflow Setumo/Modimola Dam<br><br>D41A | 9_2 | | Bokae | Dikelelo | Meetse a ka tlase ga mabu ao tswalanago ( Molopo le Grootfontein Eye) | | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo ka gare ga meetse e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.025 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.7 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a letswai ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go thekga bašomiši ba kelelo ya tlase. Kaonafatšo ya phatlalatšo ya letswai e a hlokega. | Go swara mohlagase | ≤ 75 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetšo gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona le go šomiša dinyakwa tša bašomiši ba meetse. | Phapphapano ya pH | 6.5 (5th persente) le 8.8 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalotheo go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% go tloga phatlalatšong ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gor di bontšhwe. |
| | | | | | Madulo | Ka gare ga meetse | Lebelela di RQO tša monola, mdulo ke karolo ya sesteme ya monola. | | |
| | | | | | | Dimela tša monola | | | |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la E la tswalano ya diphedi le tikologo ya tšona go iša legorong la D. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = D<br>FRAI ≥ 42%<br>Mehuta ya mehlala ya 3, |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (FRAI). | go akaretša *BBRI nyakišišong ya metsotso ye 20*. Mohlala 15 wa *PPHI* ka metsotso ye 20. |
| | | | | | | Di inbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona (seemo se seo se tsošološitšwego) goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 4.0 |
| | | Noka ya Molopo kelelong ya mathomo go tloga Letamong la Modimola Dam go ya go Letamo la Disaneng D41A (main stem) | 9_3 | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la E la tswalano ya diphedi le tikologo ya tšona go iša legorong la D. Go kaonafatša meetse ao a elelago ka gare ga sesteme go iša legorong la D la tswalano ya diphedi le tikologo ya tšona. Taolo ya kelelatšhila le sedirišwa sa okaniki. | Intekse ya potego ya madulo | Potego ya madulo a gae ga meetse EC = D ≥ 42% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la E la tswalano ya diphedi le tikologo ya tšona go iša legorong la D. Mehuta yeo sa nyakegego ya dimela swanetše gore e laolwe. Mafelo a kgauswi le meetse a swanetše gore a kaonafatšwe. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = D ≥ 42% |
| | | Letamo la Modimola (Setumo) | 9_4 | | Bokae | Maemo a letamo | Letamo le swanetše gore le laolwe go šireletša mošomo a tswalano ya diphedi le tikologo ya tšona ga | Boemo bjo bo nnyane bjoo bo hlokegago mabapi | Melao ya tshepedišo ka go šomišwa. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontšha | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | (D41A) | | | | | mmogo le bašomiši ba kelelo yatlase. Go tšweletša le go kaonafatša melao ya tshepedišo ya letamo mabapi le go hlokomela maemo a matamo go netefatša gore phapaphapano ya tswalano ya diphedi le tikologo ya tšona ya gare ga meetse e a hlokomelwa. | le go šoma ga letamo | Boemo bjo bo nnyane bja go hlokomela tswalano ya diphedi le tikologo ya tšona ya gare ga meetse (15-18%). |
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. Kaonafatšo yeo e hlokegago go tšwa seemong sa haephatrofiki. | Diothofosfeiti | ≤ 0.050 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya palomoka ya fosforase e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Palomoka ya fosforase | ≤ 0.055 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya Naetreiti le naetraete e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Naetraete le Naetreiti | ≤ 0.70 mg/ℓ N 95th persente |
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 85 mS/m<br>95th persente |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Kloraete | ≤ 100 mg/ℓ<br>95th persente |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml)<br>(95th persente) |
| | | | | | | Phapaphapano ya sesteme | Meetse a swanetše gore a amogelwe mabapi le tšhomišo ya tša boitapološo. | pH | 6.5 – 9.0<br>95th persente |
| | | | | | | | Tlhalošo yeo e oketšegilego ya ≥0.4 m | Turbidity | Persente ye nnyane ya 95th |
| | | | | | | | Phetogo ya ka gare | Themphereitša | Phetogo yeo e sa oketšegego go feta 2 °C godimo l tlase |
| | | | | | | | Maemo a oksetšene ka gare ga sesteme a swanetše gore a sepelelane le sesteme ya tswalano ya diphedi le tikologo ya tšona. | Oksetšene yeo e tološitšwego | ≥ 7.0 mg/L $O_2$<br>95th persente |
| | | | | | | Ditšhilafatši | Letamo le tswanetše gore le hlokomelwe ka gare ga seemo sa yutrofiki go fokotša tšwetšopele ya di saenopakteria. | Saenopakteria | Go ba gona ga saenopakteria ye ntši ka phatlalatšo ya Chl ya go feta 30µg/ℓ go swanetše gore go dule go le tlase ga 20% dinako ka moka. |
| | | Letamo la Disaneng (D41A) | 9_5 | | Bokae | Maemo a letamo | Letamo le swanetše gore le laolwe go šireletša mošomo wa tswalano ya diphedi le tikologo ya tšona gammogo le bašomiši ba kelelo ya tlase. Go tšweletša le go tsošološa melao ya tshepdišo ya letamo mabapi le go hlokomela maemo a letamo go netefatša gore phapaphapano ya tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse e a hlokomelwa. | Boemo bjo bo nnyane bjo bo hlokegago bja go šoma letamong | Melao ya tshepedišo ka go šomišwa.<br><br>Boemo bja tlase bja go hlokomela tswalano ya diphedi le tikologo ya tšona ya gare ga meetse (15-18%). |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro l Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Go bontša | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e hlokomelwe gore e kgone go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Diothofosfeiti | ≤ 0.010 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya palomoka ya fosforase e swanetše gore e hlokomelwe gore e kgone go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Palomoka ya fosforase | ≤ 0.025 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya naetreiti le naetraete e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tšwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Naetraete le Naetreiti | ≤ 0.70 mg/ℓ N 95th persente |
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 75 mS/m<br>95th persente |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara(ml)<br>(95th persenta) |
| | | | | | | Diphapaphapano tša sesteme | Meetse a swanetše gore a dumelelwe mabapi le tšhomišo ya tša boitapološo. | pH | 6.5 – 9.0<br>95th persente |

**Tafolana 12: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 11a: LETAMO LA GROOT MARICO / MOLATEDI**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Dikelelo tša tlase tša tlhokomelo ($m^3/s$) | Dikelelo tša komeleo ($m^3/s$) |
| 11a: LETAMO LA GROOT MARICO / MOLATEDI | III | Groot Marico go tloga kelelong ya letamong la Marico Bosveld go iša letamong la Molatedi , meedi ka moka (A31G, A31H, A31F, A31J, A32A, A32B, A32C) | 11a_1 | C/D | Boka | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Groot Marico go la MAR_EWR3 go A31F<br>NMAR = $65.0839 \times 10^6 m^3$<br>Legoro la REC=C/D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga senyakwa sa tswalano ya diphedi le tikologo ya tšona le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya Noka ya Groot Marico go A3H029 | Oct | 0.248 | 0.196 |
| | | | | | | | | | | Nov | 0.262 | 0.206 |
| | | | | | | | | | | Dec | 0.266 | 0.209 |
| | | | | | | | | | | Jan | 0.284 | 0.223 |
| | | | | | | | | | | Feb | 0.318 | 0.250 |
| | | | | | | | | | | Mar | 0.281 | 0.221 |
| | | | | | | | | | | Apr | 0.278 | 0.219 |
| | | | | | | | | | | May | 0.262 | 0.207 |
| | | | | | | | | | | Jun | 0.268 | 0.211 |
| | | | | | | | | | | Jul | 0.258 | 0.203 |
| | | | | | | | | | | Aug | 0.256 | 0.202 |
| | | | | | | | | | | Sep | 0.260 | 0.205 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo ya ka gare ga meetse e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro latswalano ya diphedi le tikologo ya tšona leo le beeleditšwego le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.090 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.7 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a | Go swara mohlagase | ≤ 55 milliSiemens/metara (mS/m) (95th persente) | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro la tswalano ya diphdi le tikologo ya tšona leo le beeleditšwego le a fihlelelwa. | Salaete | ≤ 50 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete | ≤ 40 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 50 dimillikramo/litara (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša bašomiši ba meetse. Tlhahlobo ya mothalotheo go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Phapaphapano ya pH | 6.5 (5th persente) le 8.8 (95th persente) |
| | | | | | | | | Turbidity | Phapaphapano ya 10% ya go tloga phatlalatšong ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | Madulo | Ka gare ga meetse | Phapaphaano ya madulo e swanetše gore e hlokomelwe legorong la C/D la tswalano ya diphedi le tikologo ya tšona. Kelelo yeo e tšwelelago tšhilafatšong ya okaniki le tšhilafatšong ya pakteria ya mothopo e swanetše gore e laolwe. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a ka gare ga meetse EC = C/D ≥ 58% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la C/D la tswalano ya diphedi le tikologo ya tšona. Dimela tšeo di sa nyakegego di swanetše gore di laolwe gomme le tšwetšopele ya lefelo la kgauswi le meetse e fokotšege. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C/D ≥ 58% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomele legorong la D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. Tlhahlobo ya setšhaba a dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro la tswalano ya diphedi le tikologo ya tšona . | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi l tikologo ya tšona la dihlapi = D<br>FRAI ≥ 42%<br>Go kgoboketša mehuta ye 10+ ka matsapa a mohlala a metsotso ye 20. |
| | | | | | | Dimakroinbetheporeiiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditaeathomo | Kgoboketšo ya di taeathomo e swanetše gore e hlokomelwe ka gare ga seemo se se golo sa hlago. | Intekse ya Tšhilafatšo ye e Itšego | Ditaeathomo EC = A/B ≥ 88% |
| | | | | | | Payotha ya ka gare ga meetse | Maleba a katološo ya noka ye go šoma bjalo ka madulo a nonyane ya ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse a swanetše gore a hlokomelwe ka bolaodi bja maleba bja madulo. Madulo a mafelo a kgauswi le meetse a swanetše gore a kaonafatšwe. | Dinonyane tša ka gare ga meetse/ mehuta ya diphofoolo tša go bontšha | Tlhahlobo ya mothalotheo e swanetše gore e dirwe go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphoofolo tša ka gare ga meetse kgauswi le noka. Go na le hlokego ya go bea RQO ya nomoro mabapi le bontši bja diphoofolo/dinonyane go ya ka motheo wa datha yeo e kgobokeditšwego/ e lego gona. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Molatedi (A32A, A32B, A32C) | 11a_2 | | Bokae | Boemo bja letamo | Letamo le swanetše gore le laolwe go šireletša mošomo wa tswalano ya diphedi le tikologo ya tšona gammogo le bašomiši ba kelelo ya tlase.Go tšweletša le go tsošološa melao ya tshepedišo ya letamo mabapi le go hlokomela maemo a letamo go netefatša gore phapapapano ya tswalano ya dipedi le tikologo ya tšona e a hlokomelwa. Dikelelo tša letamo di letetšwe gore di fihlelele dikelelo tša tlase mabapi le dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona. | Maemo a mannyane a tshepedišo ao a hlokegago letamong | Melao ya tshepedišomoo go kgonegago.<br>Maemo a ma nnyane a go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. (15-18%). |
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e hlokomelwe gore e kgone go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya metse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Diothofosfeiti | ≤ 0.015 mg/ℓ<br>50th persente |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phatlalatšo ya palomoka ya fosforase e swanetše gore e hlokomelwe gore e kgone go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwaliti ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Palomoka ya fosforase | ≤ 0.055 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya naetreiti le naetraete e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya mesotrofiki. | Naetraete le Naetreiti | ≤ 0.70 mg/ℓ N 95th persente |
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 55 mS/m<br>95th persente |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Phapaphapano ya sesteme | Meetse a swanetše gore a amogelwe mabapi le tšhomišo ya tša boitapološo. | pH | 6.5 – 9.0<br>95th persente |
| | | | | | | | Maemo a oksetšene ka gare ga sesteme a swanetše gore a hlokomele sesteme ya tswalano ya diphedi le tikologo ya tšona. | Oksetšene yeo e tološitšwego | ≥ 7.0 mg/ℓ O2<br>95th persente |

**Tafolana 13: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 11b: GROOT MARICO / MEEDI YA SEHLA**

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11b: GROOT MARICO / MEEDI YA SEHLA | III | Groot Marico, Rasweu, Maselaje (A32D) | 11b_1 | C | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Groot Marico go la MAR_EWR4 in A32D<br>NMAR = 153.25x$10^6$$m^3$<br>Legoro la REC=C<br><br>Tlhokomelo ya diklelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe gore dinyakwa tša dikelelo tša tikologo di fihlelelwe go thekga peelano ya bophelo bjo bo botse | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>Tlhokomelo ya Noka ya Groor Marico go la A3H007 | | Dikelelo tša tlhokomelo ya godimo ($m^3$/s) | Dikelelo tša komelelo ($m^3$/s) |
| | | | | | | | | | Oct | 0.214 | 0.173 |
| | | | | | | | | | Nov | 0.230 | 0.185 |
| | | | | | | | | | Dec | 0.239 | 0.191 |
| | | | | | | | | | Jan | 0.264 | 0.209 |
| | | | | | | | | | Feb | 0.306 | 0.242 |
| | | | | | | | | | Mar | 0.267 | 0.211 |
| | | | | | | | | | Apr | 0.258 | 0.206 |
| | | | | | | | | | May | 0.234 | 0.187 |
| | | | | | | | | | Jun | 0.236 | 0.189 |
| | | | | | | | | | Jul | 0.227 | 0.182 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | mabapi le tswalano ya diphedi le tikologo ya tšona le bašomiši. | | Aug | 0.224 | 0.180 |
| | | | | | | | | | Sep | 0.226 | 0.182 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.090 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.7 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona. Mokgwa wa kelelo wa tatelano wa hlago o swanetše gore o hlokomelwe. Go kaonafatša madulo a ka gare ga meetse le belosithi/bontši mabapi le phapaphapano ya payotha ya ka gare ga meetse. Kgokagano ya kelelo ya tlase ya (11b_2) e swanetše gore e fihlelelwe. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a ka gare ga meetse EC = C ≥ 62% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona. Dithulano tša go akaretša go fula/go gataka mafelo ao a lego kgauswi le meetse di swanetše gore di laolwe. Bolaodi bja siltheišene bo a hlokega. | Intekse ya potego ya madulo | VEGRAI EC = C ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomele ka gare ga legoro la C/D la tswalano ya diphedi l tikologo ya tšona goba bokaone. Tlhahlobo ya setšhaba a dihlapi e swanetše gore di dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. Ditsela tša dihlapi di swanetše gore di agwe mabapi le mehuta yeo e hudugago ka ge go se na kgokagano mafelong a mmalwa gona bjale. | Intekse ya Tlhahlobo ya Kaabo ya Dihlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la dihlapi = C/D<br>FRAI ≥ 58%<br><br>Mehlala ya mehuta ye 8+ go ya ka nyakišišo ya mohlala<br><br>Mehuta ya go bontšha: *BMAR, LMOL, SZAM* |
| | | | | | | Di inbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakoinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 4.8 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditaeathomo | Kgoboketšo ya ditaeathomo e swanetše gore e hlokomelwe ka gare ga seemo seo se mpshafaditšwego goba go kaonafatšwa. | Intekse ya tšhilafatšo ye e itšego | Ditaeathomo EC ≥ 62% |
| | | Elandslaagtespruit, Lengope la Kgamanyane, Lenkwane (A32E) | 11b_2 | | Di RQO tša monola moo go lokegago | | | | |

**Tafolana 14: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 12: BIERSPRUIT**

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 12: BIERSPRUIT | III | Wilgespruit, Bofule, Kolobeng, Magoditshane, Motlhabe (A24D) | 12_1 | D | Boleng | Diphepo | Phatlalatšo ya diphepo ka gare ga meetse e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.090 dimillikramo/litara(mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetotšene | ≤ 0.7 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salfaete | ≤ 80 dimillikramo/litre (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona lea fihlelelwa. | Tloraete | ≤ 40 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 70 dimillikramo/litara (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.0 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalotheo ya go bontša seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di a bontšhwa. |
| | | | | | | Ditšhilafatši | Phatlalatšo ya ditšhilafatši ga se ya swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Aluminiamo (Al) | ≤ 0.105 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha (Cu) ya go tia | ≤ 0.0073 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C la tswalano ya diphedi le tikologo ya tšona. Go swara kelelo ya hlago. Go kaonafatša madulo a kgauswi le meetse le belosithi/bontši bja phapaphapano ya dihlapi. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a gare ga meetse EC = C ≥ 62% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C la tswalano ya diphedi le tikologo ya tšona. Go kaonafatša lefelo la kgauswi le meetse. Go tloša dimela tšeo di sa nyakegego. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D la tswalano ya diphedi le tikologo ya tšona. Go swara kelelo ya hlago. Go kaonafatša madulo a gare ga meetse le belosithi/bontši bja phapaphapano ya dihlapi. | Intekse ya Tlhahlobo ya Karabo ya Dihlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la dihlapi = C/D FRAI ≥ 58% Mohlala wa mehuta ye 10+ ka matsapa a metsotso ye 20 Mehuta ya go bontša: *AJOH, LCYL, BMAR, MBRE* |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Kelelo ya letamo la Bierspruit go iša letamong la Crocodile, Bierspruit Brakspruit, Phufane, Sefatlhane, Lesobeng (A24E, A24F) | 12_2 | | Boleng | Diphepo | Phatlalatšo ya diphepo ka gare ga meetse e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. Diphatlalatšo ga se tša swanela go dumelelwa gore di fele. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.125 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene as | ≤ 1.0 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Letswai la ka gare ga meetse le swanetše gore le hlokomelwe maemong ao a amogelegilego go thekga bophelo bjo bo botse bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Diphatlalatšo ga se tša swanela go fela. | Go swara mohlagase (EC) | ≤ 85 milliSiemens/mitara (mS/m) (95thpersente) |
| | | | | | | | | Salfaete ($SO_4$) | ≤ 100 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo (Na) | ≤ 100 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete (Cl) | ≤ 100 dimillikramo/litara (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.0 (5th persente) le 8.5 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhahlobo ya mothalotheo go bontšha semo sa ka gare ga meetse sa bjale se a hlokega. | Turbidity | Phapaphapano ya 10% go tloga phatlalatšong ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Phatlalatšo ya ditšhilafatši ga se ya swanela go hlola kotsi bophelong bja batho le diphoofolo tša ka gare ga meetse. | Aluminiamo (Al) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 milligrams/litre (mg/l) (95th percentile) |
| | | | | | | | | Ione (Fe) | ≤ 0.3 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha (Cu) hard | ≤ 0.0073 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara(mg/l) (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E. coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona. Go hlokomela kelelo ya hlago. Go kaonafatša madulo a ka gare ga meetse le belosithi/bontši bja hlapi le phapaphapano ya di makroinbetheporeiti. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a gare EC = D ≥ 42% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona. Tšwetšopele ya lefelo la kgauswi le meetse e swanetše gore e laolwe ebile e lekanetšwe. Dithulano tša saltheišene di swanetše gore di laolwe. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = D ≥ 42% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomele ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo ya Dihlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la Dihlapi = D FRAI ≥ 42% Kgoboketšo ya mehuta ye 4+ ka matsapa a metsotso ye 20 a mohlala. |

