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**PART 1 OF 3**



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:

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

### Weekly Index

### Weeklikse Indeks

No.	Page No.	Gazette No.	No.	Bladsy No.	Koerant No.
<b>PROCLAMATION</b>			<b>PROKLAMASIES</b>		
R.26	12	42562	R.26	16	42562
Wet op Spesiale Ondersoekenhede en Spesiale Tribunale (74/1996) :Verwysing van Aangeleenthede na bestaande Spesiale Ondersoekenhede en Spesiale Tribunaal.....					
R.27	20	42562	R.27	21	42562
Special Investigating Units and Special Tribunals Act (74/1996)A :Amendment of Proclamation No. R. 22 of 2016.....					
R.28	22	42562	R.28	25	42562
Wet op Spesiale Ondersoekenhede en Spesiale Tribunale (74/1996) :Verwysing van aangeleenthede na bestaande Spesiale Ondersoekenhede: Departement van Water en Sanitasie .....					
R.29	28	42562	R.29	31	42562
Special Investigating Units and Special Tribunals Act (74/1996) :Referral of matters to existing Special Investigating Unit: Council for Medical Schemes .....					
R.30	34	42562	R.30	37	42562
Special Investigating Units and Special Tribunals Act (74/1996) :Referral of matters to existing Special Investigating Unit .....					
R.31	40	42562	R.31	41	42562
Special Investigating Units and Special Tribunals Act (74/1996) :Amendment of Proclamation No. R. 2 of 2018.....					
R.32	42	42562	R.32	45	42562
Special Investigating Units and Special Tribunals Act (74/1996) :Referral of matters to existing Special Investigating Unit .....					
<b>GOVERNMENT NOTICE</b>			<b>GOEWERMENTSKENNISGEWINGS</b>		
<b>Agriculture, Forestry and Fisheries, Department of</b>			<b>Landbou, Bosbou en Visserye, Departement van</b>		
959	15	42561	959	15	42561
Agricultural Product Standards Act (119/1990) :Intention to repeal the regulations relating to the grading, packing and marking of dehydrated vegetables intended for sale in the Republic (No. R. 396 of 13 March 1970).....					
<b>Co-operative Governance, Department of</b>			<b>Samewerkende Regering, Departement van</b>		
967	4	42568	967	4	42568
Local Government: Municipal Structures Act (117/1998) :Formulae for Determination of the Number of Councillors of Municipal Councils.....					
<b>Defence, Department of</b>			<b>Verdediging, Departement van</b>		
969	4	42571	969	4	42571
Defence Act, 2002 :Call for nominations for appointment of the Defence Force Service Commission .....					

No.	Page No.	Gazette No.	No.	Page No.	Gazette No.
<b>Energy, Department of</b>			<b>Energie, Departement van</b>		
968 National Energy Regulator Act (40/2004) :Notice of the Energy Regulator public hearing on City of Tshwane Municipality's application for a tariff increases of 13.07% and tariff restructuring–11 July 2019 .....	4	42569	968 National Energy Regulator Act (40/2004) :Notice of the Energy Regulator public hearing on City of Tshwane Municipality's application for a tariff increases of 13.07% and tariff restructuring–11 July 2019 .....	4	42569
<b>Environmental Affairs, Department of</b>			<b>Omgewingsake, Departement van</b>		
960 National Environmental Management Act (107/1998) :Notice of the requirement to submit a report generated by the national web based environmental screening tool..	16	42561	960 National Environmental Management Act (107/1998) :Notice of the requirement to submit a report generated by the national web based environmental screening tool..	16	42561
961 National Environmental Management Act (107/1998) :Notice of the requirement to submit a report generated by the national web based environmental screening tool..	17	42561	961 National Environmental Management Act (107/1998) :Notice of the requirement to submit a report generated by the national web based environmental screening tool..	17	42561
<b>Higher Education and Training, Department of</b>			<b>Hoër Onderwys en Opleiding, Departement van</b>		
966 Higher Education Act (101/1997) :Appointment of an Independent Assessor to conduct an investigation into the affairs of the University of Fort Hare.....	4	42567	966 Higher Education Act (101/1997) :Appointment of an Independent Assessor to conduct an investigation into the affairs of the University of Fort Hare.....	4	42567
<b>Rural Development and Land Reform, Department of</b>			<b>Landelike Ontwikkeling en Grondhervorming, Departement van</b>		
962 Restitution of Land Rights Act (22/1994), as amended :Farm Sedibeng, Mopani District of Limpopo Province .....	21	42561	962 Restitution of Land Rights Act (22/1994), as amended :Farm Sedibeng, Mopani District of Limpopo Province .....	21	42561
963 Restitution of Land Rights Act (22/1994) as amended :Various properties.....	22	42561	963 Restitution of Land Rights Act (22/1994) as amended :Various properties.....	22	42561
964 Restitution of Land Rights Act (22/1994), as amended :Farm Driekop 540 KS .....	24	42561	964 Restitution of Land Rights Act (22/1994), as amended :Farm Driekop 540 KS .....	24	42561
965 Restitution of Land Rights Act (22/1994), as amended :Portion 21 of the farm Nooitgedacht 14 LT .....	25	42561	965 Restitution of Land Rights Act (22/1994), as amended :Portion 21 of the farm Nooitgedacht 14 LT .....	25	42561
<b>GENERAL NOTICE</b>			<b>ALGEMENE KENNISGEWINGS</b>		
<b>Agriculture, Forestry and Fisheries, Department of</b>			<b>Landbou, Bosbou en Visserye, Departement van</b>		
352 Marketing of Agricultural Products Act (47/1996) :Pomegranate Industry: Application for the continuation of statutory measures.....	26	42561	352 Marketing of Agricultural Products Act (47/1996) :Pomegranate Industry: Application for the continuation of statutory measures.....	26	42561
<b>Electoral Commission</b>			<b>Verkiesingskommissie</b>		
368 Local Government: Municipal Electoral Act (27/2000) :Municipal By-elections – 24 July 2019: Official list of voting stations: Various stations .....	4	42565	368 Local Government: Municipal Electoral Act (27/2000) :Municipal By-elections – 24 July 2019: Official list of voting stations: Various stations .....	4	42565
<b>Labour, Department of</b>			<b>Arbeid, Departement van</b>		
353 Compensation for Occupational Injuries and Diseases Act (130/1993), as amended :SAOPA amendment 2019, Audiologist and Optometrist Gazette 2019, Additions Physiotherapy and Occupational Therapy Gazette .....	28	42561	353 Compensation for Occupational Injuries and Diseases Act (130/1993), as amended :SAOPA amendment 2019, Audiologist and Optometrist Gazette 2019, Additions Physiotherapy and Occupational Therapy Gazette .....	28	42561
354 Coida Act of 1993 :Notice to Compensation Fund Medical Service Providers: Compulsory invoicing requirement in Medical Claims .....	45	42561	354 Coida Act of 1993 :Notice to Compensation Fund Medical Service Providers: Compulsory invoicing requirement in Medical Claims .....	45	42561

No.	Page No.	Gazette No.	No.	Page No.	Gazette No.
355 Labour Relations Act, 1995 :Variation of Scope of the Furniture Bargaining Council	48	42561	355 Labour Relations Act, 1995 :Variation of Scope of the Furniture Bargaining Council .....	48	42561
356 Labour Relations Act, 1995 :Application for Variation of Registered Scope of a Bargaining Council .....	51	42561	356 Labour Relations Act, 1995 :Application for Variation of Registered Scope of a Bargaining Council .....	51	42561
369 Labour Relations Act, 1995 :Bargaining Council for the Contract Cleaning Services Industry (KwaZulu-Natal): Renewal of Period of Operation of the Main Collective Agreement .....	4	42566	369 Labour Relations Act, 1995 :Bargaining Council for the Contract Cleaning Services Industry (KwaZulu-Natal): Renewal of Period of Operation of the Main Collective Agreement .....	4	42566
<b>Public Works, Department of</b>			<b>Openbare Werke, Departement van</b>		
357 Construction Industry Development Regulations, 2004, as amended :Tender Value Range Adjustment in terms of the Act .....	55	42561	357 Construction Industry Development Regulations, 2004, as amended :Tender Value Range Adjustment in terms of the Act .....	55	42561
<b>South African Reserve Bank</b>			<b>Suid-Afrikaanse Reserwebank</b>		
358 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Styleup Fashions Close Corporation .....	59	42561	358 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Styleup Fashions Close Corporation .....	59	42561
359 Currency and Exchanges Act (9/1933), as amended :Styleup Fashions Close Corporation .....	60	42561	359 Currency and Exchanges Act (9/1933), as amended :Styleup Fashions Close Corporation .....	60	42561
360 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Jackson Isokpuwu .....	61	42561	360 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Jackson Isokpuwu .....	61	42561
361 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Ms Tshilidzi Eunice Makananisa (ID Number 7011190529081); and Charis Missionary Church NPC .....	62	42561	361 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Ms Tshilidzi Eunice Makananisa (ID Number 7011190529081); and Charis Missionary Church NPC .....	62	42561
362 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Professional Shipping (Pty) Limited .....	64	42561	362 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Professional Shipping (Pty) Limited .....	64	42561
363 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Ms Yasimeen Adam Nambawa .....	65	42561	363 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Ms Yasimeen Adam Nambawa .....	65	42561
364 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Mr Hangbin Weng (ID Number 8804156349182) .....	66	42561	364 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Mr Hangbin Weng (ID Number 8804156349182) .....	66	42561
370 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Lionhead Trading (Pty) Limited .....	4	42570	370 Currency and Exchanges Act (9/1933), as amended :Notice and Order of Forfeiture: Lionhead Trading (Pty) Limited .....	4	42570
371 Currency and Exchanges Act (9/1933) :Notice and Order of Forfeiture: Seattle Grain Merchants (Pty) Limited .....	5	42570	371 Currency and Exchanges Act (9/1933) :Notice and Order of Forfeiture: Seattle Grain Merchants (Pty) Limited .....	5	42570
<b>Trade and Industry, Department of</b>			<b>Handel en Nywerheid, Departement van</b>		
350 Liquor Act, (27 /1989) :Notice of application for liquor licenses: Mpumalanga .....	48	42560	350 Drankwet, (27 /1989) :Kennisgewing van aansoek om dranklisensies: Mpumalanga .....	48	42560
351 Liquor Act, (27 /1989) :Notice of applications for the removal of licenses: Limpopo	49	42560	351 Drankwet, (27 /1989) :Kennisgewing van aansoek om die verplasing van Lisensies: Limpopo .....	49	42560

No.	Page No.	Gazette No.	No.	Page No.	Gazette No.
<b>Traditional Affairs, Department of</b>			<b>Tradisionele Sake, Departement van</b>		
365 Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities Act, 2002 :Appointment of members of CRL Rights Commission.....	67	42561	365 Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities Act, 2002 :Appointment of members of CRL Rights Commission.....	67	42561
<b>Transport, Department of</b>			<b>Vervoer, Departement van</b>		
366 International Air Service Act (60/1993) :Grand/Amendment of International Air Service License.....	68	42561	366 International Air Service Act (60/1993) :Grand/Amendment of International Air Service License.....	68	42561
367 Air Service Licensing Act (115/1990) :Application for the Grant or Amendment of Domestic Air Service Licence.....	69	42561	367 Air Service Licensing Act (115/1990) :Application for the Grant or Amendment of Domestic Air Service Licence.....	69	42561
372 National Ports Act (12/2005) :Publication for Comments: Draft National Ports Amendment Bill, 2019.....	4	42574	372 National Ports Act (12/2005) :Publication for Comments: Draft National Ports Amendment Bill, 2019.....	4	42574
<b>BOARD NOTICE</b>			<b>RAADSKENNISGEWINGS</b>		
102 Allied Health Professions Act (63/1982) ("the Act") :Allied Health Professions Council of South Africa: Unprofessional Conduct Board Notice: Issuing of Certificate of Indisposition without an examination.....	70	42561	102 Allied Health Professions Act (63/1982) ("the Act") :Allied Health Professions Council of South Africa: Unprofessional Conduct Board Notice: Issuing of Certificate of Indisposition without an examination.....	70	42561
103 Allied Health Professions Act (63/1982) :Unprofessional Conduct Board Notice: The Bio-Energetic Synchronisation Technique ("The Best Technique") .....	73	42561	103 Allied Health Professions Act (63/1982) :Unprofessional Conduct Board Notice: The Bio-Energetic Synchronisation Technique ("The Best Technique") .....	73	42561
104 Allied Health Professions Act (63/1982) :Unprofessional Conduct Board Notice: Ingestion of Aromatherapy Oils.....	75	42561	104 Allied Health Professions Act (63/1982) :Unprofessional Conduct Board Notice: Ingestion of Aromatherapy Oils.....	75	42561
105 Auditing Profession Act (26/2005) :Amendments to the Rules Regarding Improper Conduct.....	77	42561	105 Auditing Profession Act (26/2005) :Amendments to the Rules Regarding Improper Conduct.....	77	42561
106 Auditing Profession Act (26/2005) :Amendments to the code of Professional Conduct for Registered Auditors in respect of second opinion.....	78	42561	106 Auditing Profession Act (26/2005) :Amendments to the code of Professional Conduct for Registered Auditors in respect of second opinion.....	78	42561
107 Engineering Profession Act, 2000 :Determination of Nominating Bodies.....	4	42564	107 Engineering Profession Act, 2000 :Determination of Nominating Bodies.....	4	42564

## Contents

<i>No.</i>		<i>Gazette No.</i>	<i>Page No.</i>
<b>GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS</b>			
<b>Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van</b>			
989	Marine Living Resources Act (18/1998): Recognition of the Nearshore Crayfishers Association as an Interest Group in terms of section 8 of the Act.....	42584	16
<b>Basic Education, Department of/ Basiese Onderwys, Departement van</b>			
990	National Education Policy Act (27/1996): Marine Sciences: Public comment .....	42584	17
<b>Energy, Department of/ Energie, Departement van</b>			
991	National Nuclear Regulator Act (47/1999): Notice in terms of section 28 of the Act, on fees for Nuclear Authorisations .....	42584	19
<b>Higher Education and Training, Department of/ Hoër Onderwys en Opleiding, Departement van</b>			
992	Higher Education Act (101/1997): Notice of intent to cancel the registration of Nazarene Theological College NPC as a private higher education institution.....	42584	22
993	Higher Education Act (101/1997): University of Johannesburg Amended Statute .....	42584	23
<b>Rural Development and Land Reform, Department of/ Landelike Ontwikkeling en Grondhervorming, Departement van</b>			
994	Restitution of Land Rights Act (22/1994): Remainder of Farm 1023, Upper Blinkwater in the Eastern Cape Province .....	42584	59
995	Restitution of Land Rights Act (22/1994) as amended: Various applications .....	42584	60
996	Restitution of Land Rights Act (22/1994): Boschpoort 388 JS: The Remaining Extent of Portion 3.....	42584	64
<b>South African Revenue Service/ Suid-Afrikaanse Inkomstediens</b>			
997	South African Revenue Service Act (34/1997): PAIA Manual.....	42584	65
<b>Water and Sanitation, Department of/ Water en Sanitasie, Departement van</b>			
998	National Water Act (36/1998): Reserve Determination of Water Resources for the Inkomati Catchment .....	42584	92
<b>GENERAL NOTICES • ALGEMENE KENNISGEWINGS</b>			
<b>Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van</b>			
385	Marketing of Agricultural Products Act (47/1996): Request for the Continuation and Amendment of Statutory Measures in the South African Pecan Nut Industry, in terms of the Act.....	42584	238
<b>Justice and Constitutional Development, Department of/ Justisie en Staatkundige Ontwikkeling, Departement van</b>			
386	Promotion of Access to Information Act (2/2000): Description submitted in terms of section 15(1): Council for Medical Schemes .....	42584	240
387	Promotion of Access to Information Act (2/2000): Description submitted in terms of section 15(1): South African Police Service .....	42584	242
388	Promotion of Access to Information Act (2/2000): Description submitted in terms of section 15(1): Department of International Relations and Cooperation.....	42584	263
<b>Non-Governmental Organization/ Nie-Regeringsorganisasie</b>			
389	Veterinary and Para-Veterinary Professions Act (19/1982): Regulations Relating to Veterinary and Para-Veterinary Professions: Amendment .....	42584	266
<b>BOARD NOTICES • RAADSKENNISGEWINGS</b>			
112	Accounting Standards Board: Invitation to comment on Exposure Draft issued by the Board .....	42584	268



















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**GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS**

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**DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**

NO. 989

19 JULY 2019

**MARINE LIVING RESOURCES ACT, 1998 (ACT NO. 18 OF 1998)****RECOGNITION OF THE NEARSHORE CRAYFISHERS ASSOCIATION AS AN INTEREST GROUP IN TERMS OF SECTION 8 OF THE MARINE LIVING RESOURCES ACT, 1998 (ACT NO 18 OF 1998).**

The Department of Agriculture, Forestry and Fisheries, hereby under section 8 of the Marine Living Resources Act (Act No. 18 of 1998) recognise the Nearshore Crayfishers Association as an interest group for the West Coast rock lobster sector in terms of section 8 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

**DEPUTY DIRECTOR-GENERAL****DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES****BRANCH: FISHERIES MANAGEMENT****DATE:** 30/05/2019



## DEPARTMENT OF BASIC EDUCATION

NO. 990

19 JULY 2019

**NATIONAL EDUCATION POLICY ACT, 1996 (ACT NO. 27 OF 1996)****CALL FOR SUBMISSIONS FROM STAKEHOLDER BODIES AND MEMBERS OF THE PUBLIC ON THE DRAFT CURRICULUM AND ASSESSMENT POLICY STATEMENT (CAPS) FOR THE SUBJECT 'MARINE SCIENCES' TO BE LISTED IN THE NATIONAL CURRICULUM STATEMENT GRADES R-12**

1. I, Angelina Matsie Motshekga, Minister of Basic Education, hereby, in terms of *section 3(4)(l)* of the *National Education Policy Act, 1996 (Act No. 27 of 1996)*, and after consultation with the Council of Education Ministers publish a call for comments regarding the Curriculum and Assessment Policy Statement for Grades R-12 for the subject Marine Sciences.