**Tafolana 15: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo LOWER CROCODILE**

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13: LOWER CROCODILE | III | Kelelo ya letamo la Crocodile Roodekopjes go iša Nokeng ya Sand, Sleepfontein - spruit, meedi ya Klipspruit (A21L, A24A, A24B, A24C) | 13_1 | C/D | Bokae | Dikelelo tša tlase | Tlhokomelo ya ERW ya dikelelo tša tlase le komelelo:<br>Noka ya Crocodile go la CROC_EWR7 in A24C<br>NMAR = 463.4x10$^6$m$^3$<br>Legoro la REC=D<br><br>Dikelelo tša tlase tša tlhokomelo le dikelelo tša komelelo di swanetše gore di amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo Dikelelo tša tlase le dikelelo tša komelelo. Tlhokomelo ya Noka ya Crocodile go la A2H132 | | Tlhokomelo ya dikelelo tša tlase (m$^3$/s) | Dikelelo tša komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 1.134 | 1.134 |
| | | | | | | | | | Nov | 1.362 | 1.362 |
| | | | | | | | | | Dec | 1.481 | 1.481 |
| | | | | | | | | | Jan | 1.938 | 1.938 |
| | | | | | | | | | Feb | 2.638 | 2.488 |
| | | | | | | | | | Mar | 2.481 | 2.481 |
| | | | | | | | | | Apr | 2.118 | 2.118 |
| | | | | | | | | | May | 1.745 | 1.745 |
| | | | | | | | | | Jun | 1.574 | 1.574 |
| | | | | | | | | | Jul | 1.389 | 1.389 |
| | | | | | | | | | Aug | 1.262 | 1.262 |
| | | | | | | | | | Sep | 1.172 | 1.172 |
| | | | | | | Dikelelo tša godimo | Dikelelo tša godimo tša EWR:<br>Noka ya Crocodile go la CROC_EWR7 in A24C<br>NMAR = 463.4x10$^6$m$^3$<br>Legoro la REC=D<br><br>Dikelelo tša godimo di swanetše gore di amogelwe go thekga dinyakwa tša tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Mafula<br><br>Kelelo ya godimo e beilwe bjalo ka dinyakwa tša lefula leo le sepelago le le tee go ya ka bogolo le nako (Lebelela mametletšo A)<br><br>Tlhokomelo ya Noka ya Crocodile go la A2H132 | | Dikelelo tša godimo (m$^3$/s) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.790 | |
| | | | | | | | | | Dec | 1.529 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 1.270 | |
| | | | | | | | | | Mar | 0 | |
| | | | | | | | | | Apr | 0.790 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e kaonafatšwe go | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.060 dimillikramo/litara (mg/l) (50$^{th}$ persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego le a fihlelelwa. Diphatlalatšo ga se tša swanela go dumelelwa gore di fokotšege. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Letswai la ka gare ga meetse le tswanetše gore le hlokomelwe maemong ao a beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse ya bophelo bjo bo botse le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Diphatlalatšo ga se tša swanela go dumelelwa gore di fokotšege. | Go swara mohlagase (EC) | ≤ 85 milliSiemens/mitara (mS/m) (95thpersente) |
| | | | | | | | | Salfaete ($SO_4$) | ≤ 100 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo (Na) | ≤ 80 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete (Cl) | ≤ 80 dimillikramo/litre (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th percentile) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalotheo ya go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% go tloga phatlalatšong ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a Oksetšene yeo e *tolo*šitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego (Dissolved oxygen) | ≥ 6 dimillikramo/litara (mg/l) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le go diphedi tša ka gare ga meetse. | Altrazaene (Atrazine) | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | Metolachlor | ≤0.30 dimillikramo/litara (mg/l) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Fe) | ≤ 0.3 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha (Cu) ya go tia | ≤ 0.0073 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Aluminimo (Al) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba semo se se kaone. Go hlokomela kelelo ye botse ya tlase go hlokomela madulo le mehuta ya go kgetha madulo le thaksa. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a gare ga meetse EC = D ≥ 42% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Kaonafatšo/tsošološo e a hlokega. Dimela tša setlogo di swanetše gore di šireletšwe (Acacia galinii(monkey thorn). Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. Go hlokomela mafelo a kgauswi le meetse mafelong ao a lemilwego. Go laola tšwetšopele. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = D ≥ 42% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba seemo se se kaone. Belosithi/bontši bja kelelo bo swanetše gore bo lekanele mabapi le mehuta yeo e kgethago kelelo e go CPRE le LMOl le mehuta yeo e kgethago madulo-AJOH. | Intekse ya Tlhahlobo ya Karabo ya Dihlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la dihlapi = D<br>FRAI ≥ 42%<br>Mehlala ya mehuta ye 6+ go ya ka matsapa a mohlala wa meuta ya go bontšha ya mehuta ya dihlapi yeo e amegago bonolo. Lefelo la mokgwa, *CPRE, LMOL* |
| | | | | | | Dimakroinbethepo reiti tša ka gare ga meetse | Kgoboketšo ya di makoinbetheporeiti e swanetše gore e hlokomelwe legorong la D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 60<br>ASPT ≥ 4.5<br>(Site A2CROC-KOEDO) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | Dikelelo tša tlase | Tlhokomelo ya ERW ya dikelelo tša tlase le dikelelo tša komello: Meetse a noka ya Sand ya Noka ya Sondags ka kopano ya S24.6289, E27.6223 in A24H NMAR = $26.56x10^6m^3$ Legoro la REC=B<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya tahlo ya Noka ya Sand ka nako ya dinyakišišo tša payolotši | Oct | 0.085 | 0.042 |
| | | | | | | | | | Nov | 0.104 | 0.024 |
| | | | | | | | | | Dec | 0.120 | 0.021 |
| | | | | | | | | | Jan | 0.196 | 0.063 |
| | | | | | | | | | Feb | 0.263 | 0.105 |
| | | | | | | | | | Mar | 0.199 | 0.055 |
| | | | | | | | | | Apr | 0.158 | 0.071 |
| | | | | | | | | | May | 0.127 | 0.059 |
| | | | | | | | | | Jun | 0.119 | 0.056 |
| | | | | | | | | | Jul | 0.108 | 0.051 |
| | | | | | | | | | Aug | 0.098 | 0.047 |
| | | | | | | | | | Sep | 0.089 | 0.044 |
| | | Noka ya Sand ge e kopana le Noka ya (A24G, A24H) | 13_2 | | Bokae | Dikelelo tša godimo | Dikelelo tša EWR tša godimo: Tlhokomelo ya Noka ya Sand ya tahlo ya Noka ya Sand ka nako ya dinyakišišo tša poyolotši go la S24.6289, E27.6223 go A24H NMAR = $26.56x10^6m^3$ Legoro laREC=B<br><br>Dikelelo tša godimo di swanetše gore di amogelwe go netefatša gore setšhaba sa dihlapi se dula se le se se mpsha.. | Dihlapi tše mpsha<br><br>Kelelo ya godimo e beeleditšwe bjalo ka senyakwa sa lefula le le tee go ya ka bogolo le nako (lebelela mametletšo A) | | Dikelelo tša ($m^3/s$) | |
| | | | | | | | | | Oct | 0.009 | |
| | | | | | | | | | Nov | 0.056 | |
| | | | | | | | | | Dec | 0.090 | |
| | | | | | | | | | Jan | 0.181 | |
| | | | | | | | | | Feb | 0.500 | |
| | | | | | | | | | Mar | 0.181 | |
| | | | | | | | | | Apr | 0.093 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |
| | | | | | Khwalithi | Matswai a Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore amogelwe go hlokomela bophelo bja tswalano ya diphedi | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.020 dimillikramo/litara (mg/l) ($50^{th}$ persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa.<br>Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) |
| | | | | | | | | Go swara mohlagase | ≤ 30 milliSiemens/metre (mS/m) (95th percentile) |
| | | | | | | | | Salfeiti | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a ka gare ga Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomele ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Payotha | Hlapi | Setšhaba a dihlapi se swanetše gore se hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga mabapi le tlhokomelo kgahlanong le legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. Madulo le kelelo di swanetše gore di lekanele mabapi le mehuta yeo e ithekgilego ka sehla,CPAR. | Intekse ya Tlhahobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona ya dihlapi = B<br>FRAI ≥ 82% |
| | | | | | | Dimakoinbetheporeiti tša gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.5<br>(Site A2SUND-WATER) |
| | | Lower Crocodile go tloga Bierspruit go ya potareng ya Botswana (Noka ya Limpopo) (A24J) | 13_3 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Crocodile go la A2H128 go A24J<br>NMAR = 565.16x10$^6$m$^3$<br>Legoro la REC=C/D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya Noka ya Crocodile go la A2H128 | |

| | Tlhokomelo ya dikelelo tša tlase (m$^3$/s) | Dikelleo tša komelelo (m$^3$/s) |
|---|---|---|
| Oct | 1.246 | 1.057 |
| Nov | 1.454 | 1.228 |
| Dec | 1.536 | 1.294 |
| Jan | 1.932 | 1.616 |
| Feb | 2.488 | 2.074 |
| Mar | 2.128 | 1.776 |
| Apr | 1.791 | 1.503 |
| May | 1.548 | 1.303 |
| Jun | 1.524 | 1.285 |
| Jul | 1.425 | 1.203 |
| Aug | 1.345 | 1.138 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Sep | 1.287 | 1.091 |
| | | | | | | Dikelelo tša godimo | Dikelelo tša godimo tša EWR: Noka ya Crocodile go la A2H128 go A24J<br>NMAR = $565.16 \times 10^6 m^3$<br>Legoro la REC=C/D<br><br>Dikelelo tša godimo di swanetše gore di amogelwe go kgonthišetša dinyakwa tša lefula tša ditšhaba tša dihlapi. | Mafula<br><br>Kelelo ya godimo ka ge e beleditšwe bjalo ka dinyakwa tša lefula go ya ka bogolo le nako (lebelela mametletšo A).<br><br>Tlhokomelo ya Noka ya Crocodile River go la A2H128 | | Dikelelo tša godimo ($m^3/s$) | |
| | | | | | | | | | Oct | 0 | |
| | | | | | | | | | Nov | 0.395 | |
| | | | | | | | | | Dec | 2.829 | |
| | | | | | | | | | Jan | 0 | |
| | | | | | | | | | Feb | 0.423 | |
| | | | | | | | | | Mar | 0 | |
| | | | | | | | | | Apr | 0 | |
| | | | | | | | | | May | 0 | |
| | | | | | | | | | Jun | 0 | |
| | | | | | | | | | Jul | 0 | |
| | | | | | | | | | Aug | 0 | |
| | | | | | | | | | Sep | 0 | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. Diphatlalatšo ga se tša swanela go dumelelwa gore di phuhlame. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.06 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Letswai la ka gare ga meetse le swanetše gore le hlokomelwe maemong ao a beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse ya bophelo bjo bo botse le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Diphatlalatši ga se tša swanela go dumelelwa gore di phuhlame. | Go swara mohlagase (EC) | ≤ 85 milliSiemens/mitara (mS/m) (95thpersente) | | |
| | | | | | | | | Salfeiti ($SO_4$) | ≤ 100 dimillikramo/litara (95th persente) | | |
| | | | | | | | | Sodiamo (Na) | ≤ 80 dimillikramo/litara (95th persente) | | |
| | | | | | | | | Tloraete (Cl) | ≤ 100 dimillikramo/litara (95th persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetš gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya gae ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Diphatlalatši tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja diphedi tša ka gare ga meetse le bophelo bja batho. | Atrazine | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D la tswalano ya diphedi le tikologo ya tšona. Go swara dikelelo tša tlase tše botse go hlokomela madulo a mehuta yeo e kgethago madulo le taksa. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga Meetse EC = C/D ≥ 58% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša setlogo di swanetše gore di šireletšwe (Arcacia galpinii (Monkey thorn). Dimela tša kgauswi le meetse di swanetše gore di kaonfatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D la tswalano ya diphedi le tikologo ya tšona. | Inekse ya Potego ya Madulo , Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C/D ≥ 58% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona. Belosithi/bontši bja kelelo bo swanetše gore bo hlokomelwe mabapi le CPAR, MACU le LMOL, le mehuta yeo e kgethao madulo- MMAC, BANN. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le tikologo ya tšona ya dihlapi = D FRAI ≥ 42%<br>Mohlala wa mehuta ye 6+ go ya ka matsapa a mohlala |
| | | | | | | Payotha ya ka gare ga meetse | Maleba a kotološo ya noka mabapi le go šoma bjalo ka madulo a ditšhaba tša diphedi tša ka gare ga meetse le dinonyane a swanetše gore a hlokomelwe ka mokgwa wo botse wa bolaodi bja madulo. Tlhokomelo ya kakaretšo ya kgauswi le meetse ya di othara. | Dinonyane **tša ka gare ga meetse / mehuta ya diphedi tša ka gare ga meetse** | Tlhahlobo ya mothalohlahli e swanetše gore e dirwe go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi tša ka gare ga meetse tšeo di emelago ka gare ga noka. Go na le tlhokego ya go bea RQO ya nomoro ya bontši bja phoofolo/ dinonyane ka motheo wa datha yeo e lego gona/e kgobokeditšwego. |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Di inbethepo reiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore hlokomelwe legorong la C/D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C/D ≥ 58%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |
| | | | | | | Ditaeathomo | Kgoboketšo ya ditaeathomo e swanetše gore e hlokomelwe ka gare ga seemo se se kaonafaditšwego se se golo goba go kaonafatšwa. | Intekse ya Tšhilafatšo ye e itšego | Ditaeathomo EC ≥ 42% |

**Tafolana 16: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | III | Noka ya Apies , Meedi ya Tshwane (A23F) | 14_1 | D | Bokae | Dikelelo | Leano la bolaodi la go laola meetse ao a lego gona (dikelelo tša poelo morago) ka gare ga sesteme le swanetše gore le tšweletšwe. Dikgetho tša maleba tša bolaodi di swanetše gore di hlahlobje. Mehola ya go fokotša dikelelo e swanetše gore e bontšwe. | Dikelelo tša tlase | E tla bontšhwa ge leano la bolaodi le tšweletšwa |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.5 dimillikramo/litara (mg/l) (50th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 3.0 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase (EC) | ≤ 80 milliSiemens/mitara (mS/m) (95thpersente) |
| | | | | | | | | Salfaete ($SO_4$) | ≤ 70 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete (Cl) | ≤ 75 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo (Na) | ≤ 80 dimillikramo/litara (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho. | Atrazine | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimillikramo/litara (mg/l) |
| | | | | | | | | Glyphosate | 0.7 dimillikramo/litara (mg/l) |
| | | | | | | | | Endosulfan | 0.13 dimicrokramo/litre (ug/l) |
| | | | | | | | | Kromiamo (VI) | ≤ 0.2 milligrams/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0013 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Cb) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go iša legorong la D la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya dikelelo tše botse tša tlase go hlokomela madulo a mehuta yeo e amegago ka pela (BMAR, BUN) le taksa. | Intekse ya potego ya madulo | Potego ya madulo a gare ga meetse EC = D ≥ 42% (kopano ya ka tlase ya Apies le Tshwane) |
| | | | | | | Madulo a kgauswi le metse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba seemo se se kaone. Tlhokomelo ya lefelo la kgauswi le meetse mafelong a go lema. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = D ≥ 42% |
| | | Noka ya Pienaars go tloga kopanong ya Boekenshout go fihlela kopanong ya Nokeng ya Apies | 14_2 | | Bokae | Dikelelo | Leano la bolaodi la go laola meetse ao a lego gona (dikelelo tša poello morago) ka gare ga sesteme le swanetše gore le tšweletšwe. Dikgetho tša bolaodi tša maleba di swanetše gore di hlahlobje. Mehola ya go fokotša kelelo e swanetše gore e bontšhwe. | Dikelelo tša tlase | E tla bontšhwa ge leano la bolaodi letšweletšwa |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.090 dimillikramo/litara (mg/l) (50th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | (A23C) | | | | | go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.7 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a letswai ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salfaete | ≤ 50 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete | ≤ 50 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 70 dimillikramo/litara (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Phatlalatšo ya ditšhilafatši ga se ya swanela go hlola kotsi bophelong bja batho le dipheding tša ka gare ga meetse. | Atrazine | ≤0.078 dimillikrams/litre (mg/l) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 milligramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0095 dimillikramo/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Khopha (Cu) hard | ≤ 0.00735 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga Meetse EC = C ≥ 62% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kguswi le meetse di swanetše gore di hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona. Kaonafatšo ya mafelo a kgauswi le meetse go la Boekenshout e a hlokega. Moepo wa santa o swanetše gore o laolwe. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela mabapi le kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. Belosithi/bontši bja kelelo bo swanetše gore bo hlokomelwe mabapi le mehuta ya dihlapi-CPAR le LMOL le mehuta yeo e amegago ka pela-AKAT yeo e ka bago gona ka gare ga monola. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la dihlapi = C<br>FRAI ≥ 62%<br>Mohlala 10 *CPAR* le 10 *LMOL* ka matsapa a metsotso ye 20. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Payotha ya ka gare ga meetse | Madulo a lefelo la lefula Moretele a swanetše gore a hlokomelwe. Katološo ya noka yeo e šomago bjalo ka madulo a nonyane ya ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse e swanetše gore e hlokomelwe ka bolaodi bja maleba bja madulo. Tlhokomelo ya mafelo a kgauswi le meetse bjalo ka madulo a bohlokwa a nonyane. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi tša ka gare ga meetse. | Tlhahlobo ya mothalohlahli e swanetše gore e dirwe go bontšha setšhaba sa dinonyane sa ka gare ga meetse le mehuta ya diphedi tša ka gare ga meetse yeo e emelago nokeng. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba yeo e kgobokeditšwego. |
| | | Noka ya Plat (A23G) | 14_3 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Plat go la A2H064 go A23G<br>NMAR = $9.64 \times 10^6 m^3$<br>Legoro la REC=C/D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>Tlhokomelo ya Noka ya Plat go la A2H064 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D la tswalano ya diphedi le tikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya madulo a gare ga meetse EC = C/D ≥ 58% |

| | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
|---|---|---|
| Oct | 0.021 | 0.012 |
| Nov | 0.023 | 0.012 |
| Dec | 0.023 | 0.013 |
| Jan | 0.025 | 0.014 |
| Feb | 0.030 | 0.016 |
| Mar | 0.027 | 0.015 |
| Apr | 0.027 | 0.014 |
| May | 0.025 | 0.013 |
| Jun | 0.025 | 0.014 |
| Jul | 0.024 | 0.013 |
| Aug | 0.024 | 0.013 |
| Sep | 0.023 | 0.012 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D. | Intekse ya potego ya madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C/D ≥ 58% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D. Tlhokomelo ya belosithi/bontši bja kelelo bja mehuta ya dihlapi ya LCYL le LMOL le mehuta yeo e kgethago madulo, MBRE le BBR. ditšhaba tšeo di ikgethilego tša CTHE mafelong a godimo a noka a swanetše gore a hlokomelwe. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona ya dihlapi = C/D<br>FRAI ≥ 58%<br>Mohlala 2 goba 3 *CTHE* le 10 *LMOL* ka matsapa a metsotso ye 20<br><br>(Lefelo A2PLAT-KOMAN) |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br><br>(Lefelo A2PLAT-KOMAN) |
| | | Noka ya Moretele (Pienaars) go tloga kopanong ya Noka ya Plat go iša Letamong la Klipvoor, | 14_4 | | Bokae | Dikelelo | Leano la bolaodi la go laola meetse ao a lego gona (dikelelo tša poelo morago) sestemeng le swanetše gore le tšweletšwe. Dikgetho tša maleba tša boalodi di swanetše gore di hlahlobje. Mehola ya go fokotša kelelo e swanetše gore e bontšhwe. | Dikelelo tša tlase | E tla bontšhwa ge leano la bolaodi le tšweleditšwe. |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.5 dimillikramo/litara (mg/l) (50th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Kutswane go iša Letamong la Klipvoor (A23J) | | | | | go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 3.0 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a letswai ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 85 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salfaete ($SO_4$) | ≤ 70 dimillikramo/litara (95th persente) |
| | | | | | | | | Tloraete (Cl) | ≤ 75 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo (Na) | ≤ 80 dimillikramo/litara (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona le dinyakwa tša bašomiši ba meetse. | Phapaphapano ya pH pH | 6.5 (5th persente) le 8.5 (95th persente ) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Letamo la Klipvoor (A23J) | 14_6 | | Bokae | Maemo a Letamo | Letamo le swanetše gore le laolwe go šireletša mošomo wa tswalano ya diphedi gammogo le bašomiši ba kelelo ya tlase. Go tšweletša le go tsošološa melao ya go šoma ya letamo mabapi le go hlokomela maemo a letamo le go netefatša gore phapaphapano ya tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse e a hlokomelwa. Tahlo ya letamo e a hlokega gore e fihllele dikelelo tša tlase mabapi le dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona. | Maemo a ma nnyane a go šoma a letamo | Melao ya go šoma moo go kgonegago.<br><br>Maemo a ma nnyane a go hlokomela tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse (15-18%). |
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Othofosfeiti | ≤ 0.05 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya palomoka ya osforase e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Palomoka ya fosforase | ≤ 0.130 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya palomoka ya Amonia bjalo ka N e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya yutrofiki. | Palomoka ya Amonia | ≤ 0.072 mg/ℓ N<br>95th persente |

CONTINUES ON PAGE 642 - PART 6

# Government Gazette
# Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 652 18 October / Oktober 2019 No. 42775

**PART 6 OF 6**



ISSN 1682-5843

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 75 mS/m<br>95th persente |
| | | | | | | Phapapha pano ya sesteme | Meetse a swanetše gore a amogelwe mabapi le tšhomišo ya tša boitapološo. | pH | 6.5 – 9.0<br>95th persente |
| | | | | | | | Tlhalošo yeo e tseneletšego | Turbidity | ≥0.4 m<br>5th persente |
| | | | | | | | Phetogo ye e lekanetšego | Themphereitša | Phetogo ya go se fetiše 2 °C godimo le tlase |
| | | | | | | | Maemo a oksetšene ka gare ga sesteme a swanetše gore a hlokomele sesteme ya tswalano ya diphedi le tikologo ya tšona. | Oksetšene yeo e tološitšwego | ≥ 7.0 mg/ℓ $O_2$<br>95th persente |
| | | | | | | Phathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml)<br>(95th persente) |
| | | | | | | Dišilafatši | Letamo le swanetše gore le laolwe go fokotša tšwetšopele ya saenopakteria ye kotsi. | Saenopakteria | Saenopakteria ya go ba le maatla le Chl, phatlalatšo ya go feta 30µg/ℓ e swanetše gore e be ka tlase ga 20%. |
| | | | | | | | Meetse a noka ga se a swanela go hlola kotsi dipheding tša ka gare ga meetse le bophelong bja batho. | Diphestisaete | Cyanide: ≤ 110 µg/ℓ<br>Endosulfan: ≤ 20 µg/ℓ<br>Atrazine: ≤ 100 µg/ℓ<br>95th persente |
| | | Noka ya Moretele go tloga Letamong la Klipvoor go iša Nokeng ya Crocodile, Tolwane (A23K, A23L) | 14_7 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya ERW ya dikelelo tša tlase le dikelelo tša komelelo:<br>Noka ya Moretele/ Pienaars go la CROC_EWR5 in A23J<br>NMAR = 113.0x10$^6$m$^3$<br>Legoro la REC=D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e thekge tswalano ya diphedi le | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo<br><br>Tlhokomelo ya Noka ya Pienaars River go la A2H106 | |

| | Tlhokomelo ya dikelelo tša tlase (m$^3$/s) | Dikelelo tša tkomelelo (m$^3$/s) |
|---|---|---|
| Oct | 0.162 | 0.159 |
| Nov | 0.210 | 0.206 |
| Dec | 0.230 | 0.226 |
| Jan | 0.303 | 0.298 |
| Feb | 0.356 | 0.351 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tikologo ya tšona le bašomiši ba dikelelo ka moka. | | Mar | 0.309 | 0.304 |
| | | | | | | | | | Apr | 0.260 | 0.256 |
| | | | | | | | | | May | 0.220 | 0.216 |
| | | | | | | | | | Jun | 0.208 | 0.205 |
| | | | | | | | | | Jul | 0.188 | 0.185 |
| | | | | | | | | | Aug | 0.174 | 0.171 |
| | | | | | | | | | Sep | 0.160 | 0.158 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e kaonafatšwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. Diphatlalatšo tša phepo di swanetše gore di fokotšwe. | Othofosfeiti ($PO_4^-$) bjalo ka fosforase | ≤ 0.060 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 1.0 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Letswai la ka gare ga meetse le swanetše gore le hlokomelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go hlokomela seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona. Ga go na phuhlamo yeo e tšwelago pele yeo e swanetše go tšwelela. Ditiragalo tšeo di theilwego godimo ga mabu le di tahlo tša WWTW di swanetše gore di laolwe. | Go swara mohlagase | ≤ 75 milliSiemens/mitara (mS/m) (95th persente) | | |
| | | | | | | | | Salfeiti | ≤ 60 dimillikramo/litara (95th persente) | | |
| | | | | | | | | Tloraete | ≤ 70 dimillikramo/litara (95th persente) | | |
| | | | | | | | | Sodiamo | ≤ 100 dimillikramo/litara (95th persente) | | |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. Tšhilafatšo ya makropayale e swanetše gore e fokotšwe. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) | | |
| | | | | | | Phapaphapano ya sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beetšwego go thekga tswalano ya diphedi le tikologo ya tšona le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) | | |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 20% go tšwa phatlalatšong ya setlogo e dumeletšwe. | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Diphatlalatši tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | Metolachlor | ≤0.30 dimillikramo/litara (mg/l) |
| | | | | | | | | Mancozeb | 0.009 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C. Tlhokomelo ya dikelelo tše botse go hlokomela madulo a mehuta yeo e amegago ka pela le thaksa. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga meetse EC = C ≥ 62% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C. Moepo wa santa lefelong la kgauswi le meetse o swanetše gore o fokotšege. | Intekse ya potego ya madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Payotha Biota | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la C/D la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela mabapi le kgahlanong ya legoro leo le beeleditšwego. Tlhokomelo ya belosithi/bontši bja mehuta ya kelelo ya tlase LMOL LCYL le CPAR le mehuta yeo e kgethago madulo, MBRE. | Intekse ya Tlhahlobo ya Karabo ya Hlapo (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le tikologo ya tšona la Hlapi = C/D<br>FRAI ≥ 58%<br>Mohlala wa mohuta wo 10+ go ya ka mohlala wa matsapa a mohlala wa matsapa a metsotso ye 20 ya BMAR |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Di inbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe legorong la D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 100<br>ASPT ≥ 5.0<br><br>(REMP site A2PIEN – BUFFE goba EWR5) |
| | | | | | | Payotha ya ka gare ga meetse | Phihlelelo ya noka ya go šoma bjalo ka madulo a setšhaba sa dinonyane tša ka gare ga meetse e swanetše gore e hlokomelwe ka bolaodi bja maleba bja madulo. Tlhokomela lefelo la kgauswi le meetse go abela madulo a maleba. | Mehuta ya go bontšha dinonyane tša ka gare ga meetse | Tlhahlobo ya mothalohlahli e swanetše gore e dirwe go bontšha mehuta ya dinonyane tša ka gare ga meetse phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro go ya ka motheo wa bontši bja dinonyane go ya ka datha yeo e kgobokeditšwego/yeo e lego gona. |
| | | | | | | Ditaeathomo | Kgoboketšo ya ditaeathomo e swanetše gore e hlokomelwe ka gare ga seemo se se golo seo se kaonafaditšwego goba go kaonafatšwa. | Intekse ya Tšhilafatšo ye e itšego | Ditaeathomo EC = D ≥ 42% |

**Tafolana 17: Maikemišetšo a Boleng a Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 15: UPPER MOKOLO**

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ERV | II | Noka ya Mokolo, meedi ya Klein | 15_1 | B/C | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya kelelo ya tlase le | Dikelelo tša motheo | | Tlhokomelo ya dikelelo | Dikelelo tša |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sand, Sondagsloop, Heuningspruit, Dwars, Jim se loop (A42C, A42E) | | | | | komelelo:<br>Noka ya Mokolo go la MOK_EWR1a go A42C<br>NMAR = $84.84 \times 10^6 m^3$<br>Legoro la PES=C/D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo go la A4H002 | | tša tlase ($m^3/s$) | komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.110 | 0.005 |
| | | | | | | | | | Nov | 0.120 | 0.005 |
| | | | | | | | | | Dec | 0.200 | 0.020 |
| | | | | | | | | | Jan | 0.550 | 0.040 |
| | | | | | | | | | Feb | 0.850 | 0.060 |
| | | | | | | | | | Mar | 0.700 | 0.050 |
| | | | | | | | | | Apr | 0.500 | 0.040 |
| | | | | | | | | | May | 0.350 | 0.030 |
| | | | | | | | | | Jun | 0.270 | 0.020 |
| | | | | | | | | | Jul | 0.230 | 0.015 |
| | | | | | | | | | Aug | 0.180 | 0.010 |
| | | | | | | | | | Sep | 0.100 | 0.005 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.025 dimillikramo/litara (mg/l) (50th persente) Data ya tlhokomelo -Selete | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete & ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya | Go swara mohlagase | ≤ 30 milliSiemens/mitara (mS/m)<br>(95th persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | | |
| | | | | | | Diphathotšene | Go ba gona ga di phathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |
| | | | | | | | Thlahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. Ditekanyetšo di swanetše gore di hlalošwe go laola dithulano tša moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% go tšwa phatlalatšong ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazine | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | | |
| | | | | | | | | Bromoxynil | ≤0.010 dimillikramo/litara (mg/l) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | Madulo | Ka gare ga meetse | Maemo a madulo a swanetše gore a kaonafatšwe go tloga legorong la C/D la tswalano ya diphedi le tikologo ya tšona go iša legorong la B/C. Dikelelo tše botse tša tlase di swanetše gore di hlokomelwe mabapi le mehuta ya go kgetha madulo. Dikelelo tša poelo morago le go ntša ka gare ga mothopo go swanetše gore go hlokomelwe le go laolwa go šireletša madulo a ka gare ga meetse. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a ka gare ga Meetse EC = B/C ≥ 78% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la C/D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C. Mafelo a kgauswi le meetse a swanetše gore a be mafelo a go buna. Puno e swanetše gore e laolwe go thibela tahlegelo ya lefelo la kgauswi le meetse. | Intekse ya potego ya madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la C/D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C. Belosithi/bontši bja kelelo bo swanetše gore bo hlokomelwe mabapi le mehuta ya LMOL, BMAR le CPRE le mehuta yeo e kgethago madulo, BRAD, BVIV. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le tikologo ya tšona la Hlapi = C<br>FRAI ≥ 62%<br>Mohlala wa15+ wa mehuta go ya ka matsapa a mohlala<br>Mohlala 25 *CPRE* le 15 *AURA* ka matsapa a metsotso ye 20<br><br>(Lefelo EWR1a Dwars) |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse tša ditšhaba tša ka gare ga meetse ka bolaodi bja maleba bja madulo. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi tša go bontša | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontša setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro mabapi le bontši bja diphoofolo/dinonyane go ya ka motheo wa datha yeo e lego gona goba yeo e kgobokeditšwego. |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga seemo sa legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South | Mafelo:<br>EWR 1a = A4MOKO-VAALW<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.5<br>A4SAND-TOPBR:<br>MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 6.0<br>LEFELO DWARS 1a = Rapid EWR Lefelo:<br>MIRAI EC = C ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | African Scoring System Version 5 (SASS5). | SASS ≥ 120<br>ASPT ≥ 5.5 |
| | | | | | | Ditaeathomo | Kgoboketšo ya ditaeathomo e swanetše gore e hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. | Intekse ya Tšhilafatšo ye e itšego | Ditaeathomo EC ≥ 82% |
| | | Sterkstroom, Frikkie se Loop (A42D) | 15_2 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo: Sterkstroom go A42D NMAR = $43.43 \times 10^6 m^3$ Legoro la REC=B<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo. Tlhokomelo ya Sterkstroom go A4H008 | |
| | | | | | | | | | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) / Dikelelo tša komelelo ($m^3/s$)<br>Oct 0.382 / 0.060<br>Nov 0.517 / 0.110<br>Dec 0.972 / 0.130<br>Jan 1.778 / 0.210<br>Feb 2.842 / 0.070<br>Mar 2.996 / 0.110<br>Apr 2.529 / 0.020<br>May 1.908 / 0.020<br>Jun 1.390 / 0.050<br>Jul 1.090 / 0.110<br>Aug 0.758 / 0.080<br>Sep 0.426 / 0.060 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya diphepo ka ge go beeleditšwe e swanetše gore e hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.015 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 20 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša *mošomiši wa meetse.* | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe ka gare ga legoro la | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego | Potego ya Madulo a gare ga Meetse EC B/C ≥ 78% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | B/C la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya dikelelo tša tlase go hlokomela madulo le mehuta yeo e kgethago madulo le thaksa. | le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B/C ≥ 78% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la B/C la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e direge ka ngwaga go hlokomela kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo bja mehuta, LMOL, BMAR, AURA le CPRE le mehuta yeo e kgethago madulo- CTHE. Go ba gona ga mehuta | Intekse ya Tlhahlobo ya Karabo (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = B/C FRAI ≥ 78%<br>Mohlala wa 9+ wa mehuta go ya ka matsapa a mohlala<br>Mohlala wa 10 *AJOH* le 2 *CTHE* ka matsapa a metsotso ye 20 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ye me mpsha : B. Waterbergensis e swanetše gore e kgonthišetšwe. | | | | |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelo ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi tša kagare ga meetse ka bolaodi bja maleba bja madulo. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane go ya ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. | | |
| | | | | | | Dimakroinbetheporeiti tša gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Dimakroinbetheporeiti EC ≥ 82% (Lefelo A4STER-WELGE) | | |
| | | Noka ya Mokolo A42F, kelelo ya gare ya Letamo la Mokolo , Taaibosspruit, Malmanies le Bulspruit (A42F) | 15_3 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya ERW ya dikelelo tša tlase le komelelo: Noka ya Mokolo MOK_EWR2 go A42F NMAR = $195.69 \times 10^6 m^3$ Legoro la PES=B/C | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo go | | Tlhokomelo ya dikelelo tša tlase($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.230 | 0.008 |
| | | | | | | | | | Nov | 0.240 | 0.110 |
| | | | | | | | | | Dec | 0.370 | 0.146 |
| | | | | | | | | | Jan | 0.602 | 0.201 |
| | | | | | | | | | Feb | 1.064 | 0.318 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | A4H005 | Mar | 0.953 | 0.285 |
| | | | | | | | | | Apr | 0.808 | 0.252 |
| | | | | | | | | | May | 0.627 | 0.207 |
| | | | | | | | | | Jun | 0.512 | 0.181 |
| | | | | | | | | | Jul | 0.400 | 0.120 |
| | | | | | | | | | Aug | 0.320 | 0.008 |
| | | | | | | | | | Sep | 0.230 | 0.005 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.025 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikolgo ya tšona le a fihlelelwa. | Go swara mohlagase | ≤ 30 milliSiemens/mitara(mS/m) (95th persente) | | |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara(ml) (95th persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | gwa swanela go hlola kotsi bophelong bja batho. | | |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. Ditekanyetšo di swanetše gore di hlalošwe go laola dithulano tša moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Diphatlalatši tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Metolachlor | ≤0.30 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga meetse EC = B ≥ 82% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dikelelo tša poelo morago tša madulo di swanetše gore di laolwe. | | |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. Tlhokomelo ya lefelo la kgauswi le meetse mafelong a go buna, le go laola puno lefelong la kgauswi le meetse. | Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo ya mehuta ya CPRE le mehuta yeo e kgethago madulo, MMAC le AJOH. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le tikologo ya tšona = C<br>FRAI ≥ 62%<br>Mohlala wa10+ wa mehuta ya matsapa a mohlala<br>Mohlala wa 10 *AJOH ka matsapa a metsotso ye 20* |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse ka bolaodi bja maleba bja madulo. | Dinonynane tša ka gare ga meetse/ mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba yeo e kgobokeditšwego. | | |
| | | | | | | Dimakroinbetheporeiti tša gare ka ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0<br><br>(Lefelo MOK_EWR2) | | |
| | | | | | | Ditaeathomo | Kgoboketšo ya ditaeathomo e swanetše gore e hlokomelwe ka gare ga seemo se se golo sa hlago goba go kaonafatšwa. | Intekse ya Tšhilafatšo ye e itšego | Ditaeathomo EC ≥ 82% | | |
| | | Letamo la Mokolo go iša karolong ya godimo ya A42G | 15_4 | | Boleng | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo: Noka ya Mokolo MOK_EWR3 go | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša | | Thlokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.383 | 0.005 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (dikilomitara tše 10 tša kelelo ya tlase ya letamo) | | | | | A42G<br>NMAR = $215.995 \times 10^6 m^3$<br>Legoro la PES=B/C<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | komelelo.<br><br>Tlhokomelo ya Noka ya Mokolo go A4H010 | Nov | 0.399 | 0.005 |
| | | | | | | | | | Dec | 0.406 | 0.005 |
| | | | | | | | | | Jan | 0.444 | 0.015 |
| | | | | | | | | | Feb | 0.559 | 0.020 |
| | | | | | | | | | Mar | 0.504 | 0.018 |
| | | | | | | | | | Apr | 0.493 | 0.015 |
| | | | | | | | | | May | 0.450 | 0.010 |
| | | | | | | | | | Jun | 0.441 | 0.008 |
| | | | | | | | | | Jul | 0.413 | 0.006 |
| | | | | | | | | | Aug | 0.399 | 0.005 |
| | | | | | | | | | Sep | 0.396 | 0.005 |
| | | | | | | Dikelelo tša godimo | Tlhokomelo ya ERW ya dikelelo tša godimo:<br>Noka ya Mokolo go MOK_EWR3 in A42G<br>NMAR = $215.995 \times 10^6 m^3$<br>Legoro la PES=B/C<br><br>Dikelelo tša godimo di swanetše gore di amogelwe go thekga dinyakwa tša tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Mafula<br><br>Kelelo ya godimo yeo e beilwego bjalo ka senyakwa sa lefula leo le ikemetšego go ya ka bogolo le nako.<br><br>Tlhokomelo ya Noka ya Mokolo go A4H010 | Go ya molao wa tshepedišo thempleiting ya Poloko, Karolo 3. | | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.010 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka | ≤ 0.5 dimillikramo/litara (50th persente) | | |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Naetrotšene | |
| | | | | | | Matswai | Maemo a letswai la ka gare ga meetse a swanetše gore a amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Go swara mophlagase | ≤ 30 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphathotšene | Go ba gona ga di phathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 dimillilitara (ml) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. Ditekanyetšo di swanetše gore di hlalošwe go laola dithulano tša moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% go tloga phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong laB/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya lefelo la kgauswi le meetse ka *Syzygium cordatum.* | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela. | VEGRAI EC = B/C ≥ 78% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo bja mehuta ya | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la Hlapi = B/C FRAI ≥ 78% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | CPRE. | | |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse ka bolaodi bja maleba bja madulo. | Dinonyane tša ka gare ga meetse/mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e dirwe ka ngwa go bontšha setšhaba sa dinyonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona gona yeo e kgobokeditšwego. |
| | | | | | | Dimakroinbetheporteiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 6.0 |
| | | Letamo la Mokolo | 15_4 | | Bokae | Maemo a letamo | Letamo le swanetše gore le laolwe go šireletša mošomo wa tswalano ya diphedi le tikologo ya tšona le bašomiši ba kelelo ya tlase. Go tšweletša le go tsošološa melao ya tshepedišo ya | Maemo a ma nnyane a gošoma ao a hlokegago letamong | Melawana ya tshepedišo go ya ka moo e kgonega.<br><br>Seemo sa fase go tshwarelela seemo sa akhwatiki sa ekhosestemo (15-18%). |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | letamo go hlokomela maemo a letamo go netefatša gore phapaphapano ya tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse e a hlokomelwa. Tahlo ya letamo e hlokega gore e fihlelele dikelelo tša tlase mabapi le dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona. | | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya othofosfeiti e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša *bašomiš ba meetse. Letamo le swanet*še gore le hlokomelwe bjalo ka sesteme ya olikrotrofiki. | Diothofosfeiti | ≤ 0.010 mg/ℓ<br>50th persente |
| | | | | | | | Phatlalatšo ya fosforase e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya | Palomoka ya Fosforase | ≤ 0.025 mg/ℓ<br>50th persente |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya olikrotrofiki. | | |
| | | | | | | | Phatlalatšo ya Naetraete le Naetreiti e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba meetse. Letamo le swanetše gore le hlokomelwe bjalo ka sesteme ya olikotrofiki. | Naetraete le Naetreiti | ≤ 0.50 mg/ℓ N 95th persente |
| | | | | | | Matswai | Letswai la ka gare ga letamo le swanetše gore le hlokomelwe go thekga bophelo bja tswalano ya diphedi le tikologo ya tšona le dinyakwa tša khwalithi ya meetse tša bašomiši ba kelelo ya tlase. | Go swara mohlagase | ≤ 20 mS/m<br>95th persente |
| | | | | | | Diphathotšene | Go ba gona ga diphathotšene ga se gwa swanela go hlola kotsi bophelong bja batho. | *Escherichia coli* (*E.coli*) | 130 counts/100 millilitara(ml)<br>(95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Meetse a swanetše gore a amogelwe mabapi le tšhomišo | pH | 6.5 – 9.0<br>95th persente |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ya tša boitapološo. | | |
| | | | | | | | Hlalošo yeo e tseneletšego ka go bala | Turbidity | ≥0.4 m<br>5th persente |
| | | Meedi ya Grootspruit le Sandspruit (Letangwana la meetse a Mokolo) (A42A, A42B) | 15_5 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya ERW ya dikelelo tša tlase le komelelo:<br>Grootspruit go A42B<br>NMAR = 27.8 x$10^6$m$^3$<br>Legoro la REC= D<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya tahlo ka nako ya dinyakišišo tša payolotši. | Tlhokomelo ya dikelelo tša tlase ($m^3$/s) / Dikelelo tša komelelo ($m^3$/s)<br>Oct 0.271 / 0.136<br>Nov 0.269 / 0.135<br>Dec 0.291 / 0.148<br>Jan 0.345 / 0.180<br>Feb 0.401 / 0.213<br>Mar 0.384 / 0.203<br>Apr 0.338 / 0.160<br>May 0.320 / 0.120<br>Jun 0.311 / 0.160<br>Jul 0.304 / 0.156<br>Aug 0.299 / 0.152<br>Sep 0.286 / 0.145 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e amogelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.05 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.7 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Maemo a ka gare ga meetse a leswai a swanetše gore a amogelwe go | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m)<br>(95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | | |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |
| | | | | | | | Tlhlahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. Ditekanyetšo di swanetše gore di hlalošwe go laola dithulano tša moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše | Intekse ya potego ya madulo, mokgwa | Potego ya Madulo a ka gare ga Meetse EC = C ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona. Kgokagano ya mehuta ya go huduga e swanetše gore e hlokomelwe. | wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la C la tswalano ya diphedi le tkologo ya tšona. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 70% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo mabapi le mehuta ya CPRE, AURA, LCYL le mehuta yeo e kgethago madulo ya MMAC le AJOH. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalanoya diphedi le tikologo ya tšona la hlapi = C FRAI ≥ 62%<br>Mohlala wa 10+ ya mehuta go ya ka matsapa a mohlala |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ya noka e swanetše gore e hlokomelwe go šoma bjalo ka tsela ya madulo le ya go huduga ya ditšhaba tša dinonyane tša ka gare ga meetse ka mokgwa wa bolaodi | Mehuta ya dinonyane tša ka gare ga meetse | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bja maleba bja madulo. Tlhokomelo ya lefelo la kgauswi le meetse- go tloša dimela tšeo di sa nyakegego, go kaonafatša ga mehuta ya setlogo. | | motheo wa datha yeo e lego gona goba e kgobokeditšwego. | | |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la D la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = D ≥ 42%<br>SASS ≥ 80<br>ASPT ≥ 5.5<br><br>(LefeloA4GROO-GROOT) | | |
| | | Noka ya Mokolo go tloga Nokeng ya Dwars go iša kopanong le Sterkstroom, Klein Vaalwaterspruit (A42E) | 15_6 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Mokolo go MOK_EWR1b go la A42E<br>NMAR = $135.03 \times 10^6 m^3$<br>Legoro la PES=B/C<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya tahlo ya Noka ya Mokolo ka nako ya dinyakišišo tša payolotši | | Tlhokomelo ya dikelelo tša tlase($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.120 | 0.005 |
| | | | | | | | | | Nov | 0.120 | 0.005 |
| | | | | | | | | | Dec | 0.320 | 0.020 |
| | | | | | | | | | Jan | 0.700 | 0.050 |
| | | | | | | | | | Feb | 1.400 | 0.080 |
| | | | | | | | | | Mar | 1.150 | 0.065 |
| | | | | | | | | | Apr | 0.850 | 0.050 |
| | | | | | | | | | May | 0.600 | 0.040 |
| | | | | | | | | | Jun | 0.450 | 0.020 |
| | | | | | | | | | Jul | 0.320 | 0.015 |
| | | | | | | | | | Aug | 0.250 | 0.010 |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | | |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.020 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.5 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Phatlalatšo ya ka gare ga meetse ya letswai e swanetše gore e hlokomelwe go šireletša seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona le bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Go swara Mohlagase | ≤ 30 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tša tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le | Phapaphapano ya pH | 6.5 (5th persente) le 8.0 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | dinyakwa tša mošomiši wa meetse. | | |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. Ditekanyetšo di swanetše gore di hlalošwe go laola dithulano tša moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Diphatlalatši tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a ka gare ga Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona goba seemong se se kaone. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B/C ≥ 78% |

| IUA | Legoro | Noka | Yuniti ya mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la B/C la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la Tswalano ya diphedi le tikologo ya tšona la Hlapi = B/C<br>FRAI ≥ 78% |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe legorong la B/C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = B/C ≥ 78%<br>SASS ≥ 140<br>ASPT ≥ 6.0<br><br>(MOK_EWR1b in A42E) |