**AVAILABILITY OF THE POLICY DOCUMENT**

2. The **CAPS for Marine Sciences** is available on the following Departmental website: [www.education.gov.za](http://www.education.gov.za). Under: **Resources, Policies, Curriculum and Assessment**, and is arranged per Phase and Subject.

**SUBMISSION**

3. It will greatly assist the department if all submissions could be made under the heading **Marine Sciences**.

**ADDRESS FOR SUBMISSIONS**

4. All submissions must be sent as per instruction below:
  - i. **Mr SA Tlhbane for attention of: Mr DL Silman,**  
Tel. No: 012 357 4074  
**Email: Silman.D@dbe.gov.za**

OR

Hand-deliver for the attention of the above at:

**Department of Basic Education  
222 Struben Street  
Pretoria, 0001**

**OR**

Post for the attention of the above:

**Department of Basic Education  
Private Bag X895  
Pretoria, 0001**

**CLOSING DATE**

5. The due date for submission of comments is set as 21 days after the publication of this notice.

  
MRS AM MOTSHEKGA, MP

**MINISTER OF BASIC EDUCATION**

**DATE:**

## DEPARTMENT OF ENERGY

NO. 991

19 JULY 2019



MINISTER  
ENERGY  
REPUBLIC OF SOUTH AFRICA

Private Bag X96, Pretoria, 0001. 7th Floor, 192 Visagie Street, C/o Visagie & Paul Kruger Street, Pretoria 0001. Tel: 012 406 7612, Fax: 012 323 5651  
Private Bag X9111, Cape Town, 8000. Parliamentary Building, 17th Floor, 120 Plein Street, Cape Town 8000. Tel: 021 469 6425, Fax: 021 469 5980

**NATIONAL NUCLEAR REGULATOR ACT, 1999 (ACT NO 47 OF 1999)****Notice in terms of section 28 of the National Nuclear Regulator Act, 1999 (Act No 47 of 1999), on fees for Nuclear Authorisations.**

I Mr. Jeff Radebe, Minister of Energy acting under section 28 of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999), on the recommendation of the NNR Board and in consultation with the Minister of Finance and by notice in the Government Gazette hereby determine the fees contained in the attached schedule payable to the Regulator in respect of —

- (a) any application for the granting of a nuclear authorisation;
- (b) an annual nuclear authorisation fee for the financial year (2019/20)

The fees shall be payable to the National Nuclear Regulator of South Africa, for the period of 01 April 2019 to 31 March 2020 by the licensed holders concerned.

A handwritten signature in black ink, appearing to read 'J. Radebe'.

MR. JEFF RADEBE, MP  
MINISTER OF ENERGY

DATE: 29/04/19

Facilities	Type of Facility	Number of authorisation holders per category	Authorisation fees for the 2018/19 financial year per licenced holder.	Total fees for the 2018/19 financial year		Authorisation fees for the 2019/20 financial year per licenced holder.	Total fees for the 2019/20 financial year	Variance based on totals from previous year
Category 1	Small users, laboratories and refurbishes	51	R57,958	R2,955,858	44	R62,305	R2,741,420	7% un
Category 2	Scrap processors, scrap smelter and service providers	27	R72,448	R1,956,096	30	R77,882	R2,336,460	19% f
Category 3	Fertilizers and other lesser mining and mineral processing facilities	5	R405,712	R2,028,560	5	R436,141	R2,180,705	6% f
Category 4	Medium operators and other lesser mining and mineral processing facilities	46	R463,359	R21,314,514	42	R498,111	R20,920,662	2% un
Category 5	Large operators which include major mining and mineral processing facilities	10	R1,101,218	R11,012,180	10	R1,183,810	R11,838,100	8% f

PROPOSED NNR AUTHORIZATION FEES FOR 2019/20 FINANCIAL YEAR

<b>Total</b>		<b>139</b>	<b>R2,100,695</b>	<b>R39,267,208</b>	<b>131</b>	<b>R2,258,249</b>	<b>R40,017,347</b>	<b>2% f</b>
Eskom KNPS-normal operation			R80,288,523	R80,288,523		R86,310,162	R86,310,162	
Eskom KNPS-Steam generator replacement			R19,611,227	R19,611,227		R21,082,069	R21,082,069	
Necsa-Pelindaba			R42,331,852	R42,331,852		R45,506,741	R45,506,741	
Necsa-Vaalputs			R6,520,372	R6,520,372		R7,009,400	R7,009,400	
Eskom-new Nuclear Installation license			R16,498,972	R16,498,972		R17,736,395	R17,736,395	
<b>Total</b>			<b>R165,250,946</b>	<b>R165,250,946</b>		<b>R177,644,767</b>	<b>R177,644,767</b>	
<b>Accumulated fees</b>			<b>R167,351,641</b>	<b>R204,518,154</b>		<b>R179,903,016</b>	<b>R217,662,114</b>	

PROPOSED NNR AUTHORIZATION FEES FOR 2019/20 FINANCIAL YEAR

## DEPARTMENT OF HIGHER EDUCATION AND TRAINING

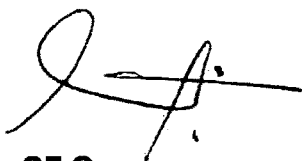
NO. 992

19 JULY 2019

**HIGHER EDUCATION ACT, 1997 (ACT No.101 OF 1997)****NOTICE OF INTENT TO CANCEL THE REGISTRATION OF NAZARENE  
THEOLOGICAL COLLEGE NPC AS A PRIVATE HIGHER EDUCATION  
INSTITUTION**

I, Gwebinkundla Felix Qonde, Director-General of the Department of Higher Education and Training, hereby, in terms of section 63(a) of the *Higher Education Act, 1997 (Act No. 101 of 1997)* ("the Act") and Regulation 17(3) of the *Regulations for the Registration of Private Higher Education Institutions, 2016* ("the Regulations"), give notice of intent to cancel the registration of *Nazarene Theological College NPC* as a private higher education institution for failure to submit the following 2017 annual reporting information:

(a) *Tax clearance certificate.*



Mr GF Qonde

Director-General: Higher Education and Training

Date: 04/12/2018

## DEPARTMENT OF HIGHER EDUCATION AND TRAINING

NO. 993

19 JULY 2019

## HIGHER EDUCATION ACT, 1997 (Act No. 101 of 1997)

## INSTITUTIONAL STATUTE

## UNIVERSITY OF JOHANNESBURG

I, Dr BE Nzimande, Minister of Higher Education, Science and Technology, in accordance with section 33 (1) of the Higher Education Act, 1997 (Act No. 101 of 1997, as amended), hereby publish the amended Institutional Statute of the University of Johannesburg set out in the Schedule hereto.



**Dr BE Nzimande, MP**

**Minister of Higher Education, Science and Technology**

**Date:** 08/07/2019

## **AMENDMENTS TO THE STATUTE OF THE UNIVERSITY OF JOHANNESBURG**

The Council of the University of Johannesburg has made amendments to the Statute, set out in the schedule to this notice, in accordance with section 32 of the Higher Education Act 101 of 1997 (as amended) which is hereby published with the approval of the Minister of Higher Education and Training in terms of section 33 of the said Act, and comes into operation upon its promulgation.

### **SCHEDULE**

To introduce a Statute for the University of Johannesburg, to give effect to the Higher Education Act 101 of 1997 (as amended) and to promote the effective governance and management of the University in respect of matters not prescribed by any law.



## CONTENTS

	Page no
Chapter 1 Definitions	4
Chapter 2 The University	7
Name	7
Status	7
Seat	7
Composition	7
Vision, Mission and Values	8
Promotion of Multilinguism	8
Chapter 3 Governance Structures	8
Council	8
Functions	8
Compostion	10
Term of Office	11
Termination of membership and vacancies	11
Office-bearers	12
Meetings	13
Fiduciary duty and conflict of interest of members	13
Ruling by Chairperson	14
Committees	14
Executive Committee	14
Other Committees	15
Senate	15
Functions	15
Accountability	17
Composition	17
Fiduciary duty of members of Senate	17
Term of office of members	17
Office-bearers	18
Meetings	18
Committees	18
Executive Committee	18
Faculty Boards	19
Chapter 4 Office-Bearers and Management Structures	20
Chancellor	20
Functions	20
Election	20
Term of Office	22
Accountability	22
Vice-Chancellor and Principal	22
Functions	22
Appointment	23
Term of Office	24
Accountability	24
Acting Vice-Chancellor and Principal	24
Vacancy	24
Deputy Vice-Chancellors and Registrar	25
Functions	25
Appointment	25
Term of Office	25
Accountability	25
Executive Deans and Executive Directors	25
Functions	25
Appointment and term of office	25
Accountability	26
Management Executive Committee	26

Functions	26
Composition	26
Meetings	26
Accountability	27
Chapter 5 Institutional Forum	27
Status and Role	27
Functions	27
Accountability	28
Composition	28
Nomination/election of members	28
Terms of office of members	28
Vacancies	29
Office-bearers	29
Meetings	29
Task teams and committees	30
Chapter 6 Employees	30
Appointment	30
Conditions of employment	30
Evaluation	30
Discipline	31
Promotion	31
Accountability	31
Chapter 7 Student Governance and Other Student-Related Affairs	31
Student Representative Council	31
Role	31
Accountability	32
Task teams and committees	32
Interim Student Representative Council	32
Role	32
Accountability	32
Other Student-Related Affairs: Admission Registration and Discipline	32
Admission and registration	32
Termination of registration	33
Discipline	33
Chapter 8 Qualifications, Honorary Degrees and Titles and Council Awards	33
Degrees, diplomas and certificates	33
Honorary degrees and titles and Council awards	34
Chapter 9 Convocation and Donors	34
Convocation	34
Role and objectives	34
Membership	34
Office-bearers	35
Meetings and elections	35
Donors	35
Chapter 10 Transitional Arrangements	35
Arrangements	35

## CHAPTER 1 DEFINITIONS

1. In this Statute, any word or expression to which a meaning has been assigned by the Higher Education Act 101 of 1997 (as amended) has the meaning so assigned to it, and, unless the context otherwise indicates -

**"Act"** means the Higher Education Act 101 of 1997 (as amended);

**"academic employee"** means any person appointed to teach or to do research at the University on such conditions as determined by the Council and any other employee designated as such by the Council;

**"Adjunct Professor"** means a title reserved for permanent and fixed-term employees primarily employed in a support division (or in a support capacity in a Faculty) who – a) may render academic services to a Faculty as a secondary activity; b) adds academic value to a Faculty; c) engage in activities that go beyond occasional mentoring and engagement in research projects and seminars; provided that such employees are appointed to teach and/or do research in a Faculty on a part-time basis;

**"alumni"** means all persons who have obtained a state-subsidised qualification from the University or its predecessors;

**"Associate Professor"** means a title below the level of Professor, conferred by the University on an employee who has demonstrated ability to produce and disseminate knowledge at a high level of scholarship recognized by the community of scholars within his/her academic discipline or set of academic disciplines;

**"Chancellor"** means the titular head of the University;

**"Convocation"** means the body established in terms of section 26(2)(g) of the Act and as described in paragraphs 76 to 80;

**"Council"** means the governing body of the University of Johannesburg, established in terms of section 26(2)(a) of the Act;

**"Deputy Vice-Chancellor"** means an employee appointed in terms of paragraph 5e and on whom the Council may bestow an appropriate functional job title;

**"Distinguished Research Associate"** means an individual with specialist high-level expertise who participates in clearly-defined teaching-and-learning and/or research activities of a Faculty as a result of a close working relationship with one or more academic employees of the University, but who may not have a physical presence at the University;

**"donor"** means a natural or juristic person who has made a donation to the

University that in the opinion of the Council warrants recognition as a donor;

**"Emeritus professor"** is a title that may be conferred on a retired employee who have held the title of professor (or associate professor) at the time of retirement, as approved by Senate;

**"employee"** means any person employed by the University;

**"Executive Dean"** means a person appointed as head of a Faculty or structure equivalent in status, designated by the Council;

**"Executive Director"** means a person appointed to perform managerial, administrative and supervisory functions in a division of the University;

**"Faculty"** means the primary academic structure for a planned cluster of academic learning and research programmes and qualifications, its substructures as approved by Council and the employees who perform functions in the academic structure; Council may approve an alternative expression for "Faculty";

**"Faculty Board"** means a body that governs a Faculty and regulates its activities;

**"Fellow"** means a person who is appointed and remunerated by a Faculty for any period between three months and three years with the specific mandate to participate in clearly defined teaching-and-learning or research activities of the Faculty, and whose association with the Faculty is aimed at producing outcomes for the Faculty that enhances the academic reputation of the University;

**"Fellowship"** means a status bestowed by the University on an individual, as a mark of academic distinction;

**"Honorary professor"** means a title conferred by the University on a person who, on the basis of proven knowledge and demonstrated insight, is recognized as a leading expert in a particular academic discipline by scholars in that discipline and who, by his/her association with the University, adds prestige to the institution's pursuit of scholarship;

**"Institutional Forum"** means the Institutional Forum established in terms of section 26(2)(f) of the Act;

**"Interim Student Council"** means the interim student governance structure appointed by Council to advise senior management on student matters in the absence or disfunctionality of the Student Representative Council;

**"Management Executive Committee"** means the management committee of the University in accordance with paragraphs 46 to 49 of the Statute;

**"non-academic employee"** means an employee who is not appointed to teach or to do research;

**“Professor”** means a title conferred by the University on a person who has demonstrated ability to produce and disseminate knowledge at the highest level of scholarship recognized by the community of scholars within his/her academic discipline or set of academic disciplines;

**"qualification"** means any qualification offered by the University and approved by Senate;

**"recognised union"** means a trade union formally recognised by the Council of the University as having sufficient representativity to bargain collectively on behalf of its members;

**"Rules"** means the institutional rules, policies, disciplinary measures and discipline provisions, and codes of conduct issued by the Council, the Senate or any other body or functionary authorised to do so by the Council, within the University;

**"Senate"** means the statutory body of the University responsible for academic matters as established in terms of section 28 of the Act, and regulates all teaching, learning, assessment, research and other academic functions of the University.

**"senior management"** means the members of the Management Executive Committee, the Executive Deans and Executive Directors;

**"Statute"** means the Statute of the University of Johannesburg;

**"student"** means a person registered at the University for a qualification;

**“Student Representative Council”** means the University Student Representative Council established in terms of section 35 of the Act and regulated by its Constitution;

**"University"** means the University of Johannesburg and “UJ” will have a commensurate meaning;

**“Visiting professor”** means a title conferred by the University on a person who  
a) is external to the University and/or external to the Faculty in which the appointment is being made; b) has specialist high-level expertise in a particular academic discipline, commensurate with the level of scholarship expected of an associate professor or professor; c) is appointed to share his/her expertise by means of part-time teaching activities and/or participation in a research project.

## CHAPTER 2 THE UNIVERSITY

### **Name**

2. The name of the University is University of Johannesburg, and also known as:
  - (a) Universiteit van Johannesburg;
  - (b) Inyuvesi yase-Johannesburg;
  - (c) Yunibesithi ya Johannesburg.

### **Status**

3. The University is a juristic person. The University exists and functions in terms of the Constitution of the Republic of South Africa, 1996, the Higher Education Act (Act No. 101 of 1997), as well as the Statute and Rules of the University and applicable law.

### **Seat**

4. The seat of the University is in the Metropolitan Area of Johannesburg, Auckland Park Kingsway Campus, Gauteng Province.

### **Composition**

5. The University consists of the –
  - (a) Council;
  - (b) Senate;
  - (c) Chancellor;
  - (d) Vice-Chancellor and Principal;
  - (e) One or more Deputy Vice-Chancellors;
  - (f) Registrar;
  - (g) Executive Deans;
  - (h) Executive Directors;
  - (i) Management Executive Committee;
  - (j) Institutional Forum;
  - (k) Student Representative Council;
  - (l) Faculties;
  - (m) Employees;
  - (n) Students;

- (o) Convocation; and
- (p) Such other positions, structures and offices as may be determined by the Council or the Statute.

### **Vision, Mission and Values**

6. The University's vision, mission and values are reflected in the University's strategic plan.

### **Promotion of Multilingualism**

7. (1) The University promotes multilingualism and designates Northern Sotho (Sesotho sa Leboa), English, Zulu (IsiZulu) and Afrikaans as its primary languages for academic, administrative, communication and marketing purposes, to the extent that is reasonably practicable.
- (2) The languages referred to in (1) above are used in a manner provided for by a Senate- and Council-approved Language Policy.

## **CHAPTER 3 GOVERNANCE STRUCTURES**

### **COUNCIL**

#### **Functions**

8. (1) The Council-
- (a) governs the University in accordance with its scope of authority as provided for in the Act;
  - (b) ensures good management of the University;
  - (c) adopts the University's vision, mission and values, and monitors the realisation thereof;
  - (d) is responsible for sustaining the University's reputation and financial health, and the well-being of its employees and students;
  - (e) is responsible for establishing and maintaining high standards of academic conduct and probity in concurrence with the Senate;
  - (f) is responsible for adopting and monitoring financial and non-financial performance measures related to the University's strategic objectives;
  - (g) determines, in consultation with the Vice-Chancellor and Principal, the nature and scope of the University's social responsibilities;
  - (h) protects the institutional autonomy of the University and the academic freedom of its employees, and deliberates on the nature and role of the University;

- (i) approves the SRC Constitution after consultation with the SRC as required by the Act; and
  - (j) is accountable to the Minister in terms of the provisions of section 41 of the Act.
- (2) The Council's responsibilities in paragraph 8(1) include -
- (a) making or amending the Statute as contemplated in sections 32 and 33 of the Act, and making or amending Rules for the University in consultation with the structures and offices affected by such Rules and amendments as required by the Act;
  - (b) appointing all employees of the University, subject to the provision in paragraph 60;
  - (c) approving the University's annual budget;
  - (d) entering into financial agreements and agreements for the construction of buildings in accordance with sections 40(2) and (3) of the Act.
  - (e) Determining after consultation with Senate –
    - (i) what academic structures are required and what the functions of each structure are in order to ensure efficient governance;
    - (ii) the appointment of academic employees, subject to the provision in paragraph 60;
    - (iii) the student admission policy of the University;
    - (iv) the language policy of the University;
- (3) The Council establishes Council committees and joint Council and Senate committees, including the approval of concomitant charters, to perform any of its functions and may appoint persons, who are not members of Council, as co-opted members of its committees as it deems fit.
- (4) The Council may delegate selected functions or powers to the Executive Committee of the Council, the Vice-Chancellor and Principal or any employee, the Management Executive Committee or any structure of the University.
- (5) The Council remains responsible and accountable for the performance and outcome of any delegated function.
- (6) Notwithstanding the Council's general responsibilities, the management and functioning of the University are the responsibility of the Vice-Chancellor and Principal and the senior management of the University.



## Composition

9. (1) Subject to section 27 of the Act, as well as the transitional arrangements reflected in paragraph 83 of this Statute, the Council consists of:

**(a) External members**

- (i) five persons appointed by the Minister;
- (ii) two members of the Convocation, elected by the Convocation;
- (iii) six members representing appropriate sectors and professions and with a broad range of competencies in fields such as, but not limited to, education, business, finance, law, marketing, information technology and human resource management as indicated by the Council, elected according to the Rules;
- (iv) co-opted members as the Council deems fit, subject to section 27(4) of the Act;

**(b) Internal members**

- (i) the Vice-Chancellor and Principal;
  - (ii) one Deputy Vice Chancellor, contemplated in paragraph 5(e) recommended by the Management Executive Committee and appointed by Council;
  - (iii) two members of the Senate who are not otherwise members of the Council, elected by the Senate;
  - (iv) one permanent full time academic employee not on Senate elected by the permanent academic employees;
  - (v) one non-academic permanent full time employees elected by the permanent non-academic employees;
  - (vi) two student representatives elected by the Student Representative Council in accordance with the constitution of the Student Representative Council.
- (2) At least sixty per cent of the Council members must be persons who are neither employees nor students of the University.
- (3) Members of the Council must be persons with knowledge and experience relevant to the objectives and governance of the University.
- (4) Members of the Council are elected and appointed according to the Rules.
- (5) No employee and no student may be elected or hold appointment under subparagraphs 9(1)(a).
- (6) A person elected and appointed under subparagraphs 9(1)(a) who

becomes a student or an employee forthwith ceases to be a member of the Council.

### **Term of office**

10. (1) The term of office of members of the Council is five years, except -
- (a) The Vice-Chancellor and Principal who serve by virtue of her/his office; and
  - (b) members elected by the Student Representative Council in terms of paragraph 9(1)(b)(vi) remain members of the Council for the term determined by the Constitution of the Student Representative Council when they are elected, provided that:
    - (i) no member of the Student Representative Council is a member of the Council for a term exceeding three years;
  - (c) members elected by the Convocation, who serve for a term of three years.
- (2) Members of Council referred to in paragraph 9(1)(a) and 9(1)(b), and not excluded as per paragraph 10(1)(a), (b) and (c), may serve for a maximum of two consecutive terms as a Council member.
- (3) The Council may, upon expiry of the term of office of a member contemplated in subparagraph 9(1)(a), co-opt such person as a member of the Council with voting rights for a period not exceeding six months for purposes of ensuring -
- (i) continued compliance of the Council's composition with the Act and this Statute; and/or
  - (ii) continuity in the performance of the Council during such period.

### **Termination of membership and vacancies**

11. (1) A Council member resigns by giving written notice to the Secretary of the Council.
- (2) A member of the Council ceases to be a member and must be informed thereof by the Secretary of the Council, when -
- (a) the member is absent from three consecutive ordinary meetings without valid reason and without the Council's leave;
  - (b) the member is convicted of an offence for which the sentence is imprisonment without the option of a fine or committed an offence that, the Council, on reasonable and justifiable grounds, considers to render such member unfit to be a member;
  - (c) the member becomes incapacitated or her/his continued membership is deemed improper after a due process in accordance with

prescribed code of conduct, taking into consideration the provisions of the Promotion of Administrative Justice Act 3 of 2000;

- (d) the member becomes disqualified to act as a director in terms of the legislation regulating the governance of companies or is removed from an office of trust by a court of law or similar tribunal or forum;
  - (e) members referred to in paragraph 9(1)(a) cease to be members when such a person registers as a student or becomes an employee.
- (3) Members referred to in paragraph 9(1)(b)(i)-(v) cease to be members on resignation or retirement from their position in the University.
  - (4) Members referred to in 9(1)(b)(vi) cease to be members when they are no longer a member of the Student Representative Council or a registered student.
  - (5) The Council is entitled to suspend any member if it deems such suspension appropriate.
  - (6) Vacancies as a result of death, resignation or other causes must be filled in the same manner in which they were originally filled according to the Rules.
  - (7) The term of office of a person who fills a vacancy is a full term (5 years) and commences:
    - (a) for non ministerial appointees: at the date of approval by Council;
    - (b) for ministerial appointees: at the date of approval by the Minister.

### **Office-bearers**

- 12. (1) The Council elects a Chairperson and a Vice-Chairperson for a term not exceeding five years from the ranks of its members who are not students or employees of the University.
- (2) Eligibility of the Chairperson and Vice-Chairperson of Council is in accordance with paragraph 9(1), 9(3) and the criteria as stipulated in the Charter of Council.
- (3) Subject to the five-year period in paragraph 12(1), a Chairperson or a Vice-Chairperson holds office only for the duration of her/his term of office.
- (4) A Chairperson or Vice-Chairperson vacates the office of Chairperson or Vice-Chairperson before the expiry date of the term, if she/he ceases to be a member of the Council.
- (5) The Chairperson and Vice-Chairperson are eligible for re-election as determined by Council.
- (6) In the absence of the Chairperson and the Vice-Chairperson, the Council elects one of its external members as Chairperson of a meeting.

- (7) The Registrar is the Secretary, electoral and compliance officer of the Council.

### **Meetings**

13. (1) The Council has at least four ordinary meetings during each academic year.
- (2) The Secretary administers meetings in accordance with the Rules.
- (3) The Council determines its own procedure for meetings in accordance with the Rules in this regard and as reflected in the Charter for the Council.
- (4) A Council meeting is quorate if the majority of the members are present.
- (5) Members physically absent may participate in a meeting and vote by electronic means in accordance with the Rules.
- (6) The Chairperson of the Council may call an extraordinary or emergency meeting in accordance with the Rules.
- (7) The Council may decide to invite persons who are not members to attend meetings, provided that -
- (a) they may participate in deliberations;
  - (b) they may not vote; and
  - (c) their attendance complies with the Rules.

### **Fiduciary duty and conflict of interest of members**

14. (1) A member of the Council stands in a fiduciary relationship to the University.
- (2) A member of the Council promotes the interests of the University and acts in good faith and trust, with care and skill, in accordance with the Council's Code of Conduct.
- (3) If a member of the Council has a direct or indirect personal, financial or other interest in a matter to be discussed at a Council or Council committee meeting, and which entails or may entail a conflict or possible conflict of interest, she/he -
- (a) declares the interest to the Council or Council committee once the meeting has been constituted and before any business is transacted; and
  - (b) recuses herself/himself (in consultation with the Chairperson) from the meeting during the discussion of the particular matter, decision-making and from voting thereon.
- (4) A member of the Council who has grounds to believe that another member

did not comply with the provisions of paragraphs 14(1), (2) or (3) must inform the Council or Council committee.

### **Ruling by Chairperson**

15. The ruling of the Chairperson on any point of order or procedure is binding, subject to clarification, unless immediately challenged by a member, in which event such ruling must be submitted without discussion for a decision by the meeting, which decision is final.

### **Committees**

16. (1) The Council constitutes -
- (a) an Executive Committee;
  - (b) an Audit and Risk Committee;
  - (c) a Finance Committee;
  - (d) a Human Resources Committee;
  - (e) joint committees of the Council and the Senate as agreed upon by the Council and the Senate; and
  - (f) other committees which the Council deems necessary.
- (2) Except as otherwise provided in the Statute, the composition, election, terms of office, functions and procedures of Council committees are as provided for in the Rules.

### **Executive Committee**

17. (1) The functions of the Executive Committee of the Council are determined by the Council, defined in the Rules and reflected in the Charter for the Council Executive Committee.
- (2) The Executive Committee consists of-
- (a) the Chairperson of the Council;
  - (b) the Vice-Chairperson of the Council;
  - (c) the Vice-Chancellor and Principal;
  - (d) the Chairpersons of the standing committees of Council as contemplated in paragraph 16(1)(b), (c), (d) and (e);
  - (e) the Deputy Vice Chancellor as contemplated in paragraph 9(1)(b)(ii);
  - (f) the other members of the Management Executive Committee are invitees.

- (3) The Chairperson of the Council is also the Chairperson of the Executive Committee, and the Secretary of the Council is also the Secretary of the Executive Committee.

### **Other committees**

18. (1) The composition, election, terms of office, functions and procedures of Council committees and joint committees are as prescribed by the Rules and relevant approved charters.
- (2) The Chairperson of the Council may not be the Chairperson of a committee other than the Executive Committee, unless the Council decides otherwise.
- (3) The Chairperson of a Council committee may not be an employee or a student of the University.

## **SENATE**

### **Functions**

19. (1) The Senate-
- (a) provides academic leadership and debates matters of academic principle;
  - (b) promotes an institutional culture of high academic and ethical standards;
  - (c) ensures the academic quality of programmes, research and community engagement activities;
  - (d) determines and recommends to the Council, in accordance with the delegation of authority, policy regarding admission, teaching, learning, assessment, research, quality assurance, community engagement, academic development and support services and other matters that form part of its functions;
  - (e) co-determines with the Council the language policy of the University;
  - (f) determines guidelines for the appointment and promotion of academic employees, advises the Council in this regard, and makes recommendations on the appointment of academic employees in terms of subsection 34(2) of the Act and paragraph 8(2)(b), 8(2)(e)(ii) and 60 of this Statute;
  - (g) determines the organisation of and structures for teaching, learning, research and community engagement in accordance with the delegation of authority;
  - (h) determines, in accordance with the delegation of authority, the introduction or termination of degrees, diplomas, certificates, programmes, courses and modules;
  - (i) determines the Rules for degrees, diplomas, certificates and other academic programmes;
  - (j) considers and approves recommendations from its committees, including Faculty Boards;
  - (k) ensures legal compliance in regard to academic matters;

- (l) advises academic management structures on the management of matters relating to Senate functions;
- (m) determines and submits recommendations to the Council on matters delegated or entrusted to it by the Council;
- (n) submits to the Council such reports on its work as may be required by the Council, and submits at its own discretion other recommendations to the Council in respect of other academic-related matters affecting the University;
- (o) establishes committees to promote its functions;
- (p) may delegate any of its powers and functions to its Executive Committee or any other Senate committee, member or members of the Senate, or an official of the University, but remains responsible and accountable for powers and functions so delegated;
- (q) may advise the Council on the procedure for the appointment of the Vice-Chancellor and Principal, the Deputy Vice-Chancellors and Registrar;
- (r) decides on matters delegated by the Council to the Senate, including:
  - (i) admission requirements in respect of academic programmes;
  - (ii) the number of students who may be admitted for a particular programme, the criteria applicable and the way in which they are selected;
  - (iii) requirements for admission to study, termination of study and re-registration; and
  - (iv) student discipline;
- (s) fulfills such other functions and tasks as determined by the Council or as described in the Rules.

## **Accountability**

20. The Senate is accountable to the Council.

## **21. Composition**

- (1) The Senate consists of the -
  - (a) Vice-Chancellor and Principal (Chairperson);
  - (b) Deputy Vice-Chancellors;
  - (c) Registrar;
  - (d) Executive Deans;
  - (e) Vice-Deans that are not otherwise full professors;
  - (f) full professors (permanent or appointed on a fixed term contract for a period of at least three years);
  - (g) heads of academic centres that are not otherwise full professors;

- (h) heads of substructures of Faculties approved by Council that are not otherwise full professors;
  - (i) Executive Directors responsible for academic and research activities, determined by the Senate from time to time;
  - (j) two external members of the Council appointed by the Council; and
  - (k) two representatives of the Student Representative Council, elected by the Student Representative Council.
- (2) The following are permanent invitees to Senate (and not members):
- (i) heads of Faculty administration; and
  - (ii) such other functionaries as determined by the Chairperson from time to time.
- (3) Such additional members are determined by the Senate from time to time.
- (4) The majority of the Senate members are senior academic employees.

### **Fiduciary duty of members of Senate**

22. (1) A member of Senate stands in a fiduciary relationship to the University.
- (2) A member of Senate promotes the interests of the University and acts in good faith and with care and skill.

### **Term of office of members**

23. The term of office of Senate members, and the manner of filling vacancies, are as set out in the Rules and approved Charter for the Senate.

### **Office-bearers**

24. (1) The Vice-Chancellor and Principal is the Chairperson of the Senate.
- (2) In the absence of the Chairperson, the acting Vice-Chancellor and Principal acts as the Chairperson of Senate.
- (3) The Registrar or in her/his absence, the acting Registrar is the Secretary of the Senate.
- (4) When both the Chairperson and acting Vice-Chancellor and Principal are absent from a meeting of the Senate, the members present at such meeting elect one of their members to preside.

### **Meetings**

25. (1) The Senate has at least four ordinary meetings during each academic year.
- (2) The Secretary administers meetings in accordance with the Rules.



- (3) The Senate determines its own procedures for meetings as reflected in the Charter for the Senate, which form part of the Rules.
- (4) The Chairperson of the Senate may call an extraordinary or emergency meeting in accordance with the Rules.
- (5) The Senate is quorate if at least forty per cent of the members (excluding those members who have been granted official travel, research or sabbatical leave of absence) are present and remain present during the transacting of business and decision-making.

## **Committees**

26. (1) The Senate constitutes -
  - (a) an Executive Committee of the Senate;
  - (b) a Faculty Board for each Faculty; and
  - (c) other Senate committees as it deems necessary.
- (2) Except as otherwise provided in the Statute, the composition, election, terms of office, functions and procedures of Senate committees are as reflected in the Charter for the Senate and prescribed in the Rules.

## **Executive Committee**

27. (1) The functions of the Executive Committee of the Senate are determined by Senate, defined in the Rules and reflected in the Charter for the Executive Committee of Senate. The functions include the appointment (on behalf of Senate) of Honorary Professors (subject to the concurrence by Council), Adjunct Professors, Fellows, Distinguished Research Associates and Visiting Professors.
- (2) The Executive Committee consists of -
  - (a) the Vice-Chancellor and Principal;
  - (b) the Deputy Vice-Chancellors;
  - (c) the Registrar;
  - (d) Executive Deans;
  - (e) four Senate members, in addition to the members listed in paragraphs 31(2)(a) to (d), elected by the Senate; and
  - (f) Additional members as determined by the Senate from time to time and reflected in the Charter approved by the Senate.
- (3) The Chairperson of the Senate is also the Chairperson of the Executive

Committee.