**Tafolana 18: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 16: Tafola19: LOWER MOKOLO**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| 16: LOWER MOKOLO | II | Noka ya Tambotie A42H (Karolo ye kgolo-eastern) | 16_1 | B/C | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Potego ya Madulo | Potego ya Madulo a gare ga Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya lefelo la kgauswi le meetse. | Intekse ya Potego ya Madulo | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo bja mehuta ya CPRE, CPAR, LCYL, LRUD le mehuta yeo e kgethago madulo ya MMAC le AJOH. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la Hlapi = B FRAI ≥ 82%<br>Mohlala wa 20+ wa mehuta go ya ka matsapa a mohlala<br>Mohlala 5 *BBRI* le 3 *PCAT* ka matsapa a metsotso ye 20 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Poer-se-Loop (letangwana la godimo) (A42G) | 16_2 | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya go ntša le kelelo. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya seemo sa lefelo la kgauswi le meetse. | Intekse ya Potego ya Madulo, INtekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e direge ka ngwaga go hlokomela kgahlanong le leroro leo le beeleditšwego la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo bja mehuta yeo e ikemetšego le yeo e kgethago madulo. (Letangwana la godimo) | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi la B FRAI ≥ 82%<br>Mohlala wa 25+ wa mehuta go ya ka matsapa a mohlala<br>Mohlala wa 5 *BBRI* le 3 *PCAT* ka matsapa a metsotso ye 20 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | Sandloop A42J le karolo yeo e šetšego ya A42H | 16_4 | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go netefatša gore legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona le a fihlelelwa. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.05 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.1 dimillikramo/litara (50th persente |
| | | | | | | Matswai | Phatlalatšo ya ka gare ga meetse ya letswai e swanetše gore e hlokomelwe go šireletša seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona le bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Go swara mohlagase | ≤ 55 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhahlobo ya mothalohlahli e swanetše gore e dirwe go bontšha seemo sa bjale sa ka gare ga meetse. Ditekanyetšo di swanetše gore di hlalošwe go laola moepo wa seleiti mothopong. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. Ditekanyetšo di swanetše gore di bontšhwe. |
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | | | | Aluminiamo (Al) | ≤ 0.062 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 dimillikramo/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Khopha (Cu) ya go tia | ≤ 0.0048 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a kgauswi le Meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona.. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | Seteme sa Mokolo go iša kopanong ya Tambotie ka tlase ga phihlelelo ya (bedrock (sand go lahlela, karolong ye kgolo ya noka )<br><br>A42G gare ga seteme se se golo sa noka | 16_5_1 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br><br>Noka ya Mokolo go MOK_EWR4 go la A42G<br>NMAR = $253.5 \times 10^6 m^3$<br>Legoro la PES=C<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e hlokomelwe go thekga tswalano ya diphedi le tikologo ya tšona le bašomiši ba kelelo ya tlase. | Dikelelo tša motheo<br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Hlokomelo ya Noka ya Mokolo go A4H013 | Oct | 0.489 | 0 |
| | | | | | | | | | Nov | 0.508 | 0 |
| | | | | | | | | | Dec | 0.508 | 0 |
| | | | | | | | | | Jan | 0.540 | 0 |
| | | | | | | | | | Feb | 0.657 | 0 |
| | | | | | | | | | Mar | 0.595 | 0 |
| | | | | | | | | | Apr | 0.589 | 0 |
| | | | | | | | | | May | 0.547 | 0 |
| | | | | | | | | | Jun | 0.543 | 0 |
| | | | | | | | | | Jul | 0.512 | 0 |
| | | | | | | | | | Aug | 0.500 | 0 |
| | | | | | | | | | Sep | 0.504 | 0 |
| | | | | | | Dikelelo tša godimo | Dikelelo tša godimo tša EWR:<br>Noka ya Mokolo go MOK_EWR4 go la A42G<br>NMAR = $253.5 \times 10^6 m^3$<br>Legoro la REC=C<br><br>Dikelelo tša godimo di swanetše gore di fihlelelwe go thekga dinyakwa tša tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Mafula<br><br>Tlhokomelo ya Noka ya Mokolo go la A4H013 | | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona le go hlokomela seemo sa tswalano ya diphedi le tikologo ya tšona. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.02 dimillikramo/litara (mg/l) (50th persente) |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.05 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Phatlalatšo ya ka gare ga meetse ya letswai e swanetše gore e hlokomelwe go šireletša seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona le bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Go swara mohlagase | ≤ 30 milliSiemens/mitara(mS/m) (95th persente) |
| | | | | | | | | Salfeiti | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le8.5 (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšende yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | Ditšhilafatši | Phatlalatšo ya dišilafatši ga se ya swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la B/C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. Tlhokomelo ya go ntšha le kelelo. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a Kgauswi le Meetse EC = B ≥ 82% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse Riparian | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B/C. Go netefatša gore kgolo ya tlase yeo e hlokometšwego go dumelela kgoboketšo ya Xanthocercis zambesiaca ka nako ya dithlahlobo tša VEGRAI. Tlhokomelo ya lefelo la kgauswi le meetse. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B/C ≥ 80% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tšwa legorong la C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi/bontši bja kelelo ya mehuta yeo e kgethago madulo. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = B/C FRAI ≥ 78%<br><br>Mohlala wa 25+ wa mehuta go ya ka matsapa a mohlala<br><br>Mohlala wa 5 *BBRI* le 3 *PCAT* ka matsapa a metsotso ye 20 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Payotha ya ka gare ga meetse ya gare | Tshwarelelo ya katološo ye ya noka mabapi le go šoma bjalo ka madulo a a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi e swanetše gore e hlokomelwe ka mokgwa wa bolaodi bja maleba bja madulo. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi ya go bontša | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontša setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le tlhokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | Dimakroinbetheporeiti tša MIRAI<br>EC = C ≥ 62%<br>SASS ≥ 80<br>ASPT ≥ 5.2 |
| | | Seteme se se golo sa Mokolo go tloga kopanong ya Tambotie go iša Limpopo A42H, A42J nokeng ya | 16_5_2 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya dikelelo tša nokeng go thekga dinyakwa tša monola go A42J | Dikelelo tša motheo | Dinyakwa tša monola mabapi le lefelo la lefula- dikelelo tša tlhokomelo lefelong le le mpša - (e be e le A4H014) |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go hlokomela bophelo bja | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.01 dimillikramo/litara (mg/l) (50th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | seteme se se golo | | | | | tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse, le go hlokomela seemo sa tswalano ya diphedi le tikologo ya tšona. | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.05 dimillikramo/litara (50th persente) |
| | | | | | | Matswai | Phatlalatšo ya letswai e swanetše gore e hlokomelwe go šireletša seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona le bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Go swara mohlagase | ≤ 30 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | | | | Salfeiti | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | | | | Sodiamo | ≤ 20 dimillikramo/litara (95th persente) |
| | | | | | | Diphapaphapano tša sesteme | Phapaphapano ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya phatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ditšhilafatši | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Aluminiamo (Al) | ≤ 0.062 millikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) hard | ≤ 0.0057 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopha (Cu) ya go tia | ≤ 0.0048 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Atrazaene | ≤0.078 dimillikramo/litara (mg/l) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D. Tlhokomelo ya go ntša le kelelo . Tlhokomelo ya kgokagano ye botse ya mafelo a kelelo ya godimo (16_5_1). | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a kgauswi le EC = C/D ≥ 58% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D. Go netefatša gore kgolo ya tlase e hlokometšwe go dumelela kgoboketšo ya Xanthocercis zambesiaca ka nako ya tlhahlobo ya VEGRAI. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C/D ≥ 58% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la D la tswalano ya diphedi le tikologo ya tšona go iša legorong la C/D. Tlhahlobo ya setšhaba sa dihlapi e swanetše gore e dirwe ka ngwaga go hlokomela kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI | Legoro la tswalano ya diphedi le tikologo ya tšona la Hlapi = C/D FRAI ≥ 58%<br>Mohlala wa 12+ wa mehuta go ya ka matsapa a mohlala |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse ka mokgwa wa maleba wa bolaodi bja madulo. Tlhokomelo ya lefelo la kgauswi le meetse. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. |

**Tafolana 19: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 17a:**
**Tafolana 19: MOTHLABATSI / MAMBA**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17a: MOTHLABATSI / MAMBA | I | Noka ya Mamba (A41B) | 17a_1 | B/C | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Noka ya Mamba go MAT_EWR3 go la A41B<br>NMAR = $9.54 \times 10^6 m^3$ | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo. | | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelleo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.034 | 0.004 |
| | | | | | | | | | Nov | 0.047 | 0.007 |
| | | | | | | | | | Dec | 0.072 | 0.014 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Legoro la REC=B/C<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse le bašomiši ba kelelo ya tlase. | Tlhokomelo ya tahlo ya Noka ya Mamba ka nako ya dinyakišišo tša payolotši | Jan | 0.104 | 0.021 |
| | | | | | | | | | Feb | 0.149 | 0.016 |
| | | | | | | | | | Mar | 0.129 | 0.011 |
| | | | | | | | | | Apr | 0.090 | 0.011 |
| | | | | | | | | | May | 0.058 | 0.004 |
| | | | | | | | | | Jun | 0.045 | 0.011 |
| | | | | | | | | | Jul | 0.039 | 0.011 |
| | | | | | | | | | Aug | 0.035 | 0.011 |
| | | | | | | | | | Sep | 0.030 | 0.007 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona le potego ya tswalano ya diphedi le tikologo ya tšona ya sesteme. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.015 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.25 dimillikramo/litara (50th persente) | | |
| | | | | | | Matswai | Maemo a leswai a ka gare ga meetse a swanetše gore a hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona le potego ya tswalano ya diphedi le tikologo ya tšona ya sesteme. | Go swara mohlagase | ≤ 20 milliSiemens/mitara (mS/m) (95th persente) | | |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la B/C la tswalano ya diphedi le tikologo ya tšona. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model | Potego ya Madulo a gare ga Meetse EC= B/C ≥ 78% | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (RHAMM) | |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la B/C la tswalano ya diphedi le tikologo ya tšona. Go netefatša gore ga go na tšwetšopele lefelong la kgauswi le meetse. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B/C ≥ 78% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya kelelo ya tlase go akaretša magoro a belosithi ya kelelo le bontši mabapi le mehuta yeo e ithekgilego ka kelelo. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = C FRAI ≥ 62%<br>Mohlala wa 7+ wa mehuta go ya ka matsapa a mohlala. Mohlala wa 8 *AURA* le 2 *CTHE* ka nako ya matsapa a mohlala |
| | | | | | | Payotha ya gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo le tsela ya go huduga ya ditšhaba tša dinonyane tša ka gare ga meetse ka mokgwa wa bolaodi bja maleba bja madulo. Lefelo la kgauswi le meetse leo le šireletšegilego. | Mehuta ya dinonyane tša ka gare ga meetse | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 130<br>ASPT ≥ 5.5 | | |
| | | Noka ya Mothlabatsi/ Matlabas (A41A, A41B) | 17a_2 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Matlabas go MAT_EWR2 go la A41C<br>NMAR = 32.80x$10^6$m$^3$<br>Legoro la REC=B/C<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya tahlo ya Noka ya Matlabas go la A4H004 | | Tlhokomelo ya dikelelo tša tlase ($m^3$/s) | Dikelelo tša komelelo ($m^3$/s) |
| | | | | | | | | | Oct | 0.153 | 0.007 |
| | | | | | | | | | Nov | 0.178 | 0.012 |
| | | | | | | | | | Dec | 0.220 | 0.080 |
| | | | | | | | | | Jan | 0.280 | 0.101 |
| | | | | | | | | | Feb | 0.373 | 0.095 |
| | | | | | | | | | Mar | 0.330 | 0.116 |
| | | | | | | | | | Apr | 0.265 | 0.077 |
| | | | | | | | | | May | 0.208 | 0.071 |
| | | | | | | | | | Jun | 0.193 | 0.070 |
| | | | | | | | | | Jul | 0.179 | 0.065 |
| | | | | | | | | | Aug | 0.168 | 0.034 |
| | | | | | | | | | Sep | 0.154 | 0.008 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go šireletša bophelo bja tswalano ya diphedi le | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.015 dimillikramo/litara (mg/l) (50th persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.25 dimillikramo/litara (50th persente) | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | tikologo ya tšona ya ka gare ga meetse le potego ya tswalano ya diphedi le tikologo ya tšona ya sesteme. | | |
| | | | | | | Matswai | Maemo a leswai a ka gare ga meetse a swanetše gore a hlokomelwe go šireletša bophelo bja tswalano ya diphedi le tikologo ya tšona le potego ya tswalano ya diphedi le tikologo ya tšona ya sesteme. | Go swara mohlagase | ≤ 20 milliSiemens/mitara (mS/m) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la C la tswalano ya diphedi le tikologo ya tšona go iša legorong la B/C. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a kgauswi le meetse EC = B/C ≥ 78% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la C la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = C ≥ 62% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se kaonafatšwe go tloga legorong la C la tswalano ya diphedi le tikologo ya tšona. Tlhahlobo ya setšhaba sa dihlapi se swanetše gore e dirwe ka ngwaga go | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = C FRAI ≥ 62% |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | hlokomela kgahlanong le legoro leo le beleditšwego la tswalano ya diphedi le tikologo ya tšona. | | | | |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo le tsela ya go huduga ya ditšhaba tša dinonyane tša ka gare ga meetse ka mokgwa wa bolaodi bja maleba bja madulo. Tlhokomelo ya lefelo la kgauswi le meetse. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. | | |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 140<br>ASPT ≥ 5.5 | | |
| | | Headwaters Mothlabatsi (Matlabas-Zyn-Kloof, peatlands) | 17a_3 | | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo: Matlabas Zyn Kloof go MAT_EWR1 go la A41A | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo. | | Tlhokomelo ya dikelelo tša tlase ($m^3/s$) | Dikelelo tša komelelo ($m^3/s$) |
| | | | | | | | | | Oct | 0.053 | 0.022 |
| | | | | | | | | | Nov | 0.057 | 0.027 |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la Tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (A41A) | | | | | NMAR = $5.23x10^6m^3$<br>Legoro la REC=A<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Tlhokomelo ya Matlabas Zyn Kloof ka nako ya dinyakišišo tša payolotši | Dec | 0.063 | 0.030 |
| | | | | | | | | | Jan | 0.075 | 0.037 |
| | | | | | | | | | Feb | 0.094 | 0.041 |
| | | | | | | | | | Mar | 0.086 | 0.037 |
| | | | | | | | | | Apr | 0.076 | 0.031 |
| | | | | | | | | | May | 0.065 | 0.030 |
| | | | | | | | | | Jun | 0.065 | 0.033 |
| | | | | | | | | | Jul | 0.061 | 0.032 |
| | | | | | | | | | Aug | 0.060 | 0.031 |
| | | | | | | | | | Sep | 0.056 | 0.030 |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e kaonafatšwe go tloga legorong la B la tswalano ya diphedi le tikologo ya tšona go iša legorong la A. | Intekse ya Potego ya Madulo | Potego ya Madulo a kgauswi le Meetse EC = A ≥ 90% | | |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% | | |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya kelelo go akaretša magoro a belosithi ya kelelo le bontši mabapi le mehuta yeo e ithekgilego ka kelelo. | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya diphedi le tikologo ya tšona la hlapi = B FRAI ≥ 82%<br><br>Mohlala wa 5+ wa mehuta go ya ka matsapa a mohlala. Mohlala wa 8 wa *AURA ka nako ya matsapa a mohlala* | | |

**Tafolana 20: Maikemišetšo a Boleng bja Mothopo a Diyuniti tša Mothopo go DINOKA le MATAMO mabapi le Tlhahlobo yeo e Tsenelelanago ya Yuniti ya Tlhahlobo 17b: MATLABAS / LIMPOPO**

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17b: MATLABAS | II | Matlabas (A41D, A41C) | 17b_1 | B/C | Bokae | Dikelelo tša tlase | Tlhokomelo ya EWR ya dikelelo tša tlase le komelelo:<br>Matlabas go MAT_EWR4 go la A41C<br>NMAR = 35.58x10$^6$m$^3$<br>Legoro la REC=B<br><br>Tlhokomelo ya dikelelo tša tlase le dikelelo tša komelelo e swanetše gore e amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Dikelelo tša motheo<br><br>Dikelelo tša tlhokomelo le dikelelo tša komelelo.<br><br>Tlhokomelo ya tahlo ya Noka ya Matlabas ka nako ya dinyakišišo tša payolotši | | Tlhokomelo ya dikelelo tša tlase (m$^3$/s) | Dikelelo tša komelelo (m$^3$/s) |
| | | | | | | | | | Oct | 0.151 | 0.007 |
| | | | | | | | | | Nov | 0.178 | 0.016 |
| | | | | | | | | | Dec | 0.225 | 0.072 |
| | | | | | | | | | Jan | 0.285 | 0.092 |
| | | | | | | | | | Feb | 0.398 | 0.100 |
| | | | | | | | | | Mar | 0.339 | 0.110 |
| | | | | | | | | | Apr | 0.266 | 0.077 |
| | | | | | | | | | May | 0.208 | 0.066 |
| | | | | | | | | | Jun | 0.192 | 0.061 |
| | | | | | | | | | Jul | 0.178 | 0.056 |
| | | | | | | | | | Aug | 0.166 | 0.034 |
| | | | | | | | | | Sep | 0.151 | 0.008 |
| | | | | | Boleng | Diphepo | Phatlalatšo ya ka gare ga meetse ya diphepo e swanetše gore e hlokomelwe go hlokomela bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse, le go hlokomela seemo sa tswalano ya diphedi le tikologo ya tšona. | Othofosfeiti ($PO_4^-$) bjalo ka Fosforase | ≤ 0.050 dimillikramo/litara (mg/l) (50$^{th}$ persente) | | |
| | | | | | | | | Naetreiti ($NO_3^-$) le Naetraete ($NO_2^-$) bjalo ka Naetrotšene | ≤ 0.07 dimillikramo/litara (50$^{th}$ persente) | | |
| | | | | | | Matswai | Phatlalatšo ya ka gare ga meetse ya letswai e swanetše gore e hlokomelwe go šireletša seemo sa bjale sa tswalano ya diphedi le tikologo ya tšona le | Go swara mohlagase | ≤ 40 milliSiemens/mitara (mS/m) (95$^{th}$ persente) | | |
| | | | | | | | | Salfeiti | ≤ 20 dimillikramo/litara (50$^{th}$ persente) | | |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | bophelo bja tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | | |
| | | | | | | Ditšhilafatši tša diphapaphapano tša sesteme | Phapaphapapno ya pH e swanetše gore e hlokomelwe ka gare ga ditekanyetšo tšeo di beilwego go thekga tswalano ya diphedi ya ka gare ga meetse le dinyakwa tša mošomiši wa meetse. | Phapaphapano ya pH | 6.5 (5th persente) le 8.5 (95th persente) |
| | | | | | | | Tlhahlobo ya mothalohlahli go bontšha seemo sa bjale sa ka gare ga meetse e a hlokega. | Turbidity | Phapaphapano ya 10% ya thatlalatšo ya setlogo e dumeletšwe. |
| | | | | | | | Maemo a oksetšene yeo e tološitšwego a swanetše gore a amogelwe go thekga tswalano ya diphedi le tikologo ya tšona ya ka gare ga meetse. | Oksetšene yeo e tološitšwego | ≥ 6 dimillikramo/litara (mg/l) |
| | | | | | | | Diphatlalatšo tša ditšhilafatši ga se tša swanela go hlola kotsi bophelong bja batho le diphedi tša ka gare ga meetse. | Aluminiamo (Al) | ≤ 0.062 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Mankanese (Mn) | ≤ 0.15 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Ayone (Fe) | ≤ 0.1 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Lead (Pb) ya go tia | ≤ 0.0057 dimillikramo/litara (mg/l) (95th persente) |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Khopha (Cu) hard | ≤ 0.0048 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Nikele (Ni) | ≤ 0.07 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Khopalte (Co) | ≤ 0.05 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | | | | Zink (Zn) | ≤ 0.002 dimillikramo/litara (mg/l) (95th persente) |
| | | | | | Madulo | Ka gare ga meetse | Phapaphapano ya madulo e swanetše gore e hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. Go šireletša potego ya ka gare ga meetse ka go laola dithulano tšeo di theilwego godimo ga mabu. Kgokagano ya Noka ya Limpopo e swanetše gore e hlokomelwe. | Intekse ya potego ya madulo, mokgwa wa tlhahlobo ya madulo a koketšego le mokgwa (Rapid Habitat Assessment Method and Model (RHAMM) | Potego ya Madulo a gare ga meetse EC = B ≥ 82% |
| | | | | | | Madulo a kgauswi le meetse | Dimela tša kgauswi le meetse di swanetše gore di hlokomelwe legorong la B la tswalano ya diphedi le tikologo ya tšona. | Intekse ya Potego ya Madulo, Intekse ya Tlhahlobo ya Karabo ya Dimela | VEGRAI EC = B ≥ 82% |
| | | | | | Payotha | Hlapi | Setšhaba sa dihlapi se swanetše gore se hlokomelwe ka gare ga legoro la B la tswalano ya diphedi le tikologo ya tšona. Tlhokomelo ya belosithi ya kelelo le šireletšo ya legoro la bontši mabapi le mehuta yeo e amegago | Intekse ya Tlhahlobo ya Karabo ya Hlapi (Fish Response Assessment Index (FRAI) | Legoro la tswalano ya iphedi le tikologo ya tšona la hlapi = B FRAI ≥ 82%<br>Mohlala wa 13+ wa mehuta ka nako ya matsapa a mohlala |

| IUA | Legoro | Noka | Yuniti ya Mothopo | Legoro la tswalano ya diphedi le tikologo ya tšona | Karolwana | Karolwana ya gare | Tlhalošo ya RQO | Sebontšhi | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ka pela (go amega ka pela mabapi le kelelo: LMOL, BIMB le go kgetha madulo: PCAT. | | |
| | | | | | | Payotha ya ka gare ga meetse ya gare | Phihlelelo ye ya noka e swanetše gore e hlokomelwe go šoma bjalo ka madulo a dinonyane tša ka gare ga meetse le ditšhaba tša diphedi tša ka gare ga meetse ka mokgwa wa bolaodi bja maleba bja madulo. Tlhokomelo ya lefelo la kgauswi le meetse. | Dinonyane tša ka gare ga meetse/ mehuta ya diphedi ya go bontšha | Tlhahlobo ya mothalohlahli e swanetše gore e direge go bontšha setšhaba sa dinonyane tša ka gare ga meetse le mehuta ya diphedi yeo e emelago phihlelelong ya noka. Go na le hlokego ya go bea RQO ya nomoro ya bontši bja diphoofolo/dinonyane ka motheo wa datha yeo e lego gona goba e kgobokeditšwego. |
| | | | | | | Dimakroinbetheporeiti tša ka gare ga meetse | Kgoboketšo ya dimakroinbetheporeiti e swanetše gore e hlokomelwe ka gare ga legoro la C la tswalano ya diphedi le tikologo ya tšona goba go kaonafatšwa. | Intekse ya Tlhahlobo ya Karabo ya Makroinbetheporeiti, le Mohuta wa 5 wa Sesteme ya go Skora ya Afrika Borwa (Macroinvertebrate Response Assessment Index, and the South African Scoring System Version 5 (SASS5). | MIRAI EC = C ≥ 62%<br>SASS ≥ 120<br>ASPT ≥ 5.0 |

**Tafolana 21: Maikemišetšo a Boleng bja Mothopo a DIHLOPHA TŠE BOHLOKWA TŠA MEHLAKA** go Diyuniti tša Methopo yeo e kgethilwego **go Diyuniti tša Mothopo go Mokolo, Matlabas, Crocodile (West) le Marico WMA**

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| **1: UPPER CROCODILE / HENNOPS / HARTEBEESPOORT** | **1_1** | Khomplekse ya Morero wa Bronkhorstfontein (Morero) | Bokae | Pherimetha ya go koloba ya Pan bjalo ka ge go metarilwe go tloga teskthopong tswalanong le go na ga pula.. | Dithulano tša bokae bja meetse di swanetše gore di laolwe e sego go nyatša bohlokwa bja tswalano ya diphedi le tikologo ya tšona bja disesteme tše tša pan. Go ntša, goba dikeletšo tša maitirelo di swanetše gore di lekanyetšwe go dipan gore bontši le nako ya lefula di hlokomelwe ka gare ga phapano ya mengwaga ya go na ga pula ya godimo, bogare le tlase. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša pherimetha yeo e kolobilego tswalanong le go na ga pula ka nako mabapi le dipan tšeo di kgethilwego.<br><br>Go bušeletša tše tša ka godimo mengwa ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba ge e le gore go bile le diphetogo tše kgolo tswalanong ka gare ga pherimetha ya go koloba le go na ga pula ka nako go di pans tšeo di kgethilwego. |
| | | | Boleng | pH, go swara mohlagase, TDS, Palomoka ya Alkalinithi bjalo ka $CaCO_3$, Sodiamo, Khalsiamo, Maknesiamo, Salfeiti, Ione, Kloraete, Phothasiamo, Maknesiamo, Mankanese, Aluminiamo, Fosforase, Silikha, Floraete, Amonia le Naetraete. | Dithulano tša khwalithi ya meetse disestemeng tša dipan di swanetše gore di lekanyetšwe go netefatša gore khemistri ya meetse le sedimente e dula ka gare ga phapano ya mothalohlahli (phatlalatšo ya anione le khathione tswalanong ya bolumu ya pan) mabapi le mohuta wa pan ye ya khemistri ya meetse. | Mabapi le dipan tšeo di kgethilwego, mohlala wa mengwaga ye 3-5. |
| | | | Madulo | Legoro la PES la teskthopo (ka motheo wa lefelo la khwanthitheithibi ya gare ka motheo wa nhla ya gare ya bogolo ya diyuniti tša Dipan ka moka khomplekseng ya monola. | Legoro la PES ya ka gare ya motheo wa bontši bja motheo wa lefelo la C/D le swanetše gore le hlokomelwe. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo ga lefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | 1_1<br>1_2 | Khomphlekse ya Monola wa Rietvlei<br><br>Dibeli tša fase tšeo di filwe tsela le tšeo di sa fiwago tsela (Channelled and Unchannelled valley bottom (peatland) | Bokae | Go tlatša go go feletšego. | Go tlatša ga sa ruri go a hlokega go hlokomela phiti. Dikelelo di swanetše gore di be ka mokgwa wo o lego gore ga di hlole kotsi sebopegong/tšeomofolotšing ya sesteme ya monola. | Nako ya tlhahlobo ya madulo e bontša gore naa sesteme e sa tletše le gore phiti e sa le gona. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya khwanthitheithibi ya gare ya monola.<br><br>Katološo le phatlalatšo ya phiti le ditšhaba tša mehuta ya dibjalo tšeo di bopago diphiti monoleng. | Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semelo sa sesteme. Ditšhaba tša go fapafapana tša mehuta ya dibjalo tša phiti di swanetše gore di hlokomelwe.<br><br>Legoro la B la PES ya gare ya motheo wa lefelo, le ge e le gore legoro la maleba leo le ka hwetšagalago e le B/C.<br><br>Phatlalatšo ya phiti le katološo e swanetše gore e seke ya fetoga goba ya oketšega. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša pherimetha yeo e kolobilego tswalanong le go na ga pula ka nako mabapi le dipan tšeo di kgethilwego.<br><br>Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgollo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša ge aba katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | 1_3 | Glen Austin Pan<br><br>(Depression / Pan) | Bokae | Dipherimetha tša go koloba tša Pan go tloga mmepeng wa teskthopo tswalanong ya go na ga pula ka nako. | Dithulano tša bokae bja meetse di swanetše gore di laolwe e sego go nyatša bohlokwa bja tswalano ya diphedi le tikologo ya tšona bja disesteme tše tša pan. Go ntša, goba dikeletšo tša maitirelo di swanetše gore di lekanyetšwe go dipan gore | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša pherimetha yeo e kolobilego tswalanong le go na ga pula ka nako mabapi le dipan tšeo di kgethilwego.<br><br>Go bušeletša tše tša ka godimo mengwa ye 3-5 le go hlahloba le go bega se ka pono ya go |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | bontši le nako ya lefula di hlokomelwe ka gare ga phapano ya mengwaga ya go na ga pula ya godimo, bogare le tlase. | hlahloba ge e le gore go bile le diphetogo tše kgolo tswalanong gare ga pherimetha ya go koloba le go na ga pula ka nako go dipan tšeo di kgethilwego. |
| | | | Boleng | pH, go swara mohlagase, TDS, Palomoka ya Alkalinithi bjalo ka $CaCO_3$, Sodiamo, Khalsiamo, Maknesiamo, Salfeiti, Ayone, Tloraete, Phothasiamo, Maknesiamo, Mankanese, Aluminiamo, Fosforase, Silikha, Floraete, Amonia le Naetraete. | Dithulano tša khwalithi ya meetse disestemeng tša dipan di swanetše gore di lekanyetšwe go netefatša gore khemistri ya meetse le sedimente e dula ka gare ga phapano ya mothalohlahli (phatlalatšo ya anione le khathione tswalanong ya bolumu ya pan) mabapi le mohuta wa pan ye ya khemistri ya meetse | Mohlala wa mengwaga ye 3-5. |
| | | | Madulo | Legoro la PES la teskthopo (ka motheo wa lefelo la khwanthitheithibi ya gare ka motheo wa nhla ya gare ya bogolo ya diyuniti tša Pans-lebelela mokgwa wa Kotze, 2016a le 2016b). | Legoro la C/D la PES ya gare ya motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke D. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya k gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo. Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Payotha | Kgodišo ya setšhaba sa Giant Bullfrogs. | Go hlokomela kgodišo ya setšhaba sa Giant Bullrogs ka gare ga pan. | Go kgonthišetša go tloga direkotong tša go hlokomela le direkoto tša go bona tša di bullfrogs tše kgolo le ditiragalo tša kgodišo tšeo di ngwadilwego. |
| | **1_4** | Colbyn Valley Wetland<br><br>Dibeli tša fase tšeo di filwego tsela le tšeo di sa fiwago tsela (Channelled | Bokae | Go tlatša go go feletšego. | Go tlatša ga sa ruri go a hlokega go hlokomela phiti. Dikelelo di swanetše gore di be ka mokgwa wo o lego gore ga di hlole kotsi sebopegong/tšeomofolotšing ya sesteme ya monola. | Go bontša gore naa sesteme e tletše le gore phiti e sa le gona naa. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | and Unchannelled valley bottom (peatland) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya khwanthitheithibi ya gare ya monola.<br><br>Katološo le phatlalatšo ya phiti le ditšhaba tša mehuta ya dibjalo tšeo di bopago diphiti monoleng. | Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semelo sa sesteme. Ditšhaba tša go fapafapana tša mehuta ya dibjalo tša phiti di swanetše gore di hlokomelwe, go akaretša ditšhaba tša maleba tša mehuta ya dibjalo yeo e bopago phiti.<br><br>Legoro la B/C la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. Phatlalatšo ya phiti le katološo e swanetše gore e seke ya fetoga goba ya oketšega. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša/go lekanyetša gore katološo ya phiti le mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go dira tlhahlobo ya PES ya teskthopo le go bontša nthla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| 4: HEX / WATERKLOOFSPRUIT / VAALKOP | 4_6 | Monola wa Waterkloofspruit<br><br>Dibeli tšeo di sa fiwago tsela (Unchannelled valley bottom) | Bokae | Go tlatša go go feletšego. | Go tlatša ga sa ruri go a hlokega go hlokomela phiti. Dikelelo di swanetše gore di be ka mokgwa wo o lego gore ga di hlole kotsi sebopegong/tšeomofolotšing ya sesteme ya monola. | Go bontša gore naa sesteme e tletše le gore phiti e sa le gona naa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya khwanthitheithibi ya gare ya monola.<br><br>Katološo le phatlalatšo ya | Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semela sa sesteme le phapaphapano ka moka e swanetše gore e hlokomewe | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša/go lekanyetša gore katološo ya phiti le mehuta ya dibjalo tšeo di bopago phiti gare ga sesteme. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontšha | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | phiti le ditšhaba tša mehuta ya dibjalo tšeo di bopago diphiti monoleng | go akaretša ditšhaba tša maleba tša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Legoro la A la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke A/B.<br><br>Phatlalatšo ya phiti le katološo e swanetše gore e seke ya fetoga goba ya oketšega. | Go dira tlhahlobo ya PES ya teskthopo le go bontšha nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipans tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontšha/go lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| **5: ELANDS / VAALKOP** | **5_1** | Khomplekse ya Koster Pan<br><br>Depressions / Pans | Bokae | Dipherimetha tša go koloba tša Pan go tloga mmepeng wa teskthopo tswalanong ya go na ga pula ka nako. | Dithulano tša bokae bja meetse di swanetše gore di laolwe e sego go nyatša bohlokwa bja tswalano ya diphedi le tikologo ya tšona bja disesteme tše tša pan. Go ntša, goba dikeletšo tša maitirelo di swanetše gore di lekanyetšwe go dipan gore bontši le nako ya lefula di hlokomelwe ka gare ga phapano ya mengwaga ya go na ga pula ya godimo, bogare le tlase. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša pherimetha yeo e kolobilego tswalanong le go na ga pula ka nako mabapi le dipan tšeo di kgethilwego.<br><br>Go bušeletša tše tša ka godimo mengwa ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba ge e le gore go bile le diphetogo tše kgolo tswalanong ka gare ga pherimetha ya go koloba le go na ga pula ka nako go dipan tšeo di kgethilwego. |
| | | | Boleng | pH, go swara mohlagase, TDS, Palomoka ya Alkalinithi bjalo ka $CaCO_3$, Sodiamo, Khalsiamo, Maknesiamo, Salfeiti, Ayone, Kloraete, | Dithulano tša khwalithi ya meetse disestemeng tša dipan di swanetše gore di lekanyetšwe go netefatša gore khemistri ya meetse le | Mabapi le dipan tšeo di kgethilwego, mohlala wa mengwaga ye 3-5. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontšha | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | Phothasiamo, Maknesiamo, Mankanese, Aluminiamo, Fosforase, Silikha, Floraete, Amonia le Naetraete. | sedimente e dula ka gare ga phapano ya mothalohlahli (phatlalatšo ya anione le khathione tswalanong ya bolumu ya pan) mabapi le mohuta wa pan ye ya khemistri ya meetse. | |
| | | | Madulo | Legoro la PES la teskthopo (ka motheo wa lefelo la khwanthitheithibi ya gare ka motheo wa ntlha ya gare ya bogolo ya diyuniti tša Dipan ka moka khomplekseng ya monola. | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontšha nhla ya gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| 6a: KLEIN MARICO / KROMELLEMBOOG<br>8: MALMANIESLOOP | 6_1<br>8_1 | Khomplekse ya Monola wa Buffelshoek<br><br>Dibeli tša fase tšeo di filwego tsela le tšeo di sa fiwago tsela (Channelled and Unchannelled valley bottom) | Bokae | Ditšhupetšo tša meetse a tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša meetse a tlase ga mabu RU 6_1 le 8_1)).<br><br>Ditšhupetšo tša kelelo di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša meetse a tlase ga mabu).<br><br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontšha dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea Tekanyetšo ya Dipalo ya karolwana ya bokae bja meetse ya di RQO. |
| | | | Boleng | Ditšhupetšo tša Noka le tša meetse a tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le meetse a tlase ga mabu). | Di RQO tša noka le meetse a tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša noka le meetse a tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša noka le meetse a tlase ga mabu). Tsošološo ya tše ka motheo wa wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. S |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya ka gare ka motheo wa lefelo la | Legoro la C la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya | Go dira tlhahlobo ya PES ya teskthopo le go bontšha nhla ya gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la BAS ke C/D. | kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a tlase ka ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| | 6_1<br>8_1 | Paardenvallei Wetland Complex (Malmaniesloop)<br><br>Dibeli tšeo di filwego tsela le tšeo di sa fiwago tsela (Channelled and Unchannelled valley bottom) | Bokae | Ditšhupetšo tša meetse a tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a tlase ga mabu). Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a katlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a tlase ga mabu di a dirišwa.<br><br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea Tekanyetšo ya Dipalo ya karolwana ya bokae bja meetse ya di RQO. |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a tlase ga mabu). | Di RQO tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu). Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya ka gare ka motheo wa lefelo la khwanthitheithibi ya ka gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la C/D la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke D. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša pherimetha yeo e kolobilego tswalanong le go na ga pula ka nako mabapi le dipan tšeo di kgethilwego. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a tlase ga mabu di a dirišwa. |
| 7: KAALOOG-SE-LOOP | 7_1 | Marico Eye Wetland (Kaaloog se Loop)<br><br>Beli ya fase yeo e filwego tsela le yeo e sa fiwago tsela (Unchannelled valley bottom (peatland) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa.<br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea Tekanyetšo ya Dipalo ya karolwana ya bokae bja meetse ya di RQO. |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša | Ditekanyetšo tša nomoro tša meetse aka tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu).<br>Tsošološo ya tše ka motheo wa dipoelo tša |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | meetse a ka tlase ga mabu). | meetse a ka tlase ga mabu). | karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES la teskthopo (ka motheo wa lefelo la khwanthitheithibi ya gare ka motheo wa ntlha ya gare ya bogolo ya diyuniti tša Dipan-lebelela mokgwa wa Kotze, 2016a le 2016b). | Legoro la A/B la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke B. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| | **7_1** | Rietspruit Wetland<br><br>Beli ya fase yeo e filwego tsela le yoe e sa fiwago tsela (Channelled and Unchannelled valley bottom) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu le noka di a dirišwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya khwanthitheithibi ya gare ya monola. | Legoro la PES leo le theilwego godimo ga lefelo la bogolo la C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| | 7_1 | Tufa Waterfall<br><br>(Tufa) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge, le gore kelelo ya meetsee dula e na le kabo ya meetse.<br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontšha | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | Boleng | pH, go swara mohlagase, TDS, Palomoka ya Alkalinithi bjalo ka $CaCO_3$, Sodiamo, Khalsiamo, Maknesiamo, Salfeiti, Ayone, Kloraete, Phothasiamo, Maknesiamo, Mankanese, Aluminiamo, Fosforase, Silikha, Floraete, Amonia le Naetraete. | Maemo a letswai ga se a swanela go oketšega.<br><br>Diphatlalatši di swanetše gore di hlokomelwe maemong go go hwetša seemo sa maleba /se se botse sa go ba le khalseamo khaponeiti. | Go swara mohlagase: ≤ 50 mS/m<br>Mokgwa wa ngwaga wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (55 mS/m).<br><br>Tlhokomelo ya ga bedi ka ngwaga ya dikarolwana tše kgolo (dimakro elemente). |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| **8: MALMANIESLOOP** | **8_1** | Malmanieloop Wetland Complex<br><br>Beli ya fase yeo e filwego tsela le yeo e sa fiwago tsela (Channelled and Unchannelled valley bottom (peatland) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge le gore dimela tša kgauswi le meetse ga di fetoge sehleng ka moka sa selemo, le gore lefelo le dula le tletše ngwaga ka moka. Se ke se nyakwa sa go kgonthišetša dihaeterofaete go fetša modikologo wa tšona wa bophelo le go tšweletša go hlokomela phiti ya ka sestemeng.<br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša dinomoro tša meetse ka a tlase ga mabu di a dirišwa.<br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontšha dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea kraetheria ya nomoro ya karolwana ya bokae bja meetse ya di RQO. |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu le noka). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu. Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya ka gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola).<br><br>Katološo ya kabo ya phiti le ditšhaba tša mehuta ya dibjalo yeo e bopago phiti monoleng. | Dimela tša monola le tšeomofolotši di swanetše gore di hlokomelwe go šireletša semela sa sesteme le phapaphapano ka moka e swanetše gore e hlokomewe go akaretša ditšhaba tva maleba tša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Legoro la B la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C.<br><br>Phatlalatšo ya phiti le katološo e swanetše gore e seke ya fetoga goba ya oketšega. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša/go lekanyetša gore katološo ya phiti le mehuta ya dibjalo tšeo di bopago phiti gare ga sesteme.<br><br>Go dira tlhahlobo ya PES ya teskthopo le go bontša nthla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya di pans tveo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša gore naa katološo ya phiti gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la šireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| **8: MALMANIESLOOP**<br>**9: MOLOPO** | **8_1**<br>**9_2** | Khomplekse ya monola wa noka ya Molopo<br><br>Beli ya fase yeo e filwego tsela le yeo e sa fiwago tsela (Channelled and Unchannelled valley bottom (peatland) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge le gore dimela tša kgauswi le meetse ga di fetoge sehleng ka moka sa selemo le gore lefelo le dula le tletše ngwaga ka moka. Se ke se nyakwa sa go kgonthišetša di haeterofaete go fetša modikologo wa tšona wa bophelo le go tšweletša go hlokomela phiti ya sestemeng. | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa.<br><br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea kraetheria ya nomoro ya karolwana ya bokae bja meetse ya di RQO. |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu le noka di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu le noka). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu. Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya ka gare mabapi le diyuniti ka moka tša khomplekse ya monola).<br><br>Katološo ya kabo ya phiti le ditšhaba tša mehuta ya dibjalo yeo e bopago phiti monoleng. | Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semela sa sesteme le phapaphapano ka moka e swanetše gore e hlokomewe go akaretša ditšhaba tša maleba tša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Legoro la B la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C/D.<br><br>Phatlalatšo ya phiti le katološo e swanetše gore e seke ya fetoga goba ya oketšega. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša/go lekanyetša gore katološo ya phiti le mehuta ya dibjalo tšeo di bopago phiti ka gare ga sesteme.<br>Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo ga lefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | | Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| **8: MALMANIESLOOP** | **8_1** | Monola wa Vergenoegd<br><br>Beli ya fase yeo e filwego tsela le yeo e sa fiwago tsela (Channelled and Unchannelled valley bottom) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa.<br><br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea kraetheria ya nomoro ya karolwana ya bokae bja meetse ya di RQO |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu. Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la B/C la PES ya ka gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa. |
| **9: MOLOPO** | **9_2** | Khomplekse ya monola ya Noka ya Middle Molopo<br><br>Channelled valley bottom | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa.<br><br>Go tšea Poloko ya Monola ye bohlokwa yeo e kgokaganego le Monola wo tee wa Noka ya Molopo le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a tlase ga mabu). | Ditekanyetšo tša nomoro tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša noka le meetse a ka tlase ga mabu). Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES la teskthopo (ka motheo wa lefelo la khwanthitheithibi ya gare ka motheo wa nhla ya ka gare ya bogolo ya diyuniti tša Pans-lebelela mokgwa wa Kotze, 2016a le 2016b).<br><br>Katološo ya kabo ya phiti le ditšhaba tša mehuta ya dibjalo yeo e bopago phiti monoleng. | Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semela sa sesteme le phapaphapano ka moka e swanetše gore e hlokomewe go akaretša ditšhaba tša maleba tša mehuta ya dibjalo tšeo di bopago phiti<br>Legoro la PES ya C/D le godimo ga motheo wa magareng le ge ele gore motheo wa BAS o ka ba go D. | Go kopantša mmepe wa motheo wa teskthopo ya maleba mabapi le disesteme pele go ka thomišwa tlhokomelo go šomišwa seswantšho sa kgopolo sa bjale le go bontša/go lekanyetša gore katološo ya phiti le mehuta ya dibjalo tšeo di bopago phiti gare ga sesteme.<br><br>Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Nako ya tlhahlobo ya madulo e bontša/go |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontšha | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | Go aba Peate le koketšego go swanetše go se fetošwe/seemong se tee/go o ketšwe. | lekanyetša gore naa katološo ya phiti ka gare ga sesteme e fetogile. Go lekanyetša mehuta ya dibjalo tšeo di bopago phiti.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | **9_3**<br>**9_5** | Khomplekse ya Monola wa Noka ya Tlase ya Molopo River<br><br>Beli ya fase yeo e filwego tsela (Channelled valley bottom) | Madulo | Legoro la PES ya teskthopo (ka motheo wa ntlha ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la PES la D ka motheo wa godimo ga lefelo ka bogolo bja gare. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nthla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya di pans tveo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| **10: DINOKANA EYE / NGOTWANE DAM** | **10_1** | Monola wa Dinokana<br><br>Beli ya fase yeo e filwego tsela le yeo e sa fiwago tsela le Hilslope sipheitše ya mo go thapilego (Unchannelled and Channelled valley bottom and Hillslope seepage wetlands) | Bokae | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu).<br><br>Ditšhupetšo tša kelelo ya godimo ga mabu di swanetše gore di bontšhwe. | Kelelo ya motheo yeo e tšwelago pele e swanetše gore e hlokomelwe go netefatša gore sesteme e dula e sa fetoge.<br><br>Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa.<br>Go tšea Poloko ya monola ye bohlokwa mabapi le sesteme le go bontša dinyakwa tša kelelo ya tswalano ya diphedi le tikologo ya tšona tša monola. Šomiša tše go bea Tekanyetšo ya Dipalo ya karolwana ya bokae bja meetse ya di RQO |
| | | | Boleng | Ditšhupetšo tša noka le tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditšhupetšo tša noka le tša meetse a ka tlase ga mabu). | Di RQO tša noka le meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša noka le meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu. Tsošološo ya tše ka motheo wa dipoelo tša karolwana ya khwalithi ya meetse ya Poloko ya Monola ye bohlokwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | gore kgonagalo ya Legoro la BAS ke C. | godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Lefelo la tšhireletšo | Ditšhupetšo tša meetse a ka tlase ga mabu di a šomišwa (lebelela ditšhupetšo tša meetse a ka tlase ga mabu). | Di RQO tša meetse a ka tlase ga mabu di a dirišwa (lebelela di RQO tša meetse a ka tlase ga mabu). | Ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu di a dirišwa (lebelela ditekanyetšo tša nomoro tša meetse a ka tlase ga mabu). |
| | **10_1** | Monola wa Ngotwane<br><br>Beli ya fase yeo e sa fiwago tsela (Unchannelled valley bottom) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| 11b: GROOT MARICO / SEASONAL TRIBUTARIES | 11_b_2 | Noka ya fase ya Lenkwane Wetland<br><br>Beli ya fase yeo e sa fiwago tsela yeo e kopantšwego le Floodplain (Unchannelled valley bottom linked to Floodplain) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la PES la B ka motheo wa godimo ga lefelo ka bogolo bja gare. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| 12: BIERSPRUIT | 12_1 | Khomplekse ya Monola wa Kolobeng<br><br>Beli ya fase yeo e filwego tsela le Floodplain (Channelled valley bottom and floodplain) | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng. | • Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba wo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| 17 b: MATLOD ILE | 13_3<br>17_b_1 | Noka ya Lower Crocodile | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula | Mafula a a hlokega go hlola lefelo la lefula ka go fa | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | Lefelo la lefula | | letangwaneng. | mmušo wa go koloba woo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. | le go na ga pula monoleng.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Boleng | Ditšhupetšo tša noka di a dirišwa (lebelela ditšhupetšo tša noka). | Di RQO tša Noka di a dirišwa (lebelela di RQO tša noka). | Ditekanyetšo tša nomoro tša Noka di a dirišwa (lebelela ditekanyetšo tša noka). |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Payotha | Tlhokomelo ya lefelo la kgauswi le meetse la go ba le mehuta ya go fapafapana. | Phapaphapano ka moka ya setraktša le mehuta ka moka ya lefelo la kgauswi le meetse e swanetše gore e hlokomelwe. | Go šomiša thlokomelo ya tlhahlobo yeo e theilwego godimo ga lefelo, setraktša le phapaphapano ya mehuta ya lefelo la kgauswi le meetse mafelong ao a kgethefilego lefelong la lefula. Go tšea diswanetšho tšeo di tiilego tša dikokwane tše kgolo. Go bega se mengwageng ye 3-5. |
| 14: TOLWANE / KULWANE / MORETELE / KLIPVOOR | 14_1 | Lefelo la lefula la Noka ya Apies | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng.. | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba wo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka | Go šomiša seswantšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | lefula mabapi le modikologo wa bophelo bja tšona. | |
| | | | Boleng | Ditšhupetšo tša noka di a dirišwa. | Di RQO tša Noka di a dirišwa. | Ditekanyetšo tša nomoro tša Noka di a dirišwa |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | 14_1<br>14_2<br>14_3<br>14_4 | Lefelo la lefula la Noka ya Moretele | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng. | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba woo o hlokegago go thekga dimela tša leelo la lefula, gagolo mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Boleng | Ditšhupetšo tša noka di a dirišwa. | | |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | Payotha | Lebelo la pego la mehuta ya dinonyane tšeo di ithekgilego ka meetse/monola. | Phapaphapano ka moka ya setraktša le mehuta ka moka ya lefelo la kgauswi le meetse e swanetše gore e hlokomelwe. | Go kgonthišetša go tšwa direkotong tša go tlhokomelo le go bontša goo go ngwadilwego go tšwa go datha yeo e lego gona ya pego ya avifanuale. Go bušeletša se mengwaga ye 3-5. |
| | 14_3 | Plat River Floodplain | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng. | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba wo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Boleng | Ditšhupetšo tša noka di a dirišwa | Di RQO tša Noka di a dirišwa. | Ditekanyetšo tša nomoro tša Noka di a dirišwa |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Lebelo la pego la mehuta ya dinonyane tšeo di ithekgilego ka meetse/monola. | Phapaphapano ka moka ya setraktša le mehuta ka moka ya lefelo la kgauswi le meetse e swanetše gore e hlokomelwe. | Go kgonthišetša go tšwa direkotong tša go tlhokomelo le go bontša goo go ngwadilwego go tšwa go datha yeo e lego gona ya pego ya avifanual.<br>Go bušeletša se mengwaga ye 3-5. |
| | 14_4 | Pan ya Tswaing Crator | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare | Legoro la A la PES ya gare la motheo wa lefelo, le ge e le | Go tšea tlhahlobo ya PES ya teskthopo le go bontša nhla ye kgolo yeo e theilwego godimo |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | Depression / Pan | | ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | gore kgonagalo ya Legoro la BAS ke B. | ga lefelo ya monola.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| 15: UPPER MOKOLO | 15_1 | Khomplekse ya Monola wa Noka ya Upper Mokolo<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C/D. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nthla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads (disekwere tša diminete tše 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola. | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go hlokomelwe. | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, SABAP2), go ba gona ga di Blue Cranes ka gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago (2425_2800 le 2425_2805). |
| | 15_1 | Khomplekse ya Monola wa Noka ya Klein Sand<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | Legoro la PES la C ka motheo wa godimo ga lefelo ka bogolo bja gare. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | bottom and Hillslope seepage wetlands) | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads (disekwere tša diminete tše 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola. | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go hlokomelwe. | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, SABAP2), go ba gona ga di Blue Cranes ka gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago (2425_2800 le 2425_2805). |
| | 15_2 | Khomplekse ya Monola wa Noka ya Frikkiesloon<br><br>Beli ya fase yoe e fiwago tsela le yeo e sa fiwago tsela (Channelled and Unchannelled valley bottom) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | 15_2 | Khomplekse ya Monola wa Grootfonteinspruit Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la PES la C ka motheo wa godimo ga lefelo ka bogolo bja gare. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads (disekwere tša diminete tše | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go hlokomelwe. | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, SABAP2), go ba gona ga di Blue Cranes ka |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola | | gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago. |
| | 15_5 | Khomplekse ya Monola wa Grootspruit<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads (disekwere tša diminete tše 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go hlokomelwe. | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, SABAP2), go ba gona ga di Blue Cranes ka gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago (2425_2800 le 2425_2805). |
| | 15_5 | Khomplekse ya Monola wa Sandspruit<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la C/D la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke D. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | (disekwere tša diminete tše 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola | hlokomelwe. | SABAP2), go ba gona ga di Blue Cranes ka gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago (2425_2800 le 2425_2805). |
| | 15_5 | Khomplekse ya monola wa Noka ya Sand<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la C/D la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke D. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme.<br>Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo. |
| | | | Payotha | Go ba gona goo go tšwelago pele ga di Blue Cranes ka gare ga diphenthads (disekwere tša diminete tše 5x5- yuniti ya go mepa yeo e šomišitšwego go SABAP2) go akaretša menola | Go ba gona goo go tšwelago pele ga di Blue Cranes go swanetše gore go hlokomelwe. | Ka go šomiša datha yeo e tšweleditšego ke Projeke ya Atlas ya Dinonyane ya Afrika Borwa ya 2 (South African Bird Atlas Project 2, SABAP2), go ba gona ga di Blue Cranes ka gare ga diphenthads go swanetše gore go kgothaletšwe ka go netefatša gore lebelo la go bega la godimo go fetiša 5% le a hlokomelwa mabapi le diphenthads tšeo di amegago (2425_2800 le 2425_2805). |
| | 15_5 | Khomplekse ya monola wa Noka ya Sand<br><br>Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C/D. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nthla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| 16: LOWER MOKOLO | 16_1<br>16_5_2 | Lefelo la lefula la Noka ya Tambotie | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba woo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. | Ditšhupetšo tša di RQO tša Noka tša RU 16_5_2 le di RQO tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša RU 16_4 di a dirišwa. | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a tlase ga mabu go ya ka diaquifer tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. |
| | | | Boleng | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. | Ditšhupetšo tša di RQO tša Noka tša RU 16_5_2 le di RQO tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša RU 16_4 di a dirišwa | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la A/B la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke B/C. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Lebelo la pego la mehuta ya dinonyane tša datha ye khubedu tšeo di ithekgilego ka Monola/meetse.<br>Tlhokomelo ya lefelo la | Phapaphapano ka botlalo le ditšhaba tša mehuta ya dinonyane tša datha ye khubedu tšeo di ithekgilego ka lefelo la lefula e swanetše | Go kgonthišetša go tšwa direkotong tša tlhokomelo le dipoelo tša direkoto go tšwa diponong tšeo di lego gona tša data ya pego ya avifanual.<br>Go dira tlhahlobo ya PES ya teskthopo le go |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | kgauswi le meetse la mehuta ya go fapafapana. | gore e hlokomelwe.<br><br>Phapaphapano ka moka ya mehuta e swanetše gore e hlokomelwe. | bontša nhla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo Go bega se mengwaga ye 3-5. |
| | 16_3 | Monola 2 wa Rietspruit<br><br>Beli ya fase yeo e sa fiwago tsela le yeo e sa fiwago tsela (Channelled and Unchannelled valley bottom) | Bokae | Ditšhuoetšo tša noka di a dirišwa. | Di RQO tša noka di a dirišwa. | Ditekanyetšo tša nomoro tša noka di a dirišwa. |
| | | | Khwlithi | Ditšhuoetšo tša noka di a dirišwa | Di RQO tša noka di a dirišwa. | Ditekanyetšo tša nomoro tša noka di a dirišwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la PES la C ka motheo wa godimo ga lefelo ka bogolo bja gare | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | 16_5_2 | Lefelo la lefula la Mokolo River<br><br>Lefelo la lefula, diphrešene, meetse a morago le menola ya go nwelela. | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba woo o hlokegago go thekga dimela tša leelo la lefula, kudu mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. Lefula le meetse gare ga aquifer ya aluviale le yona e thekga mehlare ya kgauswi le meetse kgauswi le dintlha tša lefelo la lefula. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša | Ditšhupetšo tša di RQO tša Noka tša RU 16_5_2 le di | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a ka tlase ga mabu go |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontšha | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | meetse a ka tlase ga mabu go ya ka diaquifer tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. | RQO tša meetse a ka tlase ga mabu go ya ka diakhwifaya tša aluviale tša RU 16_4 di a dirišwa. | ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. |
| | | | Boleng | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a ka tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. | Ditšhupetšo tša di RQO tša Noka tša RU 16_5_2 le di RQO tša meetse a ka tlase ga mabu go ya ka diakhwifaya tša aluviale tša RU 16_4 di a dirišwa. | Ditšhupetšo tša noka tša RU 16_5_2 le ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 le tšona di a dirišwa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka tša khomplekse ya monola). | Legoro la B/C la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke C. | Go dira tlhahlobo ya PES ya teskthopo le go bontšha nhla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya di pans tveo di kgethilwego le go tšea diswantšho tša ntlha tša dikokwane tše kgolo. Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme |
| | | | Payotha | Lebelo la pego la mehuta ya dinonyane tša datha ye khubedu tšeo di ithekgilego ka Monola/meetse. Tlhokomelo ya lefelo la kgauswi le meetse la mehuta ya go fapafapana. | Phapaphapano ka botlalo le ditšhaba tša mehuta ya dinonyane tša datha ye khubedu tšeo di ithekgilego ka lefelo la lefula e swanetše gore e hlokomelwe.<br><br>Phapaphapano ka moka ya mehuta e swanetše gore e hlokomelwe. | Go kgonthišetša go tšwa direkotong tša tlhokomelo le dipoelo tša direkoto go tšwa diponong tšeo di lego gona tša datha ya pego ya avifanual.<br>Go dira tlhahlobo ya PES ya teskthopo le go bontšha nhla ya gare yeo e theilwego godimo galefelo mabapi le khomphlekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le go tšea diswantšho tša nhla tša dikokwane tše kgolo. Go bega tše tša ka godimo mengwaga ye 3-5. |
| | | | Lefelo la šireletšo | Ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 di a dirišwa. | Ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 di a dirišwa. | Ditekanyetšo tša ditšhupetšo tša meetse a tlase ga mabu go ya ka diakhwifaya tša aluviale tša lefelo la lefula tša RU 16_4 di a dirišwa. |
| 17a: MOTHLABATSI / MAMBA | 17_a_2 | Monola wa Matlabas | Bokae | Go tlala ga sa ruri. | Go tlala ga sa ruri go a hlokega go hlokomela phiti. Dikelelo di swanetše gore di | Nako ya tlhahlobo ya madulo go bontšha gore naa sesteme e sa tletše le gore phiti e sa le |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | Beli ya fase yeo e fiwago tsela le yeo e sa fiwago tsela le Hillslope le seepheitše le mo go nago le monola (Channelled and Unchannelled valley bottom and Hillslope seepage wetlands) | | | be ka mokgwa woo o lego gore di ka se hlole kotsi sebopegong/tšeomofolotšing ya sesteme ya monola. | gona naa. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya khomplekse ya monola). | A Dimela tša monola le tša mofolotši di swanetše gore di hlokomelwe go šireletša semela sa sesteme le phapaphapano ka moka e swanetše gore e hlokomewe go akaretša ditšhaba tša maleba tša mehuta ya dibjalo tšeo di bopago phiti.<br>Legoro la A la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke A/B. | Go tšea tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo ga lefelo mabapi le monola.<br>Go kgonthišetša ka go tšea tlhahlobo ya PES ya lefelo ya monola.<br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| 17b: MATLABAS / LIMPOPO | 17_b_1 | Lefelo la lefula la Noka ya Lower Matlabas | Bokae | Katološo le tšwelelo ya lefula tswalanong le go na ga pula letangwaneng | Mafula a a hlokega go hlola lefelo la lefula ka go fa mmušo wa go koloba woo o hlokegago go thekga dimela tša leelo la lefula, gagolo mabjang a haetrofaethiki ya fakhalthibi, disetše le di difopo tšeo di ithekgilego ka lefula mabapi le modikologo wa bophelo bja tšona. Lefula le meetse ka gare ga akhwifaya ya aluviale le yona e thekga mehlare ya kgauswi le meetse kgauswi le dinhla tša lefelo la lefula. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya ditlhahlobo ge e le gore go na le diphetogo tše dingwe tšeo di lego gona tswalanong ya katološo ya lefula le ditiragalo tša go na ga pula. |
| | | | Boleng | Ditšhupetšo tša noka di a dirišwa. | Di RQO tša noka di ama. | Melawana ya noka ya tekano ya dipalo e a amega. |
| | | | Madulo | Legoro la PES ya teskthopo (ka motheo wa nhla ya gare ka motheo wa lefelo la khwanthitheithibi ya gare mabapi le diyuniti ka moka | Legoro la A/B la PES ya gare la motheo wa lefelo, le ge e le gore kgonagalo ya Legoro la BAS ke B. | Go dira tlhahlobo ya PES ya teskthopo le go bontša nhla ya ka gare yeo e theilwego godimo galefelo mabapi le khomplekse ya monola. Go kgonthišetša ka go dira tlhahlobo ya maleba ya PES ya dipan tšeo di kgethilwego le |