- (4) The members listed in paragraphs 31(2)(a) to (d) remain members of the Executive Committee by virtue of their office.
- (5) The term of office of Senate representatives on the Executive Committee is three years and these Senate representatives are eligible for one additional term of office.

### **Faculty Boards**

28. (1) The Faculty Board of every Faculty is a standing committee of the Senate.
- (2) A Faculty Board -
  - (a) governs and regulates the activities of the Faculty in accordance with the Rules;
  - (b) considers and recommends to the Senate the Academic programmes (both subsidised and non-subsidised) offered by Faculties;
  - (c) promotes research in the Faculty;
  - (d) submits recommendations to the Senate on matters that affect the Faculty as well as matters referred to it by the Senate;
  - (e) appoints subcommittees of the Faculty Board; and
  - (f) fulfills such other functions as the Rules may describe.
- (3) The composition of a Faculty Board is determined by the Senate on recommendation of a Faculty Board.
- (4) The Council appoints an Executive Dean for every Faculty in accordance with the Rules approved by the Council, who is accountable to the relevant Faculty Board and fulfills the functions as described in the Rules.
- (5) The Executive Dean of a Faculty is the Chairperson of the relevant Faculty Board.
- (6) Membership of Faculty Boards, terms of office, meeting procedures and other matters relating to Faculties are reflected in the Rules and approved Charter.

## **CHAPTER 4 OFFICE-BEARERS AND MANAGEMENT STRUCTURES**

### **CHANCELLOR**

#### **Functions**

29. (1) The Chancellor is the titular head of the University with no executive powers.
- (2) The Chancellor confers all University degrees and awards all diplomas and certificates in the name of the University.
- (3) The Chancellor constitutes and dissolves congregations of the University.
- (4) The Chancellor performs such other functions on behalf of the University as assigned to her/him by the Council or as requested by the Vice-Chancellor and Principal and approved by the Council.
- (5) The Chancellor must at all times embody the aspirations and values of the University and actively advance the interests of the University.
- (6) In the absence of the Chancellor, the Vice-Chancellor and Principal performs the functions of the Chancellor, and in the absence of the Vice-Chancellor and Principal, the functions will be performed by a Deputy Vice-Chancellor or other University functionary appointed by the Vice-Chancellor.

#### **Election**

30. (1) The Chancellor is a person –
- (a) who must not be disqualified to act as a director in accordance with the legislation regulating the governance of companies;
- (b) with knowledge and experience relevant to the objectives and governance of the University;
- (c) who is appropriately academically qualified.
- (2) The Chancellor is elected by the Council and appointed at a Council meeting in accordance with the Rules.

#### **Term of office**

31. (1) The Chancellor's term of office is five years.
- (2) A person may not be elected as Chancellor for more than two consecutive

terms of office.

- (3) Before her/his term of office expires, a Chancellor may resign in writing or be relieved of her/his office by the Council on reasonable grounds as described in the Rules, provided that at least two thirds of the Council members vote for such a decision.
- (4) A Chancellor may only be removed from office by the Council after she/he has been given the opportunity to answer to the reasons provided by Council for such removal.

### **Accountability**

32. The Chancellor is accountable to the Council.

## **VICE-CHANCELLOR AND PRINCIPAL**

### **Functions**

33. (1) The Vice-Chancellor and Principal is:
- (a) the principal, chief executive and accounting officer of the University; and
  - (b) the legal, administrative and academic head of the University.
- (2) The Vice-Chancellor and Principal reports to the Council.
- (3) The Council may assign additional duties to the Vice-Chancellor and Principal.
- (4) In the absence of the Chancellor or when the office of Chancellor is vacant, the Vice-Chancellor and Principal may exercise any official duty of the Chancellor.
- (5) The Vice-Chancellor and Principal may delegate any functions, duties and powers to a member of the Management Executive Committee, provided that the Vice-Chancellor and Principal is not divested of the responsibility for the performance of any such functions delegated to a member of the Management Executive Committee.

### **Appointment**

34. (1) The Vice-Chancellor and Principal is a person:
- (a) who must not be disqualified to act as a director in accordance with the legislation regulating the governance of companies;

- (b) with knowledge and experience relevant to the objectives and governance of the University; and
  - (c) who is appropriately academically qualified.
- (2) The Vice-Chancellor and Principal is appointed by the Council in accordance with a procedure determined by the Council and a duly constituted Selection Panel as approved by Council (which *inter alia* includes the Chairperson of Council and the Chairperson of the Human Resource Committee of Council).
  - (3) Council must consider the advice of Senate and the Institutional Forum regarding the selection of the Vice-Chancellor and Principal.
  - (4) A candidate is elected by a majority of the members of Council present as prescribed in the Rules for Council meetings.
  - (5) If no candidate receives a majority of votes, successive ballots are held, and in each successive ballot the candidate receiving the fewest/lowest votes is eliminated as a candidate.
  - (6) In the event of multiple candidates and the absence of a majority vote, the candidate with the least number of votes in a ballot or subsequent ballots are eliminated until a majority is obtained. The Council Chairperson announces the name of the elected Vice-Chancellor and Principal immediately after the election.

### **Term of office**

35. (1) The term of office of the Vice Chancellor is five years.
- (2) After the first term, the Vice-Chancellor and Principal may be appointed for another consecutive and final term. The re-appointment for the second term is subject to a a positive review process of the first term as contemplated in the Rules.
- (3) The Vice-Chancellor and Principal may be removed from her/his position by the Council before her/his term of office expires if -
  - (a) she/he is convicted of an offence that, in the opinion of the Council, renders the Vice-Chancellor and Principal unfit to perform her/his duties; and
  - (b) in the opinion of the Council, the Vice-Chancellor and Principal becomes incapacitated or her/his continued principalship is deemed improper.

### **Accountability**

36. The Vice-Chancellor and Principal is accountable to the Council and has a reporting responsibility to the Senate and the University community.

### **Acting Vice-Chancellor and Principal**

37. (1) In the absence of the Vice-Chancellor and Principal, the Vice-Chancellor and Principal appoints an acting Vice-Chancellor and Principal.
- (2) An acting Vice-Chancellor and Principal has the same responsibilities, powers and functions as the Vice-Chancellor and Principal.
- (3) An acting Vice-Chancellor and Principal is accountable to the Vice Chancellor and to the Council when applicable.

### **Vacancy**

38. (1) If the office of the Vice-Chancellor and Principal becomes vacant for whatever reason, the Council must appoint an acting Vice-Chancellor and Principal, after consulting with Senate and Institutional forum, to act as Vice-Chancellor and Principal until such time as a new Vice-Chancellor and Principal takes up his or her appointment. A successor must be appointed not later than a year after the vacancy arose.
- (2) If a vacancy arises as a result of the Council resolution to terminate the contract of Vice-Chancellor and Principal, such a resolution must be passed at a meeting of the Council by a majority vote consisting of not less than 75% and after consultation with the Senate and the Institutional Forum.

## **DEPUTY VICE-CHANCELLORS AND REGISTRAR**

### **Functions**

39. (1) Deputy Vice-Chancellors and the Registrar assist the Vice-Chancellor and Principal with the management, administration, supervision and control of the University.
- (2) Deputy Vice-Chancellors and the Registrar are responsible for the portfolios and functions allocated to them by the Vice-Chancellor and Principal and approved by the Council.
- (3) When a Deputy Vice-Chancellor or Registrar is absent or the position is vacant, the Vice-Chancellor appoints an official to perform her/his duties.

### **Appointment**

40. Deputy Vice-Chancellors, the Registrar, and other officers, are appointed by the Council, at its sole discretion, according to the procedure prescribed in the Rules and in accordance with criteria for appointment described in the Rules, with specific executive and managerial responsibilities.

### **Term of office**

41. The terms of office of the Deputy Vice-Chancellors and the Registrar are determined by the Council and described in the Rules.

### **Accountability**

42. Deputy Vice-Chancellors and the Registrar are accountable to the Vice-Chancellor and Principal.

## **EXECUTIVE DEANS AND EXECUTIVE DIRECTORS**

### **Functions**

43. The functions of Executive Deans and Executive Directors are determined by the Council and stipulated in the Rules.

### **Appointment and term of office**

44. Executive Deans and Executive Directors are appointed by the Council for terms as determined by the Council.

### **Accountability**

45. Executive Deans and Executive Directors are accountable to the relevant Deputy Vice-Chancellor in terms of portfolios, and to the Vice-Chancellor and Principal.

## **MANAGEMENT EXECUTIVE COMMITTEE**

### **Functions**

46. (1) The Management Executive Committee assists the Vice-Chancellor and Principal in the planning, management, administration, supervision and control of the University.
- (2) The Management Executive Committee may delegate some of its functions but remains responsible and accountable for the performance and outcome of any delegated function.

### **Composition**

47. (1) The Management Executive Committee consists of the:
- (a) Vice-Chancellor and Principal;
  - (b) Deputy Vice-Chancellors;

- (c) Registrar;
  - (d) Any other functionary of the University may from time to time be co-opted as a member of the Management Executive Committee for a specific period, purpose or meeting.
- (2) The Vice-Chancellor and Principal is the Chairperson of the Management Executive Committee.

### **Meetings**

48. (1) The Vice-Chancellor and Principal convenes the meetings of the Management Executive Committee and determines its business in consultation with the members of the Management Executive Committee.
- (2) The Management Executive Committee determines its delegation of authority, subcommittees and procedures for meetings in accordance with the accepted principles relating to the conduct of meetings.
- (3) Any employee of the University may be invited to attend a specific meeting of the Management Executive Committee for purposes of consultation and to make an input on a specific matter or matters.
- (4) The Registrar, or an employee approved by the Management Executive Committee, acts as Secretary of meetings of the Management Executive Committee.
- (5) In the absence of the Vice-Chancellor and Principal, a member of the Management Executive Committee appointed by the Vice-Chancellor and Principal, acts as Chairperson of a specific meeting or meetings of the Management Executive Committee.

### **Accountability**

49. The Management Executive Committee is responsible and accountable to the University Council and has a reporting responsibility to the University community.

## **CHAPTER 5**

### **INSTITUTIONAL FORUM**

#### **Status and Role**

50. The Institutional Forum advises the Council on matters that affect the University.

#### **Functions**

51. (1) The Institutional Forum must advise Council on the following matters -
- (a) the implementation of the Higher Education Act;



- (b) the national higher education policy;
  - (c) policies on equity regarding race and gender and matters relating to transformation;
  - (d) the selection and appointment of candidates for senior management positions (as defined in the Act); codes of conduct, and mediation and dispute resolution procedures;
  - (e) the fostering of an institutional culture that promotes tolerance and respect for human rights and a positive academic environment for learning, teaching, research and community engagement;
  - (f) the language policy of the University;
  - (g) amendments to the Statute; and
  - (h) any other issue that affects the University.
- (2) The Institutional Forum carries out such functions referred to in subparagraph 51(1) as determined by the Council.
- (3) The advice given by the Institutional Forum shall be submitted in writing by the Chairperson of the Institutional Forum to Council.
- (4) The Institutional Forum considers feedback by the Council on recommendations of the Institutional Forum not accepted by Council.

### **Accountability**

52. The Institutional Forum is accountable to the Council, which recognises its advisory role.

### **Composition**

53. (1) The Institutional Forum consists of -
- (a) two members representing the Management Executive Committee;
  - (b) one member representing the senior management who is responsible for industrial relations and employment conditions at the University;
  - (c) two members of the Council, elected by the Council, who are not employees or students of the University, one of which is a Convocation representative on Council;
  - (d) one member representing the senior management who is responsible for student affairs;
  - (e) two members of the Senate, elected by the Senate;
  - (f) two members elected from the ranks of the full-time permanent academic employees not being members of the Senate, elected by the permanent academic employees not being members of the Senate;
  - (g) two members elected from the ranks of the permanent non-academic employees, elected by the permanent non-academic employees;

- (h) two students, elected by the University Student Representative Council;
- (i) two members each of each recognised trade union who are permanent employees, elected by the trade union;
- (j) one member representing employees with disabilities, who is a permanent employee, selected by such permanent employees from their ranks;
- (k) such additional members as the Institutional Forum may determine from time to time, up to a maximum of two, to ensure that the Forum can fulfill its functions.

### **Nomination/election of members**

54. The nomination, election and appointment of members are as determined by each constituency or as regulated in the Rules.

### **Terms of office of members**

55. (1) Terms of office of Institutional Forum members are in principle four years, or such shorter term as the representative still represents her/his constituency or as determined by the Council.
- (2) No member may serve on the Institutional Forum for more than two terms, whether as consecutive term or not.

### **Vacancies**

56. (1) The Secretary of the Institutional Forum communicates a vacancy in the Institutional Forum to the person or body who elected or appointed the member.
- (2) A vacancy must be filled within twelve weeks after the Secretary receives notification or becomes aware of such vacancy.

### **Office-bearers**

57. (1) The Chairperson is a member of the Management Executive Committee and is appointed by Council as the Chairperson of the Institutional Forum.
- (2) The Registrar appoints the Secretary of the Institutional Forum.
- (3) When the Chairperson is absent from a meeting of the Institutional Forum, the Chairperson appoints a person to act as Chairperson, and when no such appointment has been made, the members present at such meeting elect one of their number to preside.

## Meetings

58. (1) There must be at least four meetings a year.
- (2) The Chairperson may convene an extraordinary or emergency meeting by giving notice of such meeting and the agenda thereof.
- (3) An extraordinary or emergency meeting must be convened by the Chairperson if at least thirty per cent of the members of the Institutional Forum request such meeting, where such request is in writing and the relevance of the matters to be discussed is regarded by the Chairperson to be sufficiently motivated.
- (4) At least seven days' notice of an extraordinary or emergency meeting must be given, except with the unanimous consent of the meeting.
- (5) No business other than that which the extraordinary or emergency meeting was called for may be transacted at such meeting.
- (6) Subject to the provisions of the Statute and Rules, the Institutional Forum determines its own procedure for meetings in accordance with the accepted principles relating to the conduct of meetings.
- (7) The Institutional Forum is quorate if at least forty per cent of its members are present.
- (8) A quorum must be in attendance when any decision is taken.

## Task teams and committees

59. (1) If necessary, the Institutional Forum may establish committees or task teams for specific projects or purposes, and it may co-opt a maximum of three persons to a committee in respect of any specific project.
- (2) Except as otherwise provided in the Statute, the composition, manner of election, terms of office, functions and meeting procedures of task teams and committees are as prescribed in the Rules.

# CHAPTER 6 EMPLOYEES

## Appointment

60. (1) The Council appoints employees in accordance with the Human Resources Policy as determined in the Rules.
- (2) With the exception of the Vice-Chancellor and Principal, Deputy Vice-Chancellors, Registrar, Executive Deans and Executive Directors, the appointment of academic and non-academic employees at different levels occurs in terms of delegations as approved by the Council and prescribed by the Rules.

- (3) The Institutional Forum advises the Council on the selection of senior management.

### **Conditions of employment**

61. (1) The conditions of employment, including the remuneration policy are determined by the Council and regulated in the Rules.
- (2) The Council may amend the conditions of employment from time to time, subject to the provisions of paragraph 61(3).
- (3) A negotiating team mandated by the Management Executive Committee must enter into discussions, negotiations and agreements on remuneration and related employment conditions with representative employees' organisations in accordance with relevant labour legislation, and make recommendations to the Council for approval.

### **Evaluation**

62. All employees of the University are subject to performance review in the performance of their duties.

### **Discipline**

63. Employees are subject to discipline in respect of misconduct and neglect, in accordance with the University's disciplinary code and procedures prescribed in the Rules.

### **Promotion**

64. Promotion of employees is considered in terms of the relevant stipulations in the Rules.

### **Accountability**

65. Employees are accountable to their relevant line managers or as determined by the Statute.

## **CHAPTER 7 STUDENT GOVERNANCE AND OTHER STUDENT- RELATED AFFAIRS**

### **STUDENT REPRESENTATIVE COUNCIL**

#### **Role**

66. (1) The Student Representative Council functions in terms of its constitution which forms part of the Rules. In the absence of a Student Representative Council, the Council may appoint an Interim Student Representative Council.
- (2) The Student Representative Council in particular -
- (a) represents the student community and acts in its interests with regard to relevant academic and non-academic matters;
  - (b) supports and upholds the vision, mission, values and goals of the University;
  - (c) liaises with the Council, the Senate, the Vice-Chancellor and Principal and the Management Executive Committee, Student Representative Councils of other institutions and the general public;
  - (d) promotes student participation in student affairs; and
  - (e) promotes academic diligence and excellence among students.

#### **Accountability**

67. The Student Representative Council is accountable to the Vice-Chancellor and Principal, the Council and the student body/community.

#### **Task teams and committees**

68. (1) If necessary, the Student Representative Council may establish committees or task teams for specific projects or purposes.
- (2) Except as otherwise provided in the Statute, the composition, manner of election, terms of office, functions and meeting procedures of task teams and committees are as prescribed in the Rules.