| Diyuniti tšeo di tsenelelanago tša Tlhahlobo | RU | Monola/Lefelo | Kokwane yebohlokwa | Go bontša | Tlhalošo ya RQO | Tekanyetšo ya Dipalo |
|---|---|---|---|---|---|---|
| | | | | tša khomplekse ya monola). | | go tšea diswantšho tša ntlha tša dikokwane tše kgolo.<br><br>Go bušeletša se mengwaga ye 3-5 le go hlahloba le go bega se ka pono ya go hlahloba gore naa go bile le diphetogo seemong sa sesteme. |
| | | | Payotha | Tlhokomelo ya lefelo la kgauswi le meetse la mehuta ya go fapafapana. | Phapaphapano ka moka ya mehuta e swanetše gore e hlokomelwe. | Go šomiša seswanetšho seo se lego gona, go beeletša katološo le bontši bja lefula tswalanong le go na ga pula monoleng.<br>Go tšea diswantšho tša dikokwane tše kgolo.<br>Go bega se mengwaga ye 3-5. |

**Tafolana 22: Maikemišetšo a Boleng bja Mothopo a MEETSE A KA TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 1: UPPER CROCODILE / HENNOPS / HARTEBEESPOORT**

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja Mothopo | Go bontša/ go meta | Numerical Limit |
|---|---|---|---|---|---|---|
| IUA1: Upper Crocodile/Hennops/Hartbeespoort | RU - G1 | 1_1, 1_2, 1_3, 1_8 and 1_9. | Bokae | Mekgwa ya kelelo ya meetse a ka tlase ga mabu ya dielebeišene tša phisometriki diyuniting tša diakhwifaya ga se ya swanela go bušetšwa morago go tšwa thokong ya kelelong ya hlago mabapi le kgamollo ya selegae (disesteme tša Hennops, Rietvlei le Bloubankspruit). | Bogolo bja maemo a meetse a ka tlase ga mabu (maemo a phizometriki go bontša mokgwa wa kelelo ka methopo ya meetse a godimo ga mabu).<br>Tlhokomelo ya maemo a meetse ya tatelano ya nako ( kgwedi ka kgwedi) kgahlanong le go ntša le go na ga pula.<br>Go ntša meetse a ka tlase ga mabu gare ga mafelo ao a beeleditšwego go tšwa nokeng/monoleng/ leihlong). | Disestme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a ~22 m (1_1 – 1_2), ~20 m (1_3), ~15 m (1_9), le ~34 m (1_8) lefelong la akhwifaya ya dolomaete.<br>Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.75 m/a.<br><br>Lefelo la go ntša: le swanetše gore le laolwe ka gare ga rediase ya 1000 m go tšwa mahlong a kelelo. |
| | | | | Go ntša go go swarelelago Mahlong a Grootfontein-Rietvlei le Pretoria .<br>Tekanyetšo ya meetse a ka tlase ga mabu (tsenyo ya diakhwifaya le go ntša) e hloka gore e hlahlobje mabapi le medikologo ya go koloba le go oma (go kgonthišetša mafelo a | Palo ya di intekse tša kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya ge e arogantšhwa le Tsenyo ya Yuniti ya Akhwifaya) e bontšhwa bjalo ka persente. | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI of 65%); |

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja Mothopo | Go bontša/ go meta | Numerical Limit |
|---|---|---|---|---|---|---|
| | | | | meetse a tlase ga mabu ka dinako tša komelelo). | | |
| | | | Boleng | Khwalithi ya metse ya akhwifaya e hlokometšwe go thekga kabo ye botse ya meetse a tšhomišo ya gae. | Diphepo- Naetreiti ($NO^3$–N, mg/l). Tlhokomelo ya gabedi ka ngwaga ya tše kgolo tšeo di ralokago karolo (dikokwane tša makro). | Naetreiti: tlase ga 1.0 mg/l. Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 50th (*i.e.* 0.9 $NO^3$–N mg/l). |
| | | | | | Matswai – Go swara mohlagase (TDS), mg/l). Tlhokomelo ya gabedi ka ngwaga ya tše kgolo tšeo di ralokaro karolo (dikokwane tša makro). | Go swara mohlagase ≤30 mS/m; Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (*i.e.* 60 mS/m). |
| | | | | Seemo sa khwalithi ya meetse sa setlogo sestemeng ya akhwifaya ya dolomaete kelelong ya tlase go tloga Tweelopies Spruit le Bloubank se swanetše gore se hlokomelwe. (Kamego ya bjale ya EC=220 mS/m, $SO_4$=965 mg/l, le $NO_3$–N=3.3 mg/l, ditekanyetšo tše bohlokwa tša gare). | EC, Disalfeiti le dinaetraete (setlogo sa AMD) lefelong la meetse a magolo (Tweelopies Spruit) Tlhokomelo ya khwalithi ya meetse ya kgwedi ka kgwedi mothopong (ditahlo tša TCTA WTW). | Tweelopiespruit (RU 1_8): Ditšhupetšo tša khwalithi ya meetse tša lebaka le le telele: Maemo a EC = 220 mS/m; Phatlalatšo ya $SO_4$ = 200 mg/l; le Phatlalatšo ya $NO_3$–N = 3.3 mg/l. |
| | | | | Go swara seemo sa khwalithi ya meetse se se botse Mahlong a Dolomaete ya Grootfontein-Rietvlei le Pretoria. | EC, pH, $SO_4$ le $NO_3$–N di šomišitšwego e be le le ditšhupetšo tša khwalithi ya meetse. | Lebaka le le telele la tekanyetšo-lebaka le le telele la ga tee ngwageng: EC: 25 mS/m–27 mS/m (95th persente); $SO_4$: <4.5 mg/l–6.4 mg/l $SO_4$ (95th persente); $NO_3$–N: 0.9 mg/l–1.0 mg/l (95th persente). |
| | | | Lefelo la šireletšo | Disesteme tša akhwifaya tša dolomaete (Hennops le Bloubankspruit, Menola ya Rietvlei, Grootfontein-Rietvlei le Mahlo a Pretoria): Dinyakwa tša tšhireletšo ya mothopo wa meetse tše itšego di swanetše gore di be dipeelano tša tlhahlobo go WUL. | Phokotšo ya rediase ya khuetšo (r) ka lebaka la go ntša | Maemo a meetse a lekanyetditšwe go yuniti ya karolo ya gare ya dolomaete. |
| | | | | | Botelele go tšwa nokeng (L) | Tiragalo e swanetše gore e be >500 m. |
| | | | | | Botelele go tšwa monoleng (L) | Tiragalo e swanetše gore e be >1000 m. |
| | | | | | Botelele go tšwa Leihlong la Dolomaete (L) | Tiragalo e swanetše gore e be >1000 m. |
| | | | | | Tshwarelelo ya mabu (tekanyetšo ya go thala tlase, L, go šireletša meago/ditsela/di infrastraktša) | Tekanyetšo ya 6 m yuniting ya karolo ya gare, mohlomongwe ge e le gore go dumeletšwe. |

**Tafolana 23: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 2: MAGALIES**

| IUA | Yuniti ya Meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng ya Mothopo | Go bontšha/go meta | Tekanyetšo ya Nomoro |
|---|---|---|---|---|---|---|
| MALONEY'S EYE | RU - G2 | 2_1; 2_3 | Bokae | Maloney's Eye – kelelo yeo e tšwelago pele tahlong ya leihlo ( meetse a magolo a sesteme ya Noka ya Magalies). | Maemo a meetse a ka tlase ga mabu (melete ya meetse) letangwaneng la leihlo, i.e. bogolo bja maemo a meetse a tlase ga mabu go tloga mabung;<br><br>Dibolumu tša kelelo go Maloney's Eye (ge di bapatšwa le go na ga pula, mekgwa ya maemo a meetse le go ntša letangwaneng la leihlo (i.e. Karolong ya Steenkoppies);<br>Go ntša meetse a ka tlase ga mabu gare ga mafelo a tšhireletšo ao a beeleditšwego go Maloney's Eye (meetseng a molete le kelelo ya tlase go ya ka lenaneo la tlhokomelo). | Maemo a go tlala ga akhwifaya ya dolomaete ga se a swanela go theogela tlase go fetiša 6 m tlase ga bontši bja maemo a meetse bja **~65** m lefelong la letangwana la Maloney's eye;<br>Bolumu ya kelelo go Maloney's Eye ga se ya swanela go ba tlase ga ~4 $Mm^3/a$ (i.e. puno ya pele ga 1974 ya lebaka le le telele go tloga ka ngwaga wa 1908-1973).<br>Lefelo la go ntša: le tla laolwa le kelelo leihlong ka rediase ya 1000 m go tšwa lefelong la molete. |
| | | | | Tekanyetšo ya meetse a tlase ga mabu (tsenyo ya akhwifaya le go ntša ga go nošetša). | Palo ya Di intekse tša kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/ Tsenyo ya Yuniti ya Akhwifaya) bjalo ka dipersente. Tsenyo ya 65% fela e swanetše goe e ntšhwe. | Tekanyetšo ya tekanyetšo ya SI (</=65%); le bogolo bja kgato ya kelelo lefelong la tahlo (leihlong): <-0.50 m/a) gare ga ditiragalo tša tahlo ya ngwaga. |
| | | | Boleng | Ditekanyetšo tša Naetreiti lefelong la go tsenya di swanetše gore di hlokomelwe go thekga bašomiši ba meetse a magaeng. | Diphepo – Naetreiti ($NO^3$–N, mg/l).<br>Tlhokomelo ya ga bedi ka ngwaga. | Naetreiti: tlase ga: 0.5 mg/l.<br>Mokgwa wa ngwga wa lebaka le le telele ga se wa swanela go fihla persente ya 95th (0.5 mg/l) |
| | | | | Kgonthišetšo ya seemo sa khwalithi ya meetse Leihlong la Maloney le Noka ya Lower Magalies. | Disalfeiti (AMD ya setlogo) lefelong la meetse a magolo go la Randfontein Spruit le Bloubank Spruit ka kgokagano yeo e ka kgonegago gare ga mollwane wa A21D le A21F (Fracrured Tarlton dyke). | $SO_4$: tlase ga 5 mg/l.<br>Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla persente ya 95th (7.5 mg/l) |
| | | | | Maemo a matswai ga se a swanela go oketšega.<br>Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Letswai – Go swara mohlagase (TDS), mg/l).<br>Tlhokomelo ya ga bedi ka ngwaga ya dikarolwana tše kgolo (dikokwane tša makro). | Go swara mohlagase ≤26 mS/m;<br>Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla persente ya 95th (30 mS/m) |
| | | | Lefelo la tšhireletšo | Mafelo a tšhireletšo a mollwane a tla tlišwa, i.e. botelele ka gare | Lebaka la Phokotšo ya Noka | Tekanyetšo ya </=5% ya mothopo wa meetse wa mnola/godimo ga mabu |

| IUA | Yuniti ya Meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng ya Mothopo | Go bontša/go meta | Tekanyetšo ya Nomoro |
|---|---|---|---|---|---|---|
| | | | | ga tiragalo le leihlo/molete. Kudu mabapi le disesteme tša akhwifaya ya dolomaete( Maloney's Eye le kelelo ya tlase ya Noka). | Botelele go tšwa nokeng (L). | Tiragalo yeo e laolwago ge <500 m go tšwa kgamollong ya kelelo ya tlase |
| | | | | | Botelele go tšwa Leihlong la Dolomaete (L). | Tiragalo yeo e laolwago ge <1000 m go tšwa kgamollong ya kelelo ya tlase. |
| | | | | | Botelele go tloga monoleng (L). | Tiragalo yeo e laolwago ge e le gore <1000 m go tloga kgamollong ya kelelo ya tlase. |
| | | | | | Go ba gabotse ga mabu (DCU tekanyetšo ya tlase, L) (Meago/ditsela/di infrastraktša). | Ka tekanyetšo ya yuniti ya karolwana ya ka gare ya 6 m, mohlomongwe ge e le gore go dumeletšwe ka mokgwa wo mongwe. |