### **INTERIM STUDENT REPRESENTATIVE COUNCIL**

#### **Role**

69. The Interim Student Representative Council advises the senior management on student related matters in the absence of the Student Representative Council, until such time that the Student Representative Council has been elected and constituted.

## **Accountability**

70. The Interim Student Representative Council is accountable to the Vice-Chancellor and Principal, the Council and the student body/community.

## **OTHER STUDENT-RELATED AFFAIRS: ADMISSION, REGISTRATION AND DISCIPLINE**

### **Admission and registration**

71. (1) A person may register as a student of the University if she/he satisfies the legal requirements and any other requirements for admission determined by the Council and specified by the Senate.
- (2) The Council may change the requirements for admission of students on recommendation of the Senate.
- (3) The Senate may determine the number of students who may register for a specific programme in accordance with the University Enrolment Plan.
- (4) A student is registered for one academic year or for such shorter term as the Senate may determine in general or in a particular case.
- (5) After expiry of an academic year or such shorter period as contemplated in paragraph 75(4), a student is required, in order to continue with studies at the University, to comply with any conditions set by the University and to register again.
- (6) The University may refuse to allow the renewal of registration if a student fails to meet the conditions contemplated in paragraph 71(1).
- (7) The conditions contemplated in paragraph 71(1) may include the payment of fees.
- (8) A person who completes and signs the official registration form subjects herself/himself to the Rules.

### **Termination of registration**

72. (1) A student's registration may be terminated immediately if -
- (a) she/he fails to submit the required certificates and documentation after having received reasonable notice to do so;
  - (b) she/he fails to pay the prescribed fees by the deadlines;
  - (c) she/he does not make satisfactory progress as prescribed in the Rules; or
  - (d) if disciplinary measures in a specific case include a decision to this effect.
- (2) If a student's registration is not terminated in circumstances contemplated in paragraph 72(1)(b), the University is nevertheless exempted from its obligations towards the student while the prescribed fees remain unpaid.

## **Discipline**

73. (1) A student commits a transgression if she/he contravenes any of the Rules or disregards any reasonable instruction of a body or employee who is entitled to issue such an instruction.
- (2) Disciplinary measures applicable to students are approved by the Council and set out in the Rules.
- (3) The Vice-Chancellor and Principal reports to the Senate and the Council once a year on disciplinary actions taken against students in the past year.

## **CHAPTER 8**

### **QUALIFICATIONS, HONORARY DEGREES AND TITLES AND COUNCIL AWARDS**

#### **Degrees, diplomas and certificates**

74. The University confers degrees and awards diplomas and certificates, which reflect approved state-subsidised or non-subsidised programmes in terms of section 65(B) of the Act, on or to -
- (1) persons who were registered students at the University for the period prescribed by the Rules;
- (2) who complied with the requirements of the qualification and achieved the standards prescribed by the Rules; and who have otherwise complied with the Act and the Rules.

#### **Honorary degrees and titles and Council awards**

75. (1) The University confers honorary degrees in terms of the provisions of section 65(C) of the Act.
- (2) Honorary degrees and titles are conferred when approved by Council following consultation with Senate and Council awards are made in accordance with the prescribed Rules.
- (3) The University may revoke an honorary degree in the event that an Honorary Graduate's conduct (through acts or omissions) which became known to Council subsequent to the award brings the University into disrepute.

## **CHAPTER 9**

# **CONVOCATION AND DONORS**

### **CONVOCATION**

#### **Role and objectives**

76. (1) The Convocation may state its opinion upon any matter relating the University, including matters referred to it by the Council, the Senate or the Institutional Forum.
- (2) The Convocation elects two persons from its members to serve on Council in accordance with paragraph 9(1)(a)(ii).
- (3) The Convocation, in cooperation with the Registrar, maintains a database of its members in order to promote communication between the University and members, and which serves as a voters' roll for the election of Council members and other suitable purposes.

#### **Membership**

77. (1) Membership of the Convocation consists of -
- (a) Those alumni who have been conferred a subsidised qualification (degree, diploma, certificate) from the University or the Rand Afrikaans University or the Technikon Witwatersrand;
  - (b) the Vice-Chancellor and Principal, the Deputy Vice-Chancellors and Registrar of the University;
  - (c) permanent academic employees of the University; and
  - (d) retired permanent academic employees of the University.

#### **Office-bearers**

78. (1) The Convocation elects from its members a President who acts as Chairperson of its meetings and holds office for a period as determined in the constitution of the Convocation.

#### **Meetings and elections**

79. Requirements and arrangements concerning meetings and elections of the Convocation are stipulated in the Convocation's constitution, which forms part of the Rules.



## **Accountability**

The Convocation is accountable to the Council

## **DONORS**

80. The University may receive monies, property, equipment or any other form of asset from donors to assist the University in providing quality education, research and community service.
81. The University recognises and registers donors as determined in the Rules.

# **CHAPTER 10 TRANSITIONAL ARRANGEMENTS**

## **Arrangements**

82. (1) The Statute of the University of Johannesburg promulgated in Government Gazette No 40711 of 24 March 2017 is hereby repealed with effect from the date on which this Statute comes into operation.
- (2) The Council has the power and the duty to take measures to implement the provisions of this Statute and accompanying Rules as soon as is practicable after promulgation of this Statute.
- (3) Anything done under any provision of the Standard Institutional Statute that was applicable to the University prior to the promulgation of this Statute is regarded to have been done under the corresponding provision of this Statute.
- (4) Subject to paragraph 82(6), persons who occupied posts, and structures that existed immediately prior to the approval and promulgation of this Statute, will continue to occupy those posts, and the structures will continue to exist, unless the post or structure is affected by the provisions of this Statute and/or Council decisions in accordance therewith. Any changes to posts or structures thus brought about by the Statute are subject to the Act and applicable labour law.
- (5) Notwithstanding paragraph 82(3) and (4), but subject to paragraph 82(6), the term of office for members of structures or for persons in specific posts will expire at the time originally specified.
- (6) The term of office of representatives of the Convocation serving on Council at the date of the promulgation of this Statute will be as determined by this Statute, provided that should any such

representative's term as so determined would have expired before promulgation of this Statute, the term of office concerned will terminate on the date of the promulgation of this Statute.

- (7) The University's Rules that were in force prior to the promulgation of this Statute will continue to apply until amended or replaced.

## DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM

NO. 994

19 JULY 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/1078/0/0/58

CLAIMANT : Adams Herold

PROPERTY DESCRIPTION : ¼ Share of Remainder of Farm 1023, Upper  
Blinkwater in the Eastern Cape Province

EXTENT OF LAND : 4 098 msq

TITLE DEED : T3230/1910

DATE SUBMITTED : 9<sup>th</sup> December 1998

CURRENT OWNER : Department of Rural Development and Land Reform

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**

**GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT No. 22 OF 1994), AS AMENDED**

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 has been lodged on the following properties; Remaining Extent and Remaining Extent of portion 2 of the farm Thorncliffe 374 KT, The farm Booyensdal 43 JT, Remaining Extent of the farm Mareesburg 8 JT, Remaining Extent, portion 1 and portion 2 of the farm Richmond 370 KT, Remaining Extent of the farm De Brochen 7 JT, Remaining Extent of portion 1, Remaining Extent of portion 2, portion 3, portion 4 and portion 5 of the farm Vygenhoek 10 JT, Portion 8 and portion 11 of the farm Schaapkraal 42 JT, The farm Hermansdal 3 JT, Remaining Extent, portion 1 and portion 2 of the farm St George 2 JT, Remaining Extent of portion 4, Remaining Extent of portion 7, Remaining Extent of portion 15, portion 17 and portion 25 of the farm De Kafferskraal 53 JT. The above mentioned properties are situated in the Fetakgomo Tubatse and Thaba Chueu Local Municipalities.

Mr. Jan Sedikane Lerutla of ID No. 530925 5767 089 lodged a land claim on behalf of various families on the 20<sup>th</sup> December 1998. The land claim was allocated file references KRP 1973 upon registration. The date for the lodgement of the above mentioned land claim falls within the prescribed period for lodgement of land claims as laid down in Section 2(1)(e) of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994), as amended.

The table below indicates the current description of the properties after dispossession of the families.

PROPERTY DESCRIPTION	CURRENT OWNER OF THE PROPERTY	TITLE DEED NUMBER	EXTENT OF PROPERTY	ENDORSEMENTS	HOLDER
<b>Thorncliffe 374 KT</b>					
R/E of farm Thorncliffe 374 KT	Glencore Operation South Africa PTY LTD	T90025/1999	617.8437H	I-8140/2006C K3709/1999RM  K5484/1996  K7728/1995RM	Xstrata South Africa PTY LTD  Consolidated Metallurgical Industrie PTY LTD J C I LTD
Portion 2 (Remaining Extent) farm Thorncliffe 374 KT	Didingwe River Lodge CC	T145906/2004	218.0226H	B18166/2008  I-8140/2006C KT, 374, 2	Standard Bank van Suid-Afrika LTD - -
<b>Booyensdal 43 JT</b>	Micawber 278 PTY LTD	T38487/2009	1807.2269H	K500/1950RM	Thaba Molapo Trust
<b>Mareesburg 8 JT</b>					
R/E of the farm Mareesburg 8 JT	Rustenburg Platinum Mines LTD	T112010/2002	856.0291H	K4210/2004RM	Loin's Head Platinum PTY LTD

<b>Richmond 370 KT</b>					
R/E of the farm Richmond 370 KT	Rustenburg Platinum Mines LTD	T96087/2014	627.8368H	I-8140/2006C	-
Portion 1 of the farm Richmond 370 KT	Rustenburg Platinum Mines LTD	T96087/2014	578.2862H	KT, 370, 1 K542/1981S K599/1969RM K604/1967RM	- - - -
Portion 2 of the farm Richmond 370 KT	Rustenburg Platinum Mines LTD	T96087/2014	552.1802H	K599/1969RM K604/1967RM	- -
<b>De Brochen 7 JT</b>					
R/E of the farm De Brochen 7 JT	Rustenburg Platinum Mines LTD	T112011/2002	1721.1029H	K2384/1992RM K2660/1975RM K3424/1992RM K3721/1994RM K5434/1993RM K5435/1993RM K5435/1993RM	SAMANCOR LTD - SAMANCOR LTD RAND MINES LTD S J BOTHMA BOERDERY PTY LTD RAND MINES LTD
<b>Vygenhoek 10 JT</b>					
Portion 1 (Remaining Extent) of the farm Vygenhoek 10 JT	Department of Land Affairs	T76354/2005	1335.6366H	K3011/1997S	-
Portion 2 (Remaining Extent) of the farm Vygenhoek 10 JT	Republic of South Africa	T28261/2005	436.1517H	B14038/2000 B7320/1998RM K3520/2001RM  K3665/1990RM K406/1973S	ABSA BANK LTD IMPALA PLATINUM PTD VYGENHOEK MINERAL RIGHTS TRUST - -
Portion 3 of the farm Vygenhoek 10 JT	Republic of South Africa	T28261/2005	720.5233H	B14038/2000 B73420/1998 K3377/1990RM K760/1993RM	ABSA BANK LTD ABSA BANK LTD - VYGENHOEK MINERAL RIGHTS TRUST
Portion 4 of the farm Vygenhoek 10 JT	Republic of South Africa	T28261/2005	142.1853H	K3665/1990RM  K5119/1995RM	VYGENHOEK MINERAL RIGHTS TRUST DOREY ELIZABETH HUIBRECHT
Portion 5 of the farm Vygenhoek 10 JT	National Government of the Republic of South Africa	T40985/2005	142.1862H	K1640/1991RM	DAVIES ISABEL MARGARET

<b>Schaapkraal 42 JT</b>						
Portion 8 of the farm Schaapkraal 42 JT	Pakaneng Association	Communal	T16325/2010	349.9175H	VA12369/2008	MERBETH EIENDOMME PTY LTD
Portion 11 of the farm Schaapkraal 42 JT	Pakaneng Association	Communal	T4273/2012	191.8609H	-	-
<b>Hermansdal 3 JT</b>	Joubert Jacobus Johannes		T48632/1993	1187.0363H	K1354/1978RM	TRANSVAAL VANADIUM CO PTY LTD
<b>St George 2 JT</b>						
R/E of the farm St George 2 JT	GaMawela St George Communal Prop Assoc		T33116/2015	714.9838H	K54/1956RM	Berg Michael Jacobus Van Den
Portion 1 of the farm St George 2 JT	GaMawela St George Communal Prop Assoc		T33116/2015	792.7352H	K348/1968RM K535/1967RM K84/1969RM	- - -
Portion 2 of the farm St George 2 JT	GaMawela St George Communal Prop Assoc		T33116/2015	753.8595H	I-8140/2006C K348/1968RM K535/1967RM K84/1969RM	- - - -
<b>De Kafferskraal 53 JT</b>						
Portion 4 (Remaining Extent) of the farm De Kafferskraal 53 JT	Booyendal PTYLTD	Platinum	T2134/2019	64.2410H	B42243/1999	LANDBANK
Portion 7 (Remaining Extent) of the farm De Kafferskraal 53 JT	Bakone Ba Phetla Property Association		T22071/2007	372.6342H	K1797/1998S K866/2008S	- -
Portion 15 (Remaining Extent) of the farm De Kafferskraal 53 JT	Bakone Ba Phetla Property Association		T7052/2016	179.8717H	K1176/1991S K2980/1988PC	- -

Portion 17 of the farm De Kafferskraal 53 JT	Bakone Ba Phetla Property Association	T7052/2016	24.9550H	K4366/1998RM K6396/2003RM	ACKERMANN JACOMINA HENDRINA-TRUSTEES AQUARIUS PLATINUM SOUTH AFRICA PTY LTD
Portion 25 of the farm De Kafferskraal 53 JT	Bakone Ba Phetla Property Association	T7052/2016	88.6256H	K5680/2007S	AQUARIUS PLATINUM SOUTH AFRICA PTY LTD

Take **Further Notice** that the Office of the Regional Land Claims Commissioner: Limpopo, Department of Rural Development and Land Reform has investigated the land claim. Any party that has an interest in the above-mentioned properties is hereby invited to submit in writing within **30 Days** of the publication of this notice, any comments or detailed objections on this land claim to the Regional Land Claims Commissioner: Limpopo, using the under-mentioned contacts details and under reference number: **KRP 1973**.

**Office of the Regional Land Claims Commissioner: Limpopo**

**Private Bag X9552**

**POLOKWANE**

**0700**

**61 Biccard Street**

Or

**Submission may also be delivered at:**

**First Floor, Kagiso House 96A Schoeman Street (Corner Schoeman & Rissik Streets)**

**POLOKWANE**

**0700**

  
**LEBJANE MAPHUTHA**  
**REGIONAL LAND CLAIMS COMMISSIONER**

DATE: 2019/06/28

NO. 996

DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM

19 JULY 2019

**GENERAL NOTICE IN TERMS OF RESTITUTION OF LAND RIGHTS ACT, 1994 [ACT 22 OF 1994] AS AMENDED**

Notice is hereby given in terms of Section 11[1] of the Restitution of the Land Rights Act 1994 [Act 22 of 1994] as amended, that a Land claim for Restitution of Land Rights has been lodged by Mr.Sengalela HotNot Mthombeni ID no: 160413 5079 083 on behalf of Mthombeni family on the property mentioned hereunder situated in Highlands Local Municipality, Nkangala District in Mpumalanga Province: KRP: 9511


**CURRENT PARTICULARS OF THE PROPERTY  
BOSCHPOORT 388 JS**

Description of property	Owner of Property	Title Deed Number	Extent of Property	Bonds	Bond Holder	Other Endorsements
The Remaining Extent of Portion 3	Toys Boerdery Pty Ltd [200202312207]	T11707/2008	343.4551 ha	B11434/2008	Land Agricultural Development Bank of South Africa	K620/1987RM In favour of Geldenhuys Gertruida Magdalena

The Regional Land Claims Commissioner, Mpumalanga Province will investigate all the claims in terms of the provisions of the Act, any party interested in the above mentioned property is hereby invited to submit within thirty [30 days] from the date of publication of this notice to submit any comments, or further information to:

Commissioner for Restitution of Land Rights  
Private Bag X7201  
Witbank  
1035  
or Shop No. E 8  
Saveways Crescent Centre  
Cur OR Thambo and Mandela Street  
Witbank  
1035  
TEL NO: 013 655 1000  
FAX NO: 013 690 2438

CHECKED BY: MRS R SINGH  
RESTITUTION ADVISOR  
DATE: 19/06/2019

  
MR. L. H. MAPHUTHA  
COMMISSIONER FOR RESTITUTION OF LAND RIGHTS  
DATE: 2019/06/28



**SOUTH AFRICAN REVENUE SERVICE**

NO. 997

19 JULY 2019

**SOUTH AFRICAN REVENUE SERVICE  
MANUAL ON THE PROMOTION OF  
ACCESS TO INFORMATION ACT, 2000**

Date of First Issue : April 2004  
Date of Second Issue : April 2007  
Date of Third Issue : October 2010  
Date of Fourth Issue : August 2014  
Date of Fifth Issue : April 2019

The logo for the South African Revenue Service (SARS) features a stylized white 'S' shape to the left of the letters 'SARS' in a bold, sans-serif font. Below 'SARS' is the tagline 'At Your Service' in a smaller, italicized sans-serif font.

**SARS**  
*At Your Service*

[www.sars.gov.za](http://www.sars.gov.za)

## OVERVIEW

The South African Revenue Service (SARS) holds a substantial amount of information that it gathers during the course of its primary function of collecting national revenue and of its supporting business operations. This information is of interest to the people it affects directly or indirectly, whether they are taxpayers, traders, business partners or employees. It is also of interest to academics, researchers, statisticians, competitors, litigants and the curious.

In order to ensure that the fullest possible disclosure is made to SARS by taxpayers and traders, the secrecy provisions in the legislation SARS administers provide that taxpayer and trader information is confidential and is not subject to disclosure, except under limited circumstances. The Promotion of Access to Information Act 2 of 2000 (the Act) reinforces the confidentiality of this information by providing that it must not be disclosed in terms of the Act, except to the person to whom it relates or that person's authorised representative. In addition, the Act provides for confidentiality of various aspects of SARS' business operations, where this would be appropriate or applicable.

This manual describes SARS, the procedures for making a request for any of SARS' records or information and the procedures for lodging an internal appeal in terms of the Act. SARS has centralised the receipt of requests and internal appeals at its head office so that it is able to track them, respond within the timeframes set by the Act and react to emerging trends quickly. This is consistent with the emphasis SARS places on fostering a culture of transparency within the ambit of the law, as well as its adherence to the principles of accountability, integrity and responsibility to stakeholders.

In many instances, it might not be necessary to make a formal request in terms of the Act as most of the information is automatically available from the SARS website at [www.sars.gov.za](http://www.sars.gov.za), the SARS National Contact Centre on 0800 00 72 77 or from local SARS office. The procedure to lodge a request and timeframes to deal with requests are outlined in paragraph 9 of the manual.

This is the fifth edition of SARS' manual in terms of the Act. It will change and develop as SARS and requesters explore the practical implementation of the Act, the balance the Act seeks to strike between the right to information and other rights, such as that of privacy, and the need to maintain the efficient functioning of the State. If you have any problems or difficulties in using this manual, please do not hesitate to contact the relevant Deputy Information Officer for assistance.

<b>OVERVIEW .....</b>	<b>ii</b>
<b>1. SARS'S OBJECTIVES .....</b>	<b>4</b>
<b>2. SARS'S FUNCTIONS .....</b>	<b>4</b>
<b>3. SARS'S SERVICES .....</b>	<b>5</b>
<b>4. PUBLIC INVOLVEMENT .....</b>	<b>6</b>
4.1 Primary legislation .....	6
4.2 Subsidiary legislation, interpretation notes etc.....	6
4.3 General .....	7
<b>5. SARS'S EXECUTIVE STRUCTURE.....</b>	<b>8</b>
<b>6. CONTACT DETAILS FOR INFORMATION OFFICERS .....</b>	<b>9</b>
<b>7. SARS'S RECORDS.....</b>	<b>10</b>
7.1 Taxpayer information .....	10
7.2 SARS Confidential Information.....	10
7.3 Personnel information.....	10
7.4 Business records .....	10
<b>8. RECORDS AUTOMATICALLY AVAILABLE .....</b>	<b>11</b>
<b>9. HOW TO OBTAIN ACCESS TO RECORDS HELD BY SARS .....</b>	<b>11</b>
9.1 Preliminary steps .....	11
9.2 Completing the request form.....	12
9.3 Fees .....	13
9.4 Taking a decision on your request.....	14
9.5 Appealing a decision.....	15
<b>10. TAX OMBUD .....</b>	<b>15</b>
<b>11. HUMAN RIGHTS COMMISSION'S GUIDE TO THE ACT .....</b>	<b>16</b>
<b>12. USEFUL REFERENCES .....</b>	<b>17</b>
ANNEXURE 1 .....	18
ANNEXURE 2 .....	23
ANNEXURE 3 .....	25

## 1. SARS' OBJECTIVES

SARS was created by the South African Revenue Service Act, Act 34 of 1997, which provides under section 3 that the SARS' objectives are the efficient and effective –

- collection of revenue; and
- control over the import, export, manufacture, movement, storage or use of certain goods.

## 2. SARS' FUNCTIONS

SARS is the only organ of state that is entrusted with the administration of national revenue legislation. In terms of section 4 of the SARS Act, it must –

- secure the efficient, effective and widest possible enforcement of –
  - the Transfer Duty Act, 1949,
  - the Estate Duty Act, 1955,
  - the Income Tax Act, 1962,
  - the Customs and Excise Act, 1964,
  - the Value-Added Tax Act, 1991,
  - the Tax on Retirement Funds Act, 1996,
  - various other Acts listed in Schedule 1 to the South African Revenue Service Act, 1997,
  - the Securities Transfer Tax Act, 2007
  - any regulation, proclamation, government notice or rule issued in terms of the above-mentioned legislation or any agreement entered into in terms of these pieces of legislation or the Constitution, and
  - any other legislation concerning the collection of revenue or the control over the import, export, manufacture, movement, storage or use of certain goods that may be assigned to SARS in terms of either legislation or an agreement between SARS and the organ of state or institution concerned (e.g. skills development levies and unemployment insurance contributions);
- advise the Minister of Finance on –
  - all matters concerning revenue; and
  - the exercise of any power or the performance of any function assigned to the Minister or any other functionary in the national executive in terms of the legislation referred to above; and
- advise the Minister of Trade and Industry on matters concerning the control over the import, export, manufacture, movement, storage or use of certain goods.



In light of the above, SARS' vision is to be an innovative revenue and customs agency/authority that enhances economic growth and social development, and supports the country's integration into the global economy in a way that benefits all South Africans. SARS' mission is to optimise revenue yield, facilitate trade and enlist new tax contributors by promoting awareness of the obligation to voluntarily comply with South African tax and customs laws, and providing a quality service that is responsive to the needs of the public.

### 3. SARS' SERVICES

The services SARS provides are generally aimed at promoting voluntary compliance with and knowledge of revenue legislation. The services comprise, amongst others –

- tax education and awareness programmes;
- the publication of public information, advertisements, directives, guides and interpretation notes of all legislation administered by the Commissioner for SARS; and
- assistance to taxpayers and traders in the completion of declarations, returns, and other forms.

Information and assistance is available from SARS offices and in the case of assistance with personal income tax returns, at venues advertised when these returns are due. The bulk of the information is available on the SARS website at [www.sars.gov.za](http://www.sars.gov.za).

SARS also provides services to assist taxpayers and traders in their dealings with other tax and customs administrations in the following instances:

- SARS administers Certificates of Origin and permits in terms of which exporters may gain access to preferential tariff treatment in terms of the Southern African Development Community Protocol on Trade, the Trade Development and Co-operation Agreement between South Africa and the European Union, and the United States of America's African Growth and Opportunity Act. The requirements for participation in these programmes are complex and should be obtained from SARS branch offices dealing with customs.
- SARS administers Certificates of Status, which are obtainable from the foreign tax authority or refund administrator from whom a VAT refund is desired and are certified by SARS branch offices dealing with VAT. VAT refunds in respect of foreign visitors to South Africa are handled by the VAT Refund Administrator (Pty)

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Ltd. Details of the VAT refund system are available at (011) 979 0055, [info@taxrefunds.co.za](mailto:info@taxrefunds.co.za) or you may visit [www.taxrefunds.co.za](http://www.taxrefunds.co.za).

## **4. PUBLIC INVOLVEMENT**

Although SARS is responsible for drafting certain revenue legislation, this is done under the policy direction of the Minister of Finance and, in certain cases, the Minister of Trade and Industry. Accordingly, the manuals issued by National Treasury and the Department of Trade and Industry in terms of the Act (PAIA) should also be consulted with regard to public involvement in the formulation of policy.

### **4.1 Primary legislation**

Depending on the nature and complexity of proposed legislation, the process of enacting revenue or tax levying legislation may be preceded by a discussion paper setting out a proposed approach and calling for public comments. This step may be followed or replaced by the release of draft legislation for public comment.

An informal process has also been developed to encourage public interaction and debate before the tabling of legislation (revenue or any tax levying). The process commences with the release of draft legislation at least 10 working days before the first informal briefing to the Parliamentary Committees.

National Treasury, SARS and the Parliamentary Committees call for public comments on the draft legislation, either by way of written submissions or oral presentations. Once the informal briefing has taken place, informal hearings are held by the Parliamentary Committees during which oral presentations are heard. At the end of these hearings, SARS and National Treasury prepare a response document indicating which representations have been accepted, as well as identifying which comments were not accepted and providing reasons thereof.

The proposed legislation is then tabled by the Minister of Finance and the formal Parliamentary process commences.

### **4.2 Subsidiary legislation, interpretation notes etc.**

Depending on the nature and complexity of the proposed legislation, interpretation note etc, it may be preceded by consultation with industry groupings, professional associations and other interested parties, or the release of a draft for public comments.



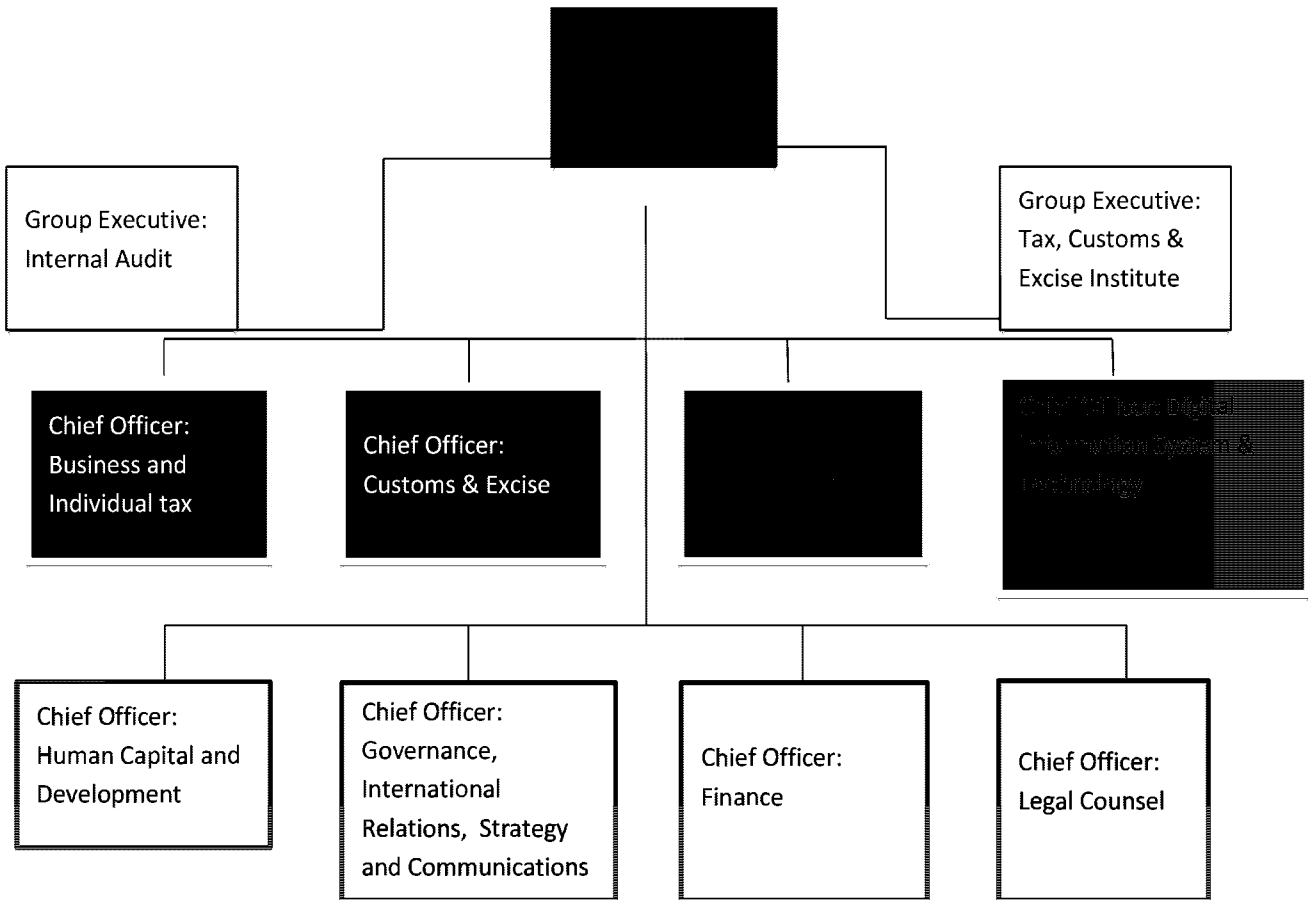
### 4.3 General

SARS welcomes representations regarding its policies and procedures. These representations should be sent to the appropriate Chief Officer from the list of divisions in paragraph 5 of this manual or to the Commissioner for the South African Revenue Service at either of the following addresses:

<b>Physical Address</b>	<b>Postal Address</b>
Lehae La SARS	SARS
299 Bronkhorst Street	Private Bag X923
Nieuw Muckleneuk	PRETORIA
PRETORIA	0001
0181	



### 5. SARS EXECUTIVE STRUCTURE



### 6. CONTACT DETAILS FOR THE INFORMATION OFFICER AND DEPUTY INFORMATION OFFICERS

In terms of the Act, SARS' Information Officer is the Commissioner for the South African Revenue Service. He has designated Deputy Information Officers to deal with requests for access to records on a day-to-day basis. SARS has a sub-unit within Corporate Legal Services that is responsible for co-ordinating all PAIA requests and ensuring compliance with provisions of the Act (PAIA). If you wish to make a request for access to SARS' records in terms of the Act, you should complete the request form (Annexure 1) and address it to the Deputy Information Officers listed below:





<b>Information Officer</b>	<b>Phone</b>	<b>Fax</b>	<b>E-mail</b>
SARS Commissioner	012-422-2006	012-452-9676	oocregistration@sars.gov.za
<b>Deputy Information Officers</b>			
Oscar Mosito (All matters)	012-422-6611		paia@sars.gov.za
Siyabonga Nkabinde (All matters)	012 422-5392		paia@sars.gov.za
Buks Annandale (Non-tax related matters)	012-422-5081		paia@sars.gov.za

SARS' Information Officer's and Deputy Information Officers' physical and postal addresses are as follows:

<b>Physical Address</b>	<b>Physical Address</b>	<b>Postal Address</b>
<b>Information Officer</b>	<b>Deputy Information Officers</b>	
Lehae La SARS 299 Bronkhorst Street Nieuw Muckleneuk PRETORIA 0181	Khanyisa Building 271 Bronkhorst Street Nieuw Muckleneuk PRETORIA 0181	SARS Private Bag X923 PRETORIA 0001

## **7. SARS' RECORDS**

As an organ of state responsible for the collection of national revenue, SARS' records fall into four broad categories.

### **7.1 Taxpayer information**

These records include tax returns, bills of entry, declarations, assessments, financial statements, financial or other information about taxpayers collected from various sources and evaluative records.

### **7.2 SARS Confidential Information**

SARS confidential information as defined in section 68 of the Tax Administration Act, Act 28 of 2011 broadly means and includes, amongst others –

- Personal information about a current or former SARS official, whether deceased or not
- information subject to legal professional privilege
- information supplied in confidence by a third party, another state or an international organisation
- information related to investigations and prosecutions described in section 39 of the Promotion of Access to Information Act, 2000
- information related to the operations of SARS including an opinion, advice, report, account of a consultation or discussion where such information relates to the formulation of policy or the performance of a duty conferred by law
- information which, if disclosed, could prejudice the economic interests of the Republic

### **7.3 Personnel information**

These records include information on employment policy, contracts of employment of all personnel in SARS, evaluative records and salary information.

### **7.4 Business records**

These records include SARS' financial records on own account and revenue administered account, contracts, minutes of various committees, operational records, operational instructions and manuals, tax statistics, tenders and trade statistics.



## 8. RECORDS AUTOMATICALLY AVAILABLE

SARS publishes a broad range of informative material both in print and on its website at [www.sars.gov.za](http://www.sars.gov.za). This includes interpretation notes and guides to the customs and tax systems.

SARS publishes trade statistics for South Africa and the BLNS (Botswana, Lesotho, Namibia and Swaziland) countries on a monthly basis.

National Treasury publishes revenue statistics on a monthly basis.

Taxpayers may obtain personal information about themselves such as a copy of their own tax returns, assessments, statement of account and similar records, including records submitted to SARS by the taxpayer or on the taxpayer's behalf. SARS will provide such information on request to the office where the records are held. A fee may be charged for copying of records depending on the volume requested.

## 9. HOW TO OBTAIN ACCESS TO RECORDS HELD BY SARS

The steps below have been designed to ensure that your request for access to records of information held by SARS is dealt with as quickly and efficiently as possible.