**Tafolana 24: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 3: CROCODILE / ROODEKOPJES**

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja Mothopo | Go bontša/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| IUA3: (Upper) Noka ya Crocodile (Alluvial Aquifers) | RU – G3 Karolo ya Noka ya Aluviale | 3_1 le 3_2 | Bokae | Tlhokomelo ya maemo a meetse a tatelano ya nako (L) ka gare ga inthakranula ya selegae le akhwifayayeo e senyegilego go hloma tirišano ya meetse a noka ya akhwifaya; ditlhahlobo tša maemo a meetse (seemo sa pizometriki ya segae). | Maemo a meetse- bogolo bja maemo a meetse a ka tlase ga mabu sestemeng ya akhwifaya ya aluviale. Mekgwa ya maemo a meetse a tlase ga mabu; le kradiente ya maemo a meetse a tlase ga mabu gamollong. | Kradiente ya meetse a tlase ga mabu ya pušetšo morago lefelong la 500 m ga se ya dumelelwa.<br>Lebelo la khutšo ya meetse le swanetše gore le be ka tlase ga 1.0 m/a. |
| | | | | Tekanyetšo ya meetse (phetišetšo ya meetse). | Ditekanyetšo tša meetse tše botse/tše mpe, bolumu (Q); phuhlamo ya kelelo lefelong la kelelo ya tlase. | Ditahlegelo tša meetse a godimo ga mabu seteišeneng sa gauging di swanetše gore di lekane le go ntša goo go dumeletšwego go tšwa nokeng. |
| | | | | Seemo sa tekanyetšo ya meetse sestemeng ya inthakranula le akhwifaya yeo e senyegilego | Palo ya di intekse tša kgatelelo (Tšhomišo ya Yuniti ya Aquifer/Tsentšho ya Yuniti ya Aquifer) bjalo ka persente. | Tekanyetšo ya bohlokwa bja SI (</=65%). |
| | | | Boleng | Ditekanyetšo tše bohlokwa tša Naetreiti lefelo la go tsentša di swanetše gore di hlokmelwe go thekga bašomiši ba meetse a ka gae. | Diphepo- Naetreiti ($NO^3$–N, mg/l).<br>Tlhokomelo ya ga bedi ngwageng. | Naetreiti: tlase ga 6.0 mg/l;<br>Mokgwa wa lebaka lel e telele ga se wa swanela go fihlelela persente ya 95th. |
| | | | | Go laola pušetšo morago ya dikelelo tša nošetšo go tšwa sestemeng ya akhwifaya ya aluviale. Maemo a letswai ga se a swanela go | Matswai- go swara mohlagase<br>Tlhokomelo ya kgwedi ka kgwedi<br>Go hlokomela khwalithi ya dikelelo tša pušetšo morago go tšwa lefelong la | Go swara mohlagase ≤75 mS/m; (persente ya 95th) |

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja Mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | oketšega. Diphatlalatši di swanetše gore di hlokomelwe maemong a go hwetša seemo se se botse sa khwalithi ya meetse. | aluviale.<br>SAR ya meetse a aquifer ya aluviale | |
| | | | Lefelo la tšhireletšo | Tshireletšo ya sesteme ya inthakranula (aluviale) le akhwifaya yeo e senyegilego ka gare ga dinoka tša Central Crocodile le Rose Spruit go ya ka tirišano ya Sw-Gw | Lebaka la phuhlamo ya noka (go laola botelele ka gare ga mothopo wa meetse a godimo ga mabu le mafelo a botse). | Go fokotša dithulano go iša go <5% ya go ntša goo go thekgilwego ke methopo ya meetse a godimo ga mabu. |
| | | | | Ditiragalo tša tšhomišo ya mabu tšeo di amago akhwifaya ya inthakranula. | Go bontša ditiragalo ka moka tša tšhomišo ya mabu lefelong la lefelo la lefula le sesteme ya akhwifaya ya inthakranula. | Go fokotša ditiragalo go ya ka letšatši la 50 (makropayale) le 365 (go taelutha) ya lefelo la tšhireletšo ya khwalithi ya meetse (L). |

**Tafolana 25: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 6a: Table 26: KLEIN MARICO / KROMELLEMBOOG**

| IUA | Yuniti ya Meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| 6a: Klein Marico Eyes | RU – G6 | 6_1, | Bokae | Mekgwa ya kelelo ya meetse a ka tlase ga mabu go ya ka motheo wa dielebeišene tša phizometriki diyuniting tša diakhwifaya ga se ya swanela go bušetšwa morago go tšwa thokong ya kelelo ya yona ya hlago go iša dikgamollong tša selegae (Noka ya Upper Klein, Noka ya Marico, Rhenosterfontein Spruit, le Lower Malmani Loop). | Maemo a meetse- bogolo bja maemo a meetse a ka tlase ga mabu go tloga mabung. Tlhokomelo ya maemo a meetse a tatelano ya nako (ka kgwedi) kgahlanong le go ntša le go na ga pula | Disestme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a **~**21 m lefelong la aquifer ya dolomaete.<br><br>Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.75 m/a. |
| | | | | Tekanyetšo ya meetse a tlase ga mabu (tsentšho ya aquifer le go ntša ga go nošetša) e hloka gore e hlahlobje mabapi le medikologo ya go koloba le go oma (go kgonthišetša mafelo a meetse a tlase ga mabu ka nako ya komelelo). | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente. | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | Boleng | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae (khwalithi ya maleba-ye botse). | Diphepo- Naetreiti ($NO^3$–N, mg/l).<br>Tlhokomelo ya ga bedi ngwageng. | Naetreiti: tlase ga 0.3 mg/l.<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (1.2 mg/l) |

| IUA | Yuniti ya Meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | Floraete- dithulano go bašomiši-maemo a floraete yeo e lego godimo. | Floraete (F, mg/l) | Floraete: ~0.2 mg/l.<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela peresente ya 50th (0.2 mg/l). |
| | | | | Maemo a letswai ga se a swanela go oketšega. Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Matswai – Go swara mohlagase (TDS), mg/l).<br>Tlhokomelo ya gabedi ka ngwaga ya tše kgolo tšeo di ralokaro karolo (dikokwane tša makro). | Go swara mohlagase ≤50 mS/m; Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla persente ya 95th (60 mS/m) |
| | | | | | Phatlalatšo ya Na-Cl go tšwa ditiragalong tša moepo matangwaneng a leihlo la segae | |
| | | | Lefelo la tšhireletšo | Kudu disesteme tša akhwifaya ya dolomaete (leelo la go nošetša); Dinyakwa tše itšego tša tšhireletšo ya mothopo wa meetse di swanetše gore di be dipeelano tša tlhahlobo go WUL; | Matangwana a mmepe (dihekthere) a Leihlo le go akaretša tekanyetšo ya go ntša ga kabo ye kgolo ya meetse. | Thibelo ya go ntša ka motheo wa tirišo ya mokgwa wa intekse ya kgatelelo. |
| | | | | | Tekanyetšo ya go ntša ga maemo a meetse yuniting ya karolwana ya dolomaete. | Bogolo bja 6 m ( ge e le gore go dumeletšwe ka mokgwa wo mongwe) |
| | | | | | Tekanyetšo ya lefelo la go nošetša bogolong bja lefelo (ha's). | Tekanyetšo ya 9% ya lefelo la mong (ha's) |
| | | | | | Botelele go tšwa sestemeng ya noka ya selegae | Tiragalo e swanetše gore e be >500 m. |
| | | | | | Botelele go tšwa Leihlong la dolomaete (L) | Tiragalo e swanetše gore e be >1000 m, ge le gore go dumeletšwe ka mokgwa wo mongwe. |
| | | | | | Go ba gabotse ga mabu (DCU ya tekanyetšo ya tlase, L) (Meago/ditsela/di infrastraktša). | Tekanyetšo ya 6 m ya yuniti ya karolwana. |

**Tafolana 26: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 7: Tafola 27: KAALOOG-SE-LOOP**

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja Mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| Kaaloog Se Loop, Rietspruit | RU – G6 | 7_1, | Bokae | Go meta go go tšwelago pele ga kelelo mahlong ao a kgethilwego a dolomaete i.e. Bokkraal Nr 1 ka Noka ya Vanstratensvlei (datha ya kelelo fela go tloga ka 1907 go iša go 1943!). | Mollwane wa lefelo la letangwana la leihlo (mollwane wa borwa woo o sa bonagalego);<br>Maemo a meetse- bogolo bja maemo a meetse a ka tlase ga mabu go tloga | Disesteme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a ~21 m lefelong la akhwifaya ya dolomaete.<br>Lebelo la maemo a meetse le swanetše gore le be |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja Mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | (Tahlo yengwe ya bohlokwa ya Noka ya Upper Groot Marico ke Rietspruit (ka Noka ya Vanstratensvlei)); (Hlokomela: go na le mahlo a didolomaete a mangwe a mmalwa lefelong, efela ga go na tshedimošo yeo e lego gona, ntle le Rhenosterfontein, yeo e welago gare ga A31D QC). | mabung; Tlhokomelo ya maemo a meetse a tatelano ya nako (ka kgwedi) kgahlanong le go ntša le go na ga pula, le Go ntša ga meetse a ka tlase ga mabu gare ga lefelo leo le beeleditšwego go tloga nokeng/monola/mothopong) | tlase ga 0.75 m/a.<br><br>Lefelo la go ntša: le tla laolwa le kelelo leihlong ka rediase ya 1000 m go tšwa lefelong la molete |
| | | | | Tekanyetšo ya meetse a tlase ga mabu (tsentšho ya akhwifaya le go ntša ga go nošetša) e hloka gore e hlahlobje mabapi le medikologo ya go koloba le go oma (go kgonthišetša mafelo a meetse a ka tlase ga mabu ka nako ya komelelo). | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | Boleng | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae (khwalithi ya maleba-ye botse). | Diphepo- Naetreiti ($NO^3$–N, mg/l). Tlhokomelo ya ga bedi ngwageng. | Naetreiti: tlase ga 0.5 mg/l. Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela peresente ya 75th (0.5 mg/l |
| | | | | Floraete- dithulano go bašomiši-maemo a floraete yeo e lego godimo | Floraete (F, mg/l)Fluoride (F, mg/l) Tlhokomelo ya ga bedi ngwageng. | Floraete: ~0.1 mg/l. Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (1.0 mg/l). |
| | | | | Maemo a letswai ga se a swanela go oketšega. Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Matswai – Go swara mohlagase (TDS), mg/l). Tlhokomelo ya gabedi ka ngwaga ya tše kgolo tšeo di ralokaro karolo (dikokwane tša makro). | Go swara mohlagase ≤50 mS/m; Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla peresente ya 95th (55 mS/m) |
| | | | Lefelo la tšhireletšo | Mafelo a tšhireletšo a mollwane a tla fihlišwa i.e. botelele go tloga tiragalong le molete/leihlo. Kudu mabapi le disesteme tša aquifer tša dolomaete (Marico Eye's le kelelo ya tlase ya Noka ya Klein Marico). | Matangwana a mmepe (dihekthere) a Leihlo le go akaretša tekanyetšo ya go ntša ga kabo ye kgolo ya meetse. | Thibelo ya go ntša ka motheo wa tirišo ya mokgwa wa intekse ya kgatelelo. |
| | | | | | Tekanyetšo ya lefelo la go nošetša bogolong bja lefelo (ha's). | Tekanyetšo ya 9% ya lefelo la mong (ha's) |
| | | | | | Botelele go tšwa sestemeng ya noka ya selegae | Tiragalo e laolwa ge ele gore <500 m go tšwa kgamollong ya kelelo ya tlase |
| | | | | | Botelele go tšwa Leihlong la dolomaete (L) | Tiragalo e laolwa ge e le gore <1000 m go tšwa kgamollong ya kelelo ya tlase. |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja Mothopo | Go bontšha/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | | Botelele go tloga monoleng (L). | Tiragalo e laolwa ge e le gore <1000 m go tloga kgamollong ya tlase. |
| | | | | | Tekanyetšo ya maemo a meetse a tlase yuniting ya karolwana ya dolomaete. | Tekanyetšo ya 6 m ya yuniti ya karolwana ya gare. |

**Tafolana 27: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 8: Tafola 28 MALMANIESLOOP**

| IUA | Yuniti ya Meetse a ka ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontšha/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| 8: Malmanie Se Loop | RU – G8 | 8_1 | Khwanthithi | Mekgwa ya kelelo ya meetse a ka tlase ga mabu go ya ka motheo wa dielebeišene tša phizometriki diyuniting tša diakhwifaya ga se ya swanela go bušetšwa morago go tšwa thokong ya kelelo ya yona ya hlago go iša dikgamollong tša selegae (Malmani Eye Se Loop).<br><br>Mafelo a tahlo (i.e. Malmani Eye, Malmani-Noupoort, Doornplaat Eye, Rietpoort Eye le Doornfontein Eye) a swanetše gore a šireletšwe kgahlanong le phuhlamo ya tafola ya meetse). | Maemo a meetse- bogolo bja maemo a meetse a ka tlase ga mabu go tloga mabung;<br>Tlhokomelo ya maemo a meetse a tatelano ya nako (ka kgwedi) kgahlanong le go ntšha le go na ga pula, le<br>Go ntšha ga meetse a ka tlase ga mabu ka gare ga lefelo leo le beeleditšwego go tloga nokeng/monola/mothopong) | Disesteme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a ~21 m lefelong la akhwifaya ya dolomaete.<br>Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.75 m/a.<br><br>Lefelo la go ntšha: le swanetše gore le hlokomelwe (go 1000 m ya melete ya leihlo). |
| | | | | Tekanyetšo ya meetse a ka tlase ga mabu (tsentšho ya akhwifaya le go ntšha ga go nošetša) e hloka gore e hlahlobje mabapi le medikologo ya go koloba le go oma (go kgonthišetša mafelo a meetse a ka tlase ga mabu ka nako ya komelelo). Mananeo a maleba a nošetšo a swanetše gore a tšweletšwe le go dirišwa ka dinako ka moka (tumelelano ya 100%). | Go ntšha- bolumu (Q). Tatelano ya nako ya maemo a meetse a pula a sesteme ya akhwifaya.<br>Tekanyetšo ya meetse a ka tlase ga mabu ya ngwaga (tsentšho ya akhwifaya le go ntšha ga nošetšo) e swanetše gore e be ya medikologo ya go koloba le go oma. | Go ntšha ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntšha ga ngwaga (i.e. SI ya 65%); |
| | | | | Seemo sa tekanyetšo ya meetse | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifay) bjalo ka diperesente | |

| IUA | Yuniti ya Meetse a ka ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontša/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | Bokae | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae (persente ya 95th = 18 mg/l). | Diphepo- Naetreiti ($NO^3$–N, mg/l). Tlhokomelo ya ga bedi ngwageng. | Naetreiti: tlase ga 1.0 mg/l. Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela peresente ya 75th (3.5 mg/l); |
| | | | | Maemo a letswai ga se a swanela go oketšega. Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Matswai – Go swara mohlagase Tlhokomelo ya kgwedi ka kgwedi tahlong | Go swara mohlagase ≤50 mS/m; Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla peresente ya 95th (85 mS/m) |
| | | | | Floraete- dithulano go bašomiši- maemo a floraete yeo e lego godimo | Floraete (F, mg/l)Fluoride (F, mg/l) Tlhokomelo ya ga bedi ngwageng. | Floraete: ~0.1 mg/l. Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (1.0 mg/l). |
| | | | Lefelo la tšhireletšo | Disesteme tša akhwifaya ya dolomaete ye e itšego (i.e. Malmani Eye, Malmani-Noupoort, Doornplaat Eye, Rietpoort Eye, le Doornfontein Eye); Dinyakwa tše itšego tša tšhireletšo ya mothopo wa meetse di swanetše gore di be dipeelano tša tlhahlobo go WUL; | Tekanyetšo ya maemo a meetse a tlase yuniting ya karolwana ya dolomaete. | Bogolo bja 6 m ( ge e le gore go dumeletšwe ka mokgwa wo mongwe) |
| | | | | | Lebaka la Phuhlamo ya Noka | Tekanyetšo ya </=5% ya mothopo wa meetse wa monola/godimo ga mabu |
| | | | | | Tekanyetšo ya lefelo la go nošetša bogolong bja lefelo (ha's). | Tekanyetšo ya 9% ya lefelo la mong (ha's |
| | | | | | Botelele go tšwa Leihlong la dolomaete (L) le Lefelo la Monola (L) | Swanetše gore e be >1000 m, ntle le ge e le gore go dumeletšwe mabapi le dikabo tše ntši tša meetse. |

**Tafolana 28: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 9: MOLOPO**

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontša/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| 9: Noka ya Upper Molopo | RU – G9 | 9_1 le 9_2 | Bokae | Mekgwa ya kelelo ya meetse a ka tlase ga mabu go ya ka motheo wa dielebeišene tša phizometriki diyuniting tša diakhwifaya ga se ya swanela go bušetšwa morago go tšwa thokong ya kelelo ya yona ya hlago go iša dikgamollong tša selegae | Maemo a meetse- bogolo bja maemo a meetse a ka tlase ga mabu go tloga mabung; Tlhokomelo ya maemo a meetsea tatelano ya nako (ka kgwedi) kgahlanong le go ntša le go na ga pula, le Go ntša ga meetse a ka tlase ga mabu gare ga lefelo leo le beeleditšwego go | Disesteme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a ~19 m lefelong la aquifer ya dolomaete. Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.75 m/a. |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontšha/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | (i.e. Malapo Eye) e swanetše gore e šireletšwe kgahlanong le phuhlamo ya tafola ya meetse (i.e. tabng ya Grootfontein Eye le Bodibe Eye). | tloga nokeng/monola/mothopong) | Lefelo la go ntša: le swanetše gore le hlokomelwe (go 1000 m ya disesteme tša aquifer tša Karst). |
| | | | | Tekanyetšo ya meetse a ka tlase ga mabu (tsentšho ya akhwifaya le go ntša ga go nošetša) e hloka gore e hlahlobje mabapi le medikologo ya go koloba le go oma (go kgonthišetša mafelo a meetse a ka tlase ga mabu ka nako ya komelelo).<br>Mananeo a maleba a nošetšo a swanetše gore a tšweletšwe le go dirišwa ka dinako ka moka (tumelelano ya 100%). | Go ntša- bolumu (Q). Tatelano ya nako ya maemo a meetse a pula a sesteme ya akhwifaya.<br>Tekanyetšo ya meetse a tlase ga mabu ya ngwaga (tsentšho ya akhwifaya le go ntša ga nošetšo) e swanetše gore e be ya medikologo ya go koloba le go oma. | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | | Seemo sa tekanyetšo ya meetse | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | |
| | | | Boleng | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae (Methopo ya temo ya Naetreiti) | Diphepo- Naetreiti ($NO^3$–N, mg/l).<br>Tlhokomelo ya ga bedi ngwageng.<br>Tlhokomelo ya kgwedi ka kgwedi diteišeneng tša DWS tša gauging. | Naetreiti: tlase ga 1.0 mg/l.<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela peresente ya 95th (3.0 mg/l); |
| | | | | Maemo a letswai ga se a swanela go oketšega. Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Matswai – Go swara mohlagase<br>Tlhokomelo ya kgwedi ka kgwedi diteišeneng tša DWS tša gauging | Go swara mohlagase ≤50 mS/m;<br>Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla peresente ya 95th (80 mS/m) |
| | | | | Ditšhilafatši ša temo/intasteri mabapi le Molopo, Grootfontein, Itsoseng (Bodibe) Eyes. | Diphatlalatšo tša disalfeiti $SO_4$)<br>Tlhokomelo ya kgwedi ka kgwedi ya khwalithi ya meetse mafelong a mothopo (Mahlo le mafelo a molete). | $SO_4$: tlase ga 5.0 mg/l;<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela persente ya 95th (30 mg/l); |
| | | | Lefelo la tšhireletšo | Tšhireletšo ya diakhwifaya tša inthakranula le diakhwifaya tšeo di senyegilego: Tšhireletšo ya dikarolo tša tlase tša Madibe, Polfontein Spruit le Noka ya Molopo kgahlanong ya tšhilafatšo ya intasteri/temo/makropayale. | Botelele go tloga tseleng ya kgamollo: go ka motheo wa nako ya go sepela ya matšatši a 50 (makropayale) le nako ga go taelutha ya matšatši a 365 (dikarolwana tšeo di sego tša okaniki). | <1000 m ya tšhireletšo ya lefelo (dikhwifaya tša DLMT)<br><500 m ya tšhireletšo ya lefelo (diakhwifaya tša letlapa la go tia) |
| | | | | | Botelele go tloga lefelong la tahlo la mahlo a dolomaete: ka motheo wa nako | <1000 m ya šireletšo ya lefelo (di aquifer tša letlapa la go tia) |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontša/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | | ya go sepela ya matšatši a 50 (makropayale) le nako ya go taelutha ya matšatši a 365 (dikarolwana tšao di sego tša okaniki). | |