### 9.1 Preliminary steps

Consider whether the record you wish to request relates to information about SARS or information SARS is most likely to hold or have under its control. Requests for records that are most likely to be held or be under the control of another body should be directed to that body. Requests to SARS for records that it might not possibly hold or have under its control will slow down its responses to other requests for records and will generally have to be referred to another body, which will delay the response to your request.

Review the information available from the SARS website at [www.sars.gov.za](http://www.sars.gov.za) or from your local SARS office to see if it will satisfy your intended request.

Bear in mind that SARS must deny a request for a record if it contains information that SARS holds or has obtained for the purposes of enforcing revenue legislation, unless that information is about or relates to you or the person that you represent.



SARS may refuse a request for access to a record if it constitutes SARS confidential information or a record that may be refused in terms of one of the grounds for refusal in terms of the Act (PAIA).

Consider whether a request for reasons for an administrative action should not rather be made in terms of the Promotion of Administrative Justice Act, 2000 (“PAJA”) as the reasons may not yet have taken the form of a record of information as defined.

## 9.2 Completing the request form

If you are satisfied that you still wish to make a request for records, you must fill in **Form A** which must be accompanied by the requester’s proof of payment as explained in 9.3 below, which you will find as Annexure 1 to this manual. The request must be sent to the contact details listed in paragraph 6 of this manual. The relevant Deputy Information Officer will reply within 30 days (60 days in certain circumstances) to inform you whether your request has been granted or refused. Access to records will be granted in the format requested or in the format that the records exist, if the requested format is not available.

If you have not received an acknowledgement of receipt of your request within 14 days, please contact the SARS switchboard at (012) 422 4000 and ask to be transferred to one of the Deputy Information Officers for assistance or call the telephone number of one of the Deputy Information Officers.

Some important points to remember when completing your request form:

- Each section of the form contains instructions that should be followed to improve the likelihood of your request being granted with minimal delay being experienced.
- Where a request is made for records relating to an organisation, it is strongly recommended that the organisation’s public officer make or authorise the request. The request must be accompanied by a letter indicating the authority to request records on behalf of the organisation.
- If you are requesting records on behalf of another person, you must **provide a copy of the mandate** authorising you to act on behalf of that person.
- You should provide as detailed as possible a description of the records you are requesting to enable the Deputy Information Officer to identify them.



If you are experiencing difficulties in completing the request form or have a disability that prevents you from completing it, please do not hesitate to contact any of the Deputy Information Officers for assistance. He/she will be happy to assist you in completing the form, as well as sending you a written copy of the completed form where he/she has completed it on your behalf.

### 9.3 Fees

In certain circumstances you will be required to pay a non-refundable fee to SARS before your request is considered or the records that you have requested are made available to you. SARS will only continue processing your request after you have paid a deposit. These fees are –

- *Request fee:* If you request access to records containing personal information about yourself you will not be required to pay the request fee. Any other request must be accompanied by the required request fee which is currently R35.00.
- *Access fee:* If the request is granted then an access fee must be paid for the reproduction of records and for time in excess of one hour to search and prepare the records for disclosure. Where the time to prepare the records for disclosure is likely to exceed six hours, a deposit of one third of the anticipated access fee may be required as a deposit.

#### **No fees are applicable if you are –**

- single and earn an income of less than R14 712 per year
- married or have a life partner and earn a combined income of less than R27 192 per year

You may pay the fees by cheque at a SARS branch office, via EFT or directly at **ABSA**. You may request from the Deputy Information Officer, the bank account details if payment will be effected by EFT or directly at the bank. Remember to cite **MAIN022 PAIA** as the payment reference number.

The requested records will only be made available to you once the cheque is cleared by your bank if payment has been made by cheque. Proof of payment must be sent to the contact details provided in paragraph 6 above. All payments must be in South African currency. The fee structure is set in the Regulations Regarding the Promotion of Access to Information issued in terms of section 92 of the Promotion of Access to Information Act, 2000 and is reproduced in Annexure 2 to this manual.



#### 9.4 Taking a decision on your request

The Deputy Information Officer is required to make a decision on your request within 30 days (60 days in certain circumstances) of receipt of your request, failing which your request is deemed to have been refused. You will be notified of the Deputy Information Officer's decision in the manner specified in your request form.

You will be given access to a record of information if –

- you have complied with all procedural requirements in the Act relating to the request for access to that record, that is –
  - the request is properly made on the prescribed form;
  - you have furnished proof of authority to act on another's behalf, if you are not making the request on your own behalf;
  - the record you have requested is sufficiently described to enable the Deputy Information Officer to identify it;
  - you have paid the required fees; and
- access to the record can be refused on one or more grounds of refusal specified in the Act, which fall into the following categories –
  - mandatory protection of privacy of a third party who is a natural person;
  - mandatory protection of certain records of SARS;
  - mandatory protection of commercial information of a third party;
  - mandatory protection of certain confidential information and protection of certain other confidential information of a third party;
  - mandatory protection of safety of individuals and protection of property;
  - mandatory protection of police dockets in bail proceedings and protection of law enforcement and legal proceedings;
  - mandatory protection of records privileged from production in legal proceedings;
  - defence, security and international relations of the Republic;
  - economic interests and financial welfare of the Republic and commercial activities of public bodies;
  - mandatory protection of research information of a third party and protection of research information of a public body;
  - operations of public bodies; and
  - manifestly frivolous or vexatious requests or substantial and unreasonable diversion of resources.



## 9.5 Appealing a decision

Should you not be satisfied with the decision of the Deputy Information Officer or the deemed refusal of your request, you are entitled to lodge an internal appeal in respect of that decision or deemed refusal.

The internal appeal must be noted in writing using Form B, which you will find in Annexure 3 to this manual. You must set out the grounds for the appeal in respect of each record sought. The internal appeal must generally be lodged within 60 days of the receipt of the Deputy Information Officer's decision or the date of the deemed refusal. It must be lodged in person or by e-mail, fax or post under the name of the Deputy Information Officer that dealt with your original request. The Deputy Information Officer will then forward your appeal, together with the reasons for his decision, to SARS' Relevant Authority for a decision. If you have not received an acknowledgement of receipt of your appeal within 14 days, please contact the Deputy Information Officer to ensure that your appeal has been received.

Should you not be satisfied with the decision of the Relevant Authority, you may apply to Court for relief or review of the decision of the DIO and/or Relevant Authority. The review application to Court must be made within 180 days from the date when the requester receives notice of the decision on internal appeal. On hearing such an application, the Court may grant a just and equitable order including –

- confirming, amending or setting aside the decision that is the subject of the application;
- requiring the Information Officer to take some action or to refrain from taking such action as the court considers necessary within the period mentioned in the order;
- granting an interdict, interim or specific relief, a declaratory order or compensation;  
or
- costs.

## 10. TAX OMBUD

The Minister of Finance has established the office of the Tax Ombud. The Tax Ombud's office exists as an independent, impartial and objective institution separate from SARS. Taxpayers may approach the Tax Ombud for assistance to resolve matters relating to service, procedure and administration by SARS. The purpose of the office of the Tax Ombud is to improve the relationship between the public and SARS by offering an effective conflict resolution channel between the two parties.



Before lodging a complaint with the office of the Tax Ombud, a taxpayer must exhaust the available complaints resolution mechanisms within SARS unless there are compelling circumstances for not doing so. Accordingly, a taxpayer should first seek to resolve a complaint directly with SARS through its call centre or at the taxpayer's SARS branch. If a taxpayer is dissatisfied with the outcome of a complaint lodged through the call centre or at the branch office of SARS, the matter must be escalated to SARS' Operational Service Escalations and Support office for further attention.

If a dispute with SARS remains unresolved, a taxpayer may then approach the Tax Ombud's office. There are no legislated time limits within which to resolve a complaint by the Tax Ombud.

The Tax Ombud cannot make decisions or recommendations which are binding on SARS or a taxpayer. The Tax Ombud's contact details are as follows-

**Tax Ombud  
Menlyn Corner,  
2<sup>nd</sup>Floor, 87 Frikkie  
De Beer Street  
Menlyn  
Pretoria  
0181**

**Telephone: 0800 662 837 (Toll Free) or  
(+27) 12 431-9105**

**Fax: (+27) 12- 452-5013**

**E-mail: [Office@taxombud.gov.za](mailto:Office@taxombud.gov.za)**

## **11. HUMAN RIGHTS COMMISSION'S GUIDE TO THE ACT**

Section 10 of the Act stipulates that the Human Rights Commission must compile a guide on how to use the Act. This guide is available from the South African Human Rights Commission. Please direct any queries to –

**The South African Human Rights Commission: PAIA Unit**

**The Research and Documentation Department**

**Private Bag X2700**

**Houghton**

**2041**

**Telephone: 011-484-8300**

**Fax:  
011-484-1360**

**Website: [www.sahrc.org.za](http://www.sahrc.org.za)**

**E-mail: [PAIA@sahrc.org.za](mailto:PAIA@sahrc.org.za)**



## 12. USEFUL REFERENCES

The Act:

Department of Justice and

<http://www.justice.gov.za/>

Constitutional

Development

SARS

<http://www.sars.gov.za>

**ANNEXURE 1**

**FORM A  
REQUEST FOR ACCESS TO RECORD OF SARS**

(Section 18(1) of the Promotion of Access to Information Act, 2000 (Act No. 2 of 2000))

**A. Particulars of SARS**

*The name and postal or physical address, fax number or e-mail address of the Information Officer or Deputy Information Officer must be stated below.*

Attention:

Information Officer/Deputy Information Officer: SARS

**B. Particulars of person requesting access to the record**

- (a) The particulars of the person requesting access to the record must be recorded below.*
- (b) Furnish an address and/or fax number in the Republic to which information/decision must be sent.*
- (c) Proof of the capacity in which the request is made, if applicable, must be attached.*

Full name(s) and surname: \_\_\_\_\_

Postal address: \_\_\_\_\_  
\_\_\_\_\_

Telephone number: \_\_\_\_\_

Fax number: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Capacity in which the request is made, together with proof of such capacity, when made on behalf of another person: \_\_\_\_\_

**C. Particulars of person on whose behalf request is made**

*This section must be completed only if a request for information is made on behalf of another person.*

Full name(s) and surname: \_\_\_\_\_

Identity/company number: \_\_\_\_\_

**D. Particulars of record**

- (a) SARS must deny a request for a record if it contains information that SARS holds or has obtained for the purposes of enforcing revenue legislation, unless that information is about or relates to you or the person that you represent.
- (b) Provide full particulars of the record to which access is requested, including the reference number if it is known to you, to enable the record to be located.
- (c) If the provided space is inadequate please continue on a separate page and attach it to this form. **You must sign all the additional pages.**

Description of record or relevant part of the record:

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Reference number, if available:

Any further particulars of record:

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**E. Fees**

- (a) A request for access to a record, other than a record containing personal information about yourself, will only be processed after a **request fee** has been paid.
- (b) The request fee is R35.00.
- (c) The **access fee** payable for access to a record depends on the form in which access is required and the reasonable time required to search for and prepare a record.
- (d) If you believe that you qualify for exemption from the payment of the prescribed fee, please state the reason for your belief.

Reason for exemption: \_\_\_\_\_

**F. Form of access to record**

- Mark the appropriate box with an "X".
- (a) Your indication as to the required form of access depends on the form in which the record is available.
  - (b) Access in the form requested may be refused in certain circumstances. In such a case you will be informed if access will be granted in another form.
  - (c) The fee payable for access to the record, if any, will be determined partly by the form in which access is requested.

If you are prevented by a disability from reading, viewing or listening to the record in a form provided for in 1 to 4 below, state your disability and indicate in which form the record is required.

Disability:		Form in which record is required:	
<b>1. If the record is in written or printed form –</b>			
<input type="checkbox"/>	copy of record*	<input type="checkbox"/>	inspection of record
<b>2. If record consists of visual images –</b> (including photographs, slides, video recordings, computer-generated images, sketches etc.)			
<input type="checkbox"/>	view the images	<input type="checkbox"/>	copy of the images*
<input type="checkbox"/>		<input type="checkbox"/>	transcription of the images*
<b>3. If record consists of recorded words or information which can be reproduced in sound –</b>			
<input type="checkbox"/>	listen to the soundtrack (audio cassette)	<input type="checkbox"/>	transcription of soundtrack* (written or printed document)

<b>4. If record is held on computer or in an electronic or machine-readable form –</b>							
<input type="checkbox"/>	printed copy of record*	<input type="checkbox"/>	printed copy of information derived from the record*	<input type="checkbox"/>	copy in computer readable form* (stiffy or compact disc)		
* If you are requesting a copy or transcription of a record above, do you wish the copy or transcription to be posted to you? <b>A postal fee is payable.</b>				<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
<i>In which language would you prefer the record?</i>							
<i>Note that if the record is not available in the language you prefer, access may be granted in the language in which the record is available.</i>							

**G. Notice of decision regarding request for access**

*You will be notified in writing, at the address or fax number provided in Part B, whether your request has been approved or denied.*

*If you also wish to be informed in another manner, please specify the manner and provide the necessary particulars to enable compliance with your request.*

How would you prefer to be informed of the decision regarding your request?

<input type="checkbox"/>	Postal Address	<input type="checkbox"/>	Email	<input type="checkbox"/>	Fax
Other:					

Signed at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

\_\_\_\_\_  
SIGNATURE OF REQUESTOR

**FOR SARS USE**

Reference number allocated:

Request received by:

Request received on:

Request fee (if any):

Access fee:

Decision:

Signature of Deputy Information

Officer:

Date:

**ANNEXURE 2**

**FEES IN RESPECT OF PUBLIC BODIES  
IN TERMS OF GOVERNMENT NOTICE NO. R. 187  
IN GOVERNMENT GAZETTE 23119 OF 15 FEBRUARY 2002**

1. The fee for a copy of the manual as contemplated in regulation 5(c) is R0,60 for every photocopy of an A4 size page or part thereof.
2. The fees for reproduction referred to in regulation 7(1) are as follows:

	R/c
(a) For every photocopy of an A4 size paper or part thereof	0,60
(b) For every printed copy of an A4 size page or part thereof held on a computer or in electronic or machine readable form	0,40
(c) For a copy in a computer-readable form on –	
(i) stiffy disc	5,00
(ii) compact disc	40,00
(d) (i) For a transcription of visual images, for an A4 size page or part thereof	22,00
(ii) For a copy of visual images	60,00
(e) (i) For a transcription of an audio record, for an A4 size page or part thereof	12,00
(ii) For a copy of an audio record	17,00
3. The request fee payable by every requester, other than a personal requester, referred to in regulation 7(2) is R35,00.

## 4. The access fees payable by a requester referred to in regulation 7(3) are as follows:

	R/c
(a) For every photocopy of an A4 size paper or part thereof	0,60
(b) For every printed copy of an A4 size page or part thereof held on a computer or in electronic or machine-readable form	0,40
(c) For a copy in a computer-readable form on –	
(i) stiffy disc	5,00
(ii) compact disc	40,00
(d) (i) For a transcription of visual images, for an A4 size page or part thereof	22,00
(ii) For a copy of visual images	60,00
(e) (i) For a transcription of an audio record, for an A4 size page or part thereof	12,00
(ii) For a copy of an audio record	17,00
(f) To search for and prepare the record for disclosure, R15,00 for each hour or part of an hour, excluding the first hour, reasonably required for such search and preparation.	
(g) For purposes of section 22(2) of the Act, the following applies:	
(i) six hours as the hours to be exceeded before a deposit is payable;	
and	
(ii) one third of the access fee is payable as a deposit by the requester.	
(h) The actual postage is payable when a copy of a record must be posted to a requester.	



**ANNEXURE 3**

**FORM B  
NOTICE OF INTERNAL APPEAL**

(Section 75 of the Promotion of Access to Information Act, 2000 (Act No. 2 of 2000))

<p><b>STATE YOUR REFERENCE NUMBER:</b></p>
--

**A. Particulars of SARS**

<p><i>The name and postal or physical address, fax number or e-mail address of the Information Officer or Deputy Information Officer must be stated below.</i></p>
--

Attention:

Information Officer/Deputy Information Officer: SARS

**B. Particulars of person requesting access to the record**

<p>(a) <i>The particulars of the person requesting access to the record must be recorded below.</i></p> <p>(b) <i>Furnish an address and/or fax number in the Republic to which information/decision must be sent.</i></p> <p>(c) <i>Proof of the capacity in which the request is made, if applicable, must be attached.</i></p>
---

Full names and surname:

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Postal address:

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Telephone number:

---

Fax number:

---

E-mail address:

---

Capacity in which the request is made, together with proof of such capacity, when made on behalf of another person:

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**C. Particulars of person on whose behalf request is made**

*This section must be completed only if a request for information is made on behalf of another person.*

Full names and surname: \_\_\_\_\_

Identity/company number: \_\_\_\_\_

**D. The decision against which the internal appeal is lodged**

*Mark the decision against which the internal appeal is lodged with an "X" in the appropriate box*

	Refusal of request for access.
	Decision regarding fees determined in terms of section 22 of the Act.
	Decision regarding the extension of the period within which request must be dealt with in terms of section 26(1) of the Act.
	Decision in terms of section 29(3) of the Act to refuse access in the form as requested by the requester.
	Decision to grant request for access.