**Tafolana 29: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 10: Table 30: DINOKANA EYE / LETAMO LA NGOTWANE**

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| IUA10: Dinokana Eye | RU – G10 | 10_1 | Bokae | Mafelo a tahlo (i.e. Mahlo/dinoka) a swanetše gore a šireletšwe kgahlanong le phuhlamo ya tafola ya meetse). | Maemo a meetse: Tlhokomelo ya maemo a meetse a tatelano ya nako (kgwedi ka kgwedi) kgahlanong le go ntša le go na ga pula. | Disesteme tša akhwifaya ya dolomaete: maemo a go tlatša ga se a swanela go ya tlase ga **>6 m** tlase ga bogolo bja maemo a meetse a ~24 m lefelong la akhwifaya ya dolomaete.<br><br>Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.75 m/a.<br><br>Lefelo la go ntša: le swanetše gore le hlokomelwe (go 1000 m ya radiase go tloga moleteng wa leihlo) . |
| | | | | | | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | | Seemo sa tekanyetšo ya meetse (molawana wa tšhomišo ya meetse lefelong la go tsentša) | Kelo ya kelelo tahlong ya leihlo.<br>Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | |
| | | | Boleng | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae | Diphepo- Naetreiti ($NO^3$–N, mg/l).<br>Tlhokomelo ya ga bedi ngwageng. | Naetreiti: tlase ga 1.0 mg/l.<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela peresente ya 95th (1.1 mg/l); |
| | | | | Floraete- dithulano go bašomiši-maemo a floraete yeo e lego godimo | Floraete (F, mg/l)Fluoride (F, mg/l)<br>Tlhokomelo ya ga bedi ngwageng. | Floraete: ~0.15 mg/l.<br>Mokgwa wa ga tee ngwageng wa lebaka le le telele ga se wa swanela go fihlelela |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | **Maikemi**šetšo a Boleng bja mothopo | **Go bont**ša/ go meta | **Tekanyet**šo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | | | peresente ya 95th (0.5 mg/l). |
| | | | | Matswai:<br>Diphatlalatši di swanetše gore di hlokomelwe maemong go kgonthiša seemo sa khwalithi ya meetse se se botse. | Matswai – Go swara mohlagase Tlhokomelo ya kgwedi ka kgwedi | Go swara mohlagase ≤45 mS/m;<br>Mokgwa wa ngwaga wa lebaka le le telele ga se swa swanela go fihla persente ya 95th (55 mS/m) |
| | | | Lefelo la tšhireletšo | Dinyakwa tše itšego tša tšhireletšo ya mothopo wa meetse di swanetše gore di be dipeelano tša tlhahlobo go WUL; | Matangwana a mmepe (dihekthere) a Leihlo le go akaretša tekanyetšo ya go ntšha ga kabo ye kgolo ya meetse. | Thibelo ya go ntšha ka motheo wa tiragatšo ya mokgwa wa intekse ya kgatelelo. |
| | | | | | Tekanyetšo ya maemo a meetse a tlase yuniting ya karolwana ya dolomaete. | Bogolo bja 6 m ( ge e le gore go dumeletšwe ka mokgwa wo mongwe) |
| | | | | Go ba gabotse ga tlaleletšo lefelong la letangwana la Mahlo a DMLT. | Tekanyetšo ya lefelo la go nošetša bogolong bja lefelo (ha's). | Tekanyetšo ya 9% ya lefelo la mong (ha's |
| | | | | | Botelele go tšwa Leihlong la dolomaete (L) | Swanetše gore e be >1000 m, ntle le ge e le gore go dumeletšwe mabapi le dikabo tše ntši tša meetse. |

**Tafolana 30: Maikemišetšo a Boleng bjaMothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 13: LOWER CROCODILE**

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontša/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| 13: Noka ya Lower Crocodile | Karolo ya Noka ya Aluviale ya RU – G13 | 13_1 and 13_3 | Bokae | Go fokotša go tšea meetse a godimo ga mabu ge go ntšhwa meetse ka gare ga melete ya meetse lefelong la lefula la disesteme tša diakhwifaya tša aluviale (go swanetše gore go be le tekanyetšo ya kgole). | Kradiente ya maemo a meetse a tlase ga mabu gare ga sesteme ya akhwifaya ya inthakranula; le Mekgwa ya maemo a meetse a ka tlase ga mabu disestemeng tša akhwifaya tša inthakranula. | Kradiente ya meetse a tlase ga mabu ya pušetšo morago (noka mabapi le molete wa meetse/molete lefelong la 500m kgauswi le seteme se se golo ga se wa dumelelwa.<br><br>Lebelo la maemo a meetse le swanetše gore le be tlase ga 1.0 m/a. |
| | | | | | Kelo ya kelelo ya moela/noka: dipeeletšo tše botse/tše mpe tša meetse:bolumu (Q);<br><br>Phuhlamo ya kelelo mafelong a kelo ya kelelo ya tlase. | Ditahlegelo tša meetse a godimo ga mabu di swanetše gore di lekane le go ntšha goo go dumeletšwego go tšwa nokeng (go akaretša ditahlegelo tva evaphotranspirešene). |

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a Boleng bja mothopo | Go bontšha/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | Seemo sa tekanyetšo ya meetse a tlase ga mabu le sesteme ya aquifer yeo e senyegilego | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | Boleng | Bohlokwa bja Naetreiti bo swanetše gore bo hlokomelwe go thekga bašomiši ba meetse a ka gae | Diphepo- Naetreiti ($NO^3$–N, mg/l). Tlhokomelo ya ga bedi ngwageng. | Naetreiti: 1.0 mg/l. (95th persente) |
| | | | | Matswai ao a tološitšwego mothopong wa meetse a tlase ga mabu: go laola khwalithi ya kelelo ya pušetšo morago ya nošetšo go tšwa sestemeng ya akhwifaya ya inthakranula (aluviale). Diphatlalatšo di swanetše gore di hlokomelwe maemong go kgonthišetša seemo se se botse sa khwalithi ya meetse. | Matswai – Go swara mohlagase Tlhokomelo ya kgwedi ka kgwedi/beke ka beke<br><br>Khwalithi ya sesteme ya akhwifaya ya inthakranula ya aluviale. SAR ya meetse a akhwifaya ya aluviale | Go swara mohlagase: ≤ 85 mS/m (95th persente)<br><br>SAR: gare ga tekanyetšo ya maleba ya meetse a go nošetša. |
| | | | Lefelo la tšhireletšo | Botelele bjo bo nnyane go tšwa mothoppong wa meetse wa godimo ga mabu moo meetse a ka tlase ga mabu a ka ntšhwago gona (ka motheo wa sesteme ya akhwifaya ya inthakranula (aluviale). | Lebaka la Phuhlamo ya Noka. | Go fokotša go ntša ga gare ga molete wa meetse/molete go iša go 5% ya kelelo methopong ya meetse a godimo ga mabu (ntlheng ya go ntša). |
| | | | | Ditiragalo tša tšhomišo ya mabu tšeo di ka amago aquifer ya aluviale.<br>Go bontšha tšhireletšo ya lefelo (i.e. botelele go tvwa methopong ya meetse ya godimo ga mabu) sestemeng ya aquifer ya inthakranula ya aluviale go ya ka tshepedišo ya tšhilafatšo ya makropayale le intasteri /temo. | Mokgwa wa khwalithi ya meetse (tshepedišo ya makropayale mabapi le mothopo wa meetse a godimo ga mabu);<br>Mokgwa wa bokae bja meetse (thulano ya meetse a godimo ga mabu mola go ntša go tvwa sestemeng ya aquifer ya inthakranula ya aluviale. | Tekanyetšo ya meetse ya pele(1): lefelo la matšatši a 50 (makropayale, botelele gare ga tiragalo le mothopo wa meetse a godimo ga mabu.<br>Tekanyetšo ya bokae bja meetse(2): Lefelo la tšhireletšo ya khwalithi ya meetse ya matšatši a 365 (taelušene) (L). |

**Tafolana 31: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 16: LOWER MOKOLO**

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a boleng bja mothopo | Go bontšha/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| 16: Sandloop & Mokolo | RU – G16_4 | 16_4 | Bokae | Go fokotša phuhlamo (phokotšo) ya go tlala ga akhwifaya (maemo a meetse). | Maemo a meetse a akhwifaya ya tatelano ya nako lefelong la kgauswi leo le emelago lefelo la setlogo tšwetšong pele ye e itšego i.e. lefelo la moepo, lefelo la intasteri le tšwetšopele ya intasteri). | Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.5 m/a lefelong la tšhupetšo la tiragalo yeo e itšego. |
| | | | | Seemo sa tekanyetšo ya meetse a ka tlase ga mabu sestemeng ya akhwifaya (kelelo ya gare le kelelo ya ka ntle). | Intekse ya kgatelelo (Tšhomišo ya yuniti ya akhwifaya/ Tsentšo ya yuniti ya akhwifaya), lefelo la kantle la tiragalo. | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%) lefelong la tšhupetšo. |
| | | | Boleng (Hlokomela gore ditekanyetšo tša setlogo tša dikokwane tše bohlokwa tša khemokhale di ka ba selo sa hlago gomme di swanetše gore di dumelwe, i.e. i.e. EC, $NO_3$-N, Cl, $SO_4$, le F). | Go ba le esiti ga meetse a ka tlase ga mabu ka kgamollo ya letlapa la esiti (Acidity of groundwater with regard to acid rock drainage potential (high in areas of coal mining and UCG's) | Bohlokwa bja pH ya meetse a ka tlase ga mabu Lefelong le le itšego la Tšhupetšo. | Bohlokwa bja pH gare ga 6.1 le 8.2 lefelong la tšhupetšo. |
| | | | | Diphepo ka gare ga meetse a tlase ga mabu tšeo di amago bophelo bja moreki. | Phatlalatšo ya Naetreiti ($NO_3$-N) meetseng a tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | Naetreiti: ≤35 mg/l lefelong la tšhupetšo Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 50th persente + 10% (~40 mS/m) – go ya ka dithuto tša selegae. |
| | | | | Matswai ao a tološitšwego methopong ya meetse a ka tlase ga mabu-tlhokomelo ya Medupi/Grootgeluk le dinetweke tše dingwe tšeo di tswalanago le thulano. | Letswai: go swara mohlagase ga meetse a tlase ga mabu lefelong le le itšego la tšhupetšo (T3). | Go swara mohlagase ≤200 mS/m lefelong la tšhupetšo. Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 50th peresente + 10% (~220 mS/m) – go ya ka dithuto tša segae. |
| | | | | Dielemente tša di makro khemikhale tšeo di tološitšwego ka gare ga meetse a ka tlase ga mabu. | Phatlalatšo ya Kloraete Cl meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3). | Tloraete: ≤300 mg/l lefelong la tšhupetšo Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 50th peresente + 10% (~330 mS/m) – go ya ka dithuto tša segae. |
| | | | | Meetse a Maene wa Esiti le methopo ya meetse a godimo ga mabu | Phatlalatšo ya salfeiti ($SO_4$) meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | $SO_4$: ≤200mg/l lefelong la tšhupetšo. Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 50th peresente + 10% (~220 mS/m) – go ya ka dithuto tša segae. |
| | | | | Diphatlalatšo tša floraete meetseng a ka tlase ga mabu ao a abelwago bašomiši ba magaeng. | Phatlalatšo ya Floraete meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | Floraete: ≤2.5 mg/l lefelong la tšhupetšo. Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 50th peresente + 10% (~2.7 mg/l) – go ya ka dithuto tša selegae. |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a boleng bja mothopo | Go bontšha/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | Lefelo la šireletšo | Maemo a go tlatša ga akhwifaya | Maemo a meetse ao a beilwego mabapi le lefelo la dinhla tše tharo (3).. | T1–lefelo la tiragalo: phuhlamo ya maemo a meetse ao a hlokegago a tiragalo.<br>T2–Lefelo la mollwane:lebelo la khutšo ya maemo a meetse le swanetše gore le be tlase ga 1.0 m/a.<br>T3–Lefelo la setlogo goba tšhupetšo: lebelo la khutšo ya maemo a meetse le swanetše gore le be tlase ga 0.5 m/a. |
| | | | | Go ya ka dipeeletšo tša khwalithi ya meetse. | Diphaametha tva khwalithi ya meetse tšeo di beilwego mabapi le lefelo la dinhla tše tharo (3). | T1–lefelo la tiragalo, maemo a phatlalatšo ka lebaka la thulano ya (persente ya 95 ya khwalithi ya meetse go QC):<br>pH: 5.0 to 9.5;<br>$NO_3$–N: 60 mg/l;<br>Letswai EC: 600 mS/m;<br>Tloraete: 1500 mg/l;<br>Disalfaete: 800 mg/l; le<br>Floraete: 6.4 mg/l.<br>T2–Lefelo la mollwane: le dumelela go fihlela peresente ya 75 ya go thekga ke thuto ya setlogo sa lefelo la mollwane – ditekanyetšo tša nnete tšeo di bonwego go QC A42J:<br>pH: 6.7 to 8.1;<br>$NO_3$–N: 35 mg/l;<br>Letswai EC: 340 mg/l;<br>Tloraete: 650 mg/l;<br>Salfaete: 250 mg/l; le<br>Floraete: 2.5 mg/l.<br>T3–Lefelo la setlogo goba tšhupetšo: go dumelela go fihlela go peresente ya 50 + 10% ya dikarolwana tše kgolo bjalo ka ge go bontšhitšwe ka godimo (khwalithi). |
| 16: Mokolo Mainstem | RU – G16 | 16_5_2 | Bokae | Go fokotša go swarwa ga meetse a ka godimo ga mabu ge go ntšhwa meetse meleteng ya meetse lefelong la lefula la sesteme ya akhwifaya ya aluviale (go swanetše gore go be le tekanyetšo ya botelele). | Maemo a meetse go diakhwifaya: kradiente ya maemo a meetse a ka tlase ga mabu gare ga sesteme ya akhwifaya ya inthakranula; le<br>Mekgwa ya maemo a meetse a ka tlase ga mabu disestemeng tša akhwifaya ya inthakranula. | Kradiente ya meetse a tlase ga mabu ya pušetšo morago lefelong la 500 m kgauswi le seteme se se golo e dumeletšwe.<br><br>Mekgwa ya maemo a meetse yeo e sego <-1.0 m/a |
| | | | | Seemo sa tirišano gare ga methopo ya Swater le Gwater. | Dipeeletšo tše botse/tše mpe tša tekanyetšo ya meetse: bolumu (Q); | Ditahlegelo tša meetse a godimo ga mabu di swanetše gore di lekane le go ntša goo go |

| IUA | Yuniti ya meetse a ka tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a boleng bja mothopo | Go bontšha/go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | | phuhlamo ya kelelo mafelong a kelelo ya tlase. | dumeletšwego go tšwa nokeng (go akaretša ditahlegelo tša evaphotranspirešene). |
| | | | | Ditekanyetšo tša meetse a ka tlase ga mabu sestemeng ya inthakranula le akhwifaya yeo e senyegilego | Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%); |
| | | | Boleng (Hlokomela gore ditekanyetšo tša setlogo tša dikokwane tše bohlokwa tša khemokhale di ka ba selo sa hlago gomme di swanetše gore di dumelwe, i.e. i.e. EC, $NO_3$-N, Cl, $SO_4$, le F). | Diphepo- Naetreiti | Tlhokomelo ya kgwedi diteišene tša DWS.<br>Go hloma phatlalatšo ya naetreiti ya hlago mothopong wa meetse. | Naetreiti: 0.5 mg/l.<br>(95th persente) |
| | | | | Matswai ao a tološitšwego methopong ya meetse a tlase ga mabu- | Letswai- go swara mohlagase<br>Go hloma phatlalatšo ya naetreiti ya hlago mothopong wa meetse. | Go swara mohlagase: ≤ 55 mS/m<br>(95th persente) |
| | | | | Meetse a Moepo wa Esiti a mehuta ya matlapa ya tlase ga mabu ya esiti | Maemo a phatlalatšo ya disalfeiti Sulphates ($SO_4$) meetseng a ka tlase ga mabu.<br><br>Go hloma phatlalatšo ya salfeiti mothopong wa meetse. | $SO_4^{-}$ ≤ 80 mg/l.<br>(95th persente) |
| | | | Lefelo la tšhireletšo | Go fokotša go hwetša meetse a ka godimo ga mabu ge go ntšhwa meetse meleteng ya meetse lefelong la lefula disestemeng tša akhwifaya tša aluviale ( go swanetše gore go be le botelele bja tekanyetšo). | Lebaka la phuhlamo ya Noka sestemeng ya khwifaya ya aluviale ya Mokolo (L). | Go fokotša Naetreiti: 1.0 mg/l.<br>(95th persente) a go ntša gare ga meetse ka tlase ga 5% ya kelelo methopong ya meetse (lefelong le le itšego la go ntša). |
| | | | | Ditiragalo tša tšhomišo ya mabu tšeo di ka amago sesteme ya akhwifaya ya inthakranula ya aluviale. | Mokgwa wa khwalithi ya meetse (tshepedišo ya makropayale mabapi le mothopo wa meetse).<br>Mokgwa wa bokae bja meetse mola go ntšhwa go tšwa sestemeng ya akhwifaya ya inthakranula ya aluviale. | Tekanyetšo ya khwalithi ya meetse (1): lefelo la matšatši a 50 (makropayale), botelele gare ga tiragalo le mothopo wa meetse wa godimo ga mabu<br>.<br>Tekanyetšo ya khwalithi ya meetse (2): Lefelo la tšhireletšo ya khwalithi ya meetse ya matšatši a 365 (taelušene) (L). |

**Tafolana 32: Maikemišetšo a Boleng bja Mothopo a MEETSE A TLASE GA MABU diyuniting tšeo di kgethilwego go Diyuniti tšeo di tsenelelanago tša Tlhahlobo 17b: Tafola 32: MATLABAS / LIMPOPO**

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a boleng bja mothopo | Go bontšha/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| IUA 17: MATALBAS | RU – G17_b_2 | 17_b_2 | Bokae | Go fokotša phuhlamo (phokotšo) ya go tlala ga akhwifaya (maemo a meetse). | Maemo a meetse sestemeng ya akhwifaya;<br><br>Ditrente tša maemo a meetse a ka fase ga mabu. | Lebelo la maemo a meetse le swanetše gore le be tlase ga 0.5 m/a lefelong la tšhupetšo la tiragalo yeo e itšego. |
| | | | | Seemo sa tekanyetšo ya meetse a tlase ga mabu sestemeng ya akhwifaya;<br><br>Palo ya intekse ya kgatelelo (Tšhomišo ya Yuniti ya Akhwifaya/Tsentšho ya Yuniti ya Akhwifaya) bjalo ka diperesente | Tekanyetšo ye botse goba ye mpe ya meetse. | Go ntša ga ngwaga ga se gwa swanela go fetiša bogare bja 65% bja go ntša ga ngwaga (i.e. SI ya 65%) lefelong la tšhupetšo. |
| | | | Boleng (Hlokomela gore ditekanyetšo tša setlogo tša dikokwane tše bohlokwa tša khemokhale di ka ba selo sa hlago gomme di swanetše gore di dumelwe, i.e. i.e. EC, $NO_3$-N, Cl, $SO_4$, le F). | Diphepo ka gare ga meetse a ka tlase ga mabu tšeo di amago bophelo bja moreki | Phatlalatšo ya Naetreiti ($NO_3$-N) meetseng a tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | Naetreiti: ≤3.0 mg/l lefelong la tšhupetšo Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 70th peresente + 10% (~33 mg/l) – go ya ka dithuto tša segae. |
| | | | | Matswai ao a tološitšwego methopong ya meetse a tlase ga mabu- | Letswai:go swara mohlagase ga meetse a tlase ga mabu. | Go swara mohlagase ≤140 mS/m lefelong la tšhupetšo.<br>Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 75th peresente + 10% (~155 mS/m) – go ya ka dithuto tša selegae. |
| | | | | Dielemente tša di makro khemikhale tšeo di tološitšwego gare ga meetse a ka tlase ga mabu. | Phatlalatšo ya Tloraete Cl meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3). | Tloraete: ≤145 mg/l lefelong la tšhupetšo Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 75th peresente + 10% (~160 mg/l) – go ya ka dithuto tša selegae. |
| | | | | Tšweletšo ya meetse a moepo wa esiti go tšwa matlapeng a go ba le esiti; le go thibela phuhlamo ya ka moso ya meetse a moepo go mabapi le methopo ya meetse a godimo ga mabu. | Phatlalatšo ya salfeiti ($SO_4$) meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | $SO_4$: ≤85mg/l lefelong la tšhupetšo.<br>Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 75th peresente + 10% (~94 mg/l) – go ya ka dithuto tša selegae. |
| | | | | Diphatlalatšo tša floraete meetseng a tlase ga mabu ao a abelwago bašomiši ba magaeng. | Phatlalatšo ya Floraete meetseng a ka tlase ga mabu lefelong le le itšego la tšhupetšo (T3) | Floraete: ≤1.3 mg/l lefelong la tšhupetšo.<br>Mokgwa wa lebaka le le telele wa ngwaga ga se wa swanela go fihlelela 75th peresente + 10% (~1.4 mg/l) – go ya ka dithuto tša selegae. |
| | | | | Maemo a go tlala a akhwifaya | Maemo a meetse ao a beilwego lefelong | T1–lefelo la tiragalo: phuhlamo ya maemo a |

| IUA | Yuniti ya meetse a tlase ga mabu | RU | Karolwana ya gare | Maikemišetšo a boleng bja mothopo | Go bontšha/ go meta | Tekanyetšo ya nomoro |
|---|---|---|---|---|---|---|
| | | | | | la nhla tše tharo. | meetse e hlokegago mabapi le tiragalo.<br>T2–lefelo la mollwane: lebelo la khutšo ya meetse le swanetše gore le be tlase ga1.0 m/a.<br>T3–lefelo la setlogo goba tšhupetšo: lebelo la khutšo ya meetse ga se la swanela go feta 0.5 m/a. |
| | | | Lefelo la tšhireletšo | Go ya ka dipeeletšo tša khwalithi ya meetse. | Dipharametha tša khwalithi ya meetse tšeo di beilwego lefelong la dinhla tše tharo. | T1–lefelo la tiragalo, maemo a phatlalatšo a magolo ka lebaka la thulano (go ya ma motheo wa sete ya data lefelong leo le amegago):<br>pH:;<br>pH: 5.0 to 9.5;<br>$NO_3$–N: 60 mg/l;<br>Letswai EC: 600 mS/m;<br>Kloraete: 1500 mg/l;<br>Disalfaete: 800 mg/l; le<br>Floraete: 6.4 mg/l.<br><br>T2–Lefelo la mollwane: le dumelela go fihlela persente ya 75 ya go thekga ke thuto ya setlogo sa lefelo la mollwane – ditekanyetšo tša nnete tšeo di bonwego go QC A42J:<br>pH: 7.2 – 7.8<br>$NO_3$–N: 8.0 mg/l;<br>Letswai EC: 200 mg/l;<br>Tloraete: 300 mg/l;<br>Salfaete: 170 mg/l; le<br>Floraete: 1.8 mg/l.<br>T3–Lefelo la setlogo goba tšhupetšo: go dumelela go fihlela go peresente ya 75 ya ditekanyetšo tša setlogo go QC A41E:<br><br>T3–lefelo la setlogo goba la tšhupetšo: le dumelela go fihlela go peresente ya 50 + 10% ya dikokwane tše kgolo bjalo ka ge go bontšhitšwe ka godimo (lebelela khwalithi ka godimo). |

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Contact Centre Tel: 012-748 6200. eMail: info.egazette@gpw.gov.za
Publications: Tel: (012) 748 6053, 748 6061, 748 6065