**E. Grounds for appeal**

*If the provided space is inadequate please continue on a separate page and attach it to this form.*

***You must sign all the additional pages.***

State the grounds upon which the internal appeal is based:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

State any other information that may be relevant in considering the appeal:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**F. Notice of decision on appeal**

*You will be notified in writing, at the address or fax number provided in Part B, of the decision on your internal appeal. If you also wish to be informed in another manner, please specify the manner and provide the necessary particulars to enable compliance with your request.*

How would you prefer to be informed of the decision regarding your request?  
 \_\_\_\_\_

Signed at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

\_\_\_\_\_  
**SIGNATURE OF APPELLANT**

**FOR SARS USE**

Appeal received by:

Appeal received on:

Appeal fee:

Submitted to Relevant

Authority on:

Outcome of appeal:

New decision, if applicable:

Signature of Relevant Authority

Date of decision:

## DEPARTMENT OF WATER AND SANITATION

NO. 998

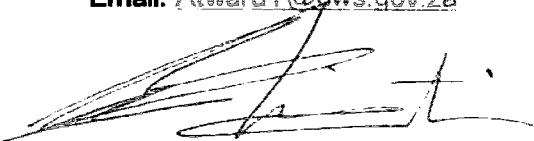
19 JULY 2019

**NATIONAL WATER ACT, 1998  
(ACT NO. 36 OF 1998)****RESERVE DETERMINATION OF WATER RESOURCES FOR THE INKOMATI  
CATCHMENT**

I, Gugile Ernest Nkwinti, in my capacity as Minister of Water and Sanitation of the Department of Water and Sanitation, having complied with section 13 of the National Water Act, (Act No. 36 of 1998) ("the Act") and Regulation 3 of the Regulations for the establishment of Water Resource Classification System (No. R. 810 Government Gazette No. 33541, 17 September 2010), and duly authorised in terms of sections 16(1) and 63(1)(a) of the Act, after having complied with section 16(2) and (3) of the Act, hereby publish the Reserve determination of water resources for the Inkomati catchment.

Director: Reserve Determination  
Attention: Mr Yakeen Atwaru  
Department of Water and Sanitation  
Ndinaye Building 5084  
178 Francis Baard Street  
Private Bag X313  
Pretoria  
0001

Email: [AtwaruY@dws.gov.za](mailto:AtwaruY@dws.gov.za)



**NKWINTI GE (MP)**  
**MINISTER OF WATER AND SANITATION**  
DATE: 24/05/2019

## SCHEDULE

### 1. DESCRIPTION OF WATER RESOURCE

- 1.1 The Reserve is determined for all or part of every significant water resource within the Inkomati catchment as set out below:

Water Management Area: Inkomati-Usutu  
 Drainage Regions: X Primary Drainage Region  
 Rivers: Komati, Crocodile and Sabie-Sand River Systems

- 1.2 The Minister has in terms of section 16 of the National Water Act, 1998 (Act No.36 of 1998) ("the Act"), prescribed a system for classifying water resources by issuing Government Notice No. R. 810, published in Government Gazette No. 33541 dated 17 September 2010. In terms of section 16(1) of the Act, the Minister must, as soon as reasonably practicable after the class of all or part of a water resource has been determined, by Notice in the Gazette, determine the Reserve for all or part of that water resource.
- 1.3 The Minister, in terms of section 16(1) and (2) of the Act, declares, the following Reserve for the Inkomati catchment.

### 2. ACRONYMS AND DEFINITIONS

#### 2.1 Acronyms

BHN	Basic Human Needs
BHNR	Basic Human Needs Reserve
EcoSpecs	Ecological Specifications
EIS	Ecological Importance and Sensitivity
EWR	Ecological Water Requirement
EWR_MLF	Ecological Water Requirement Maintenance Low Flows
WARMS	Water Allocation Registration Management System
GRAII	Groundwater Resource Assessment Phase II
GRDM	Groundwater Resource Directed Measures
MAR	Mean Annual Runoff
MCM	Million Cubic Metres
PES	Present Ecological Status
REC	Recommended Ecological Category
TEC	Targeted Ecological Category
DWS	Department of Water and Sanitation
DWAF	Department of Water Affairs and Forestry
EC	Electrical Conductivity
TIN	Total Inorganic Nitrogen
SRP	Soluble Reactive Phosphorus
RC	Reference Condition
WQU	Water Quality Unit

## 2.2 Definitions

In this Determination, unless the context otherwise indicates -

**“Baseflow”** means a sustained low flow in rivers during dry or fair weather conditions, but not necessarily all contributed by groundwater and includes contribution from delayed interflow and groundwater discharge;

**“EWR” (Ecological Water Requirements)** means the flow patterns (magnitude, timing and duration) and water quality needed to maintain a riverine ecosystem in a particular condition;

**“Recharge”** means the addition of water to the zone of saturation, either by downward percolation of precipitation or surface water and/ or the lateral migration of groundwater from adjacent aquifers.

## 3. RESERVE DETERMINATION

A summary of the quantity component for the Rivers which include the EWR (**Figure 1 & 2**) and the BHN for the Inkomati catchment is set out in Section 4. **Table 4.1** includes the results of the EWR Sites and the biophysical nodes and **Table 4.2** includes the results of BHN per quaternary catchment.

A summary of the quality component for the Rivers at the EWR sites for the Inkomati catchment is set out in **Tables 5.1.1 – 5.3.6**.

A summary of the groundwater contribution to the Reserve for Water Quantity for the Inkomati catchment is set out in **Table 6.1**.

A summary of the groundwater contribution to the Reserve for Water Quality for the Inkomati catchment is set out in **Tables 7.1, 7.2 and 7.3**.

A summary of the Water Quantity & Quality Reserve for selected Wetlands for the Inkomati catchment is set out in **Tables 8.1 and 8.2**.

#### 4. SURFACE-WATER - QUANTITY COMPONENT FOR RIVERS

The results for the Reserve determination and ecological categorisation for the Inkomati Catchment, where the Reserve is expressed as a percentage of the NMAR for the respective catchments (cumulative) are tabulated below.

**Table 4.1:** Summary of the quantity component for the Rivers which includes the results of the EWR Sites and the biophysical nodes.

Biophysical nodes	Water Resource	PES	EIS	TEC	Ecological Reserve (%NMAR)	NMAR (MCM)
<b>Komati River Catchment</b>						
X11A-01248	Vaalwaterspruit	C	Moderate	C	23.50	26.30
X11A-01295	Vaalwaterspruit	C	Moderate	C	27.20	15.40
X11A-01300	Vaalwaterspruit	B	Moderate	B	28.10	1.70
X11A-01354	Vaalwaterspruit	C	Moderate	C	24.50	3.90
X11A-01358	Vaalwaterspruit	C	Moderate	C	26.80	6.60
X11B-01272	Boesmanspruit	C	High	B/C	24.20	51.20
X11B-01361	Boesmanspruit	B/C	Moderate	B/C	27.00	4.20
X11B-01370	Boesmanspruit	B	High	B	28.80	4.80
X11C-01147	Witkloofspruit	C	Very High	C	22.10	11.40
X11D-01129	Klein-Komati	C	High	C	27.40	21.00
X11D-01137	Waarkraalloop	C	Moderate	C	27.30	11.70
X11D-01196	Komati	C	Moderate	C	20.10	95.40
X11D-01219	Komati	C/D	Moderate	C/D	12.30	73.60
X11E-01237	Swartspruit	C	Very High	B	27.90	14.80
X11E-01157	Komati	B/C	High	B/C	25.60	118.30
X11F-01133	Bankspruit	B	High	B	30.80	6.50
<b>EWR K1</b>	<b>Komati</b>	<b>B/C</b>	<b>Moderate</b>	<b>C</b>	<b>27.50</b>	<b>158.62</b>
X11G-01143	Gemakstroom	C	Moderate	C	26.10	10.40
X11G-01188	Ndubazi	B/C	High	B	34.90	17.40
<b>EWRG1</b>	<b>Gladdespruit</b>	<b>D</b>	<b>Moderate</b>	<b>D</b>	<b>26.90</b>	<b>29.52</b>
X11K-01165	Poponyane	C	Moderate	C	22.70	13.70
X11K-01179	Gladdespruit	C	Moderate	C	20.20	64.40
X11K-01194	Gladdespruit	C	Moderate	C	19.10	71.20

Biophysical nodes	Water Resource	PES	EIS	TEC	Ecological Reserve (%NMAR)	NMAR (MCM)
X11K-01199	Gladdespruit	D	Moderate	D	22.30	2.40
X12A-01305	Buffelspruit	C	Very High	B	30.30	32.00
X12B-01246	Hlatjiwe	C	Moderate	C	30.50	22.10
X12C-01242	Phophenyane	B	High	B	37.50	6.30
X12C-01271	Buffelspruit	B	High	B	40.50	71.10
X12D-01235	Seekoiespruit	C	High	C	30.50	97.00
<b>EWRT1</b>	<b>Teespruit</b>	<b>C</b>	<b>Moderate</b>	<b>C</b>	<b>35.30</b>	<b>56.36</b>
<b>EWRK2</b>	<b>Komati</b>	<b>C</b>	<b>High</b>	<b>C</b>	<b>18.30</b>	<b>545.56</b>
X12H-01318	Sandspruit	C	Moderate	C	31.70	13.90
X12H-01338	Sandspruit	B	High	B	36.70	4.40
X12H-01340	Sandspruit	B	High	B	39.50	4.80
X12J-01202	Mtsoli	B	Very High	B	33.50	66.50
X12K-01316	Komati	D	Moderate	D	21.20	577.00
X12K-01332	Mhlangampepa	B	High	B	40.00	3.40
X12K-01333	Mlondozi	C	High	B/C	28.20	22.40
<b>EWR K3A</b>	<b>Komati</b>	<b>D</b>	<b>Moderate</b>	<b>D</b>	<b>17.20</b>	<b>1021.67</b>
X13J-01141	Mzinti	D	Moderate	D	19.10	6.30
X13J-01205	Mbiteni	D	Moderate	D	17.60	5.90
X13J-01221	Komati	D	Moderate	D	19.70	1000.30
X13K-01068	Nkwakwa	C/D	Moderate	C/D	22.70	5.40
X13K-01114	Komati	D	Moderate	D	18.10	1341.40
X13K-01136	Mambane	D	Moderate	D	22.40	1.80
X13L-00995	Komati	D	Moderate	D	11.10	1356.60
X13L-01000	Ngweti	D	Moderate	D	14.50	4.60
X14A-01173	Lomati	C	High	B/C	36.30	84.40
X14B-01166	Ugutugulo	C	High	C	31.70	20.90
<b>EWR L1</b>	<b>Lomati</b>	<b>C</b>	<b>Moderate</b>	<b>C</b>	<b>17.30</b>	<b>294.31</b>
<b>Grocodile River Catchment</b>						
<b>EWR C1</b>	<b>Crocodile</b>	<b>A/B</b>	<b>Moderate</b>	<b>A/B</b>	<b>30.3</b>	<b>15.6</b>



Biophysical nodes	Water Resource	PES	EIS	TEC	Ecological Reserve (%NMAR)	NMAR (MCM)
X21B-00898	Lunsklip	C/D	High	C/D	25.80	8.40
X21B-00925	Lunsklip	C	High	C	31.30	25.80
X21B-00929	Gemsbokspruit	C/D	High	C/D	26.30	3.80
<b>EWR C2</b>	<b>Crocodile</b>	<b>B</b>	<b>High</b>	<b>B</b>	<b>35.63</b>	<b>76.1</b>
X21C-00859	Alexanderspruit	C	High	C	31.50	28.80
X21D-00938	Crocodile	C	High	C	24.00	124.80
X21D-00957	Buffelskloofspruit	C	High	B/C	32.60	16.90
X21E-00897	Buffelskloofspruit	B	High	B	35.30	8.40
<b>EWR C3</b>	<b>Crocodile</b>	<b>B/C</b>	<b>High</b>	<b>B/C</b>	<b>48.8</b>	<b>194</b>
X21E-00947	Crocodile	B	High	B	28.90	125.10
X21F-01046	Elands	C	Moderate	C	35.20	35.10
X21F-01081	Elands	C	High	C	35.50	50.80
X21F-01091	Rietvleispruit	C	Moderate	C	35.40	3.30
X21F-01092	Leeuspruit	C/D	Moderate	C/D	31.20	11.90
X21F-01100	Leeuspruit	C	Moderate	C	35.10	11.90
X21G-01016	Swartkoppiespruit	C	High	C	32.50	11.40
<b>EWR E1</b>	<b>Elands</b>	<b>B</b>	<b>Moderate</b>	<b>B</b>	<b>48.82</b>	<b>50.10</b>
X21G-01090	Weltevredespruit	C	Moderate	C	32.00	5.50
X21H-01060	Ngodwana	C	Very High	B	22.10	59.60
X21J-01013	Elands	C	High	B/C	30.50	151.50
X21K-01007	Lupelule	B	High	B	32.10	29.40
<b>EWR E2</b>	<b>Elands</b>	<b>B</b>	<b>High</b>	<b>B</b>	<b>45.02</b>	<b>50.10</b>
X22A-00824	Blystaanspruit	B/C	High	B	35.30	21.00
X22A-00875	Houtbosloop	B/C	High	B	34.20	6.90
X22A-00887	Beestekraalspruit	B/C	High	B/C	33.90	3.70
X22A-00913	Houtbosloop	C	Very High	B	41.30	75.30
X22A-00917	Houtbosloop	C	Moderate	C	29.70	14.80
X22A-00919	Houtbosloop	B/C	Moderate	B/C	34.70	10.60
X22A-00920	Houtbosloop	B	Moderate	B	39.40	1.70

Biophysical nodes	Water Resource	PES	EIS	TEC	Ecological Reserve (%NMAR)	NMAR (MCM)
X22C-00990	Visspruit	B/C	Moderate	B/C	31.10	3.40
X22C-01004	Gladdespruit	C	High	B/C	20.90	16.30
X22D-00843	Nels	C	Moderate	C	29.60	20.60
X22D-00846	Nels	C	Moderate	C	31.90	13.80
X22E-00833	Kruisfonteinspruit	C	Moderate	C	26.60	11.10
X22E-00849	Sand	C	Moderate	C	27.70	8.70
X22F-00842	Nels	C	High	C	19.00	74.90
X22F-00886	Sand	C	High	C	27.40	48.90
X22F-00977	Nels	C/D	High	C/D	24.10	125.40
X22H-00836	Wit	D/E	High	D	14.90	43.00
<b>EWR C4</b>	<b>Crocodile</b>	<b>C</b>	<b>High</b>	<b>C</b>	<b>31.74</b>	<b>824.8</b>
X22K-01029	Blinkwater	C	Moderate	C	27.20	7.60
X22K-01042	Mbuzulwane	B	Moderate	B	38.50	1.20
X22K-01043	Blinkwater	B	High	B	34.90	5.90
X23B-01052	Noordkaap	D	Very High	C	23.50	50.90
X23C-01098	Suidkaap	C	High	B/C	39.50	61.80
X23E-01154	Queens	C	High	B/C	27.10	39.50
X23F-01120	Suidkaap	C	Moderate	C	31.00	109.80
<b>EWR K7</b>	<b>Kaap</b>	<b>C</b>	<b>High</b>	<b>C</b>	<b>21.84</b>	<b>179.5</b>
X24A-00826	Nsikazi	C	Moderate	C	34.00	2.00
X24A-00881	Nsikazi	B	High	B	40.60	11.70
X24B-00903	Gutshwa	D	Moderate	D	24.40	25.40
X24B-00928	Nsikazi	A/B	High	A/B	44.00	42.40
X24C-00978	Nsikazi	B	High	B	40.50	52.30
<b>EWR C5</b>	<b>Crocodile</b>	<b>C</b>	<b>Very High</b>	<b>C</b>	<b>22.2</b>	<b>1117.4</b>
<b>EWR C6</b>	<b>Crocodile</b>	<b>C</b>	<b>Very High</b>	<b>C</b>	<b>12.53</b>	<b>1165.6</b>
<b>Sabie River Catchment</b>						
X31A-00741	Klein Sabie	C	High	B/C	23.00	14.60
X31A-00783	Klein Sabie	C	Moderate	C	33.80	12.10

Biophysical nodes	Water Resource	PES	EIS	TEC	Ecological Reserve (%NMAR)	NMAR (MCM)
X31A-00786	Klein Sabie	B	High	B	47.80	4.70
<b>EWR S1</b>	<b>Sabie</b>	<b>B/C</b>	<b>High</b>	<b>B</b>	<b>40.31</b>	<b>132</b>
X31B-00792	Goudstroom	B/C	Moderate	B/C	38.90	12.20
<b>EWR S4</b>	<b>Mac Mac</b>	<b>B</b>	<b>High</b>	<b>B</b>	<b>45.31</b>	<b>65.78</b>
X31E-00647	Marite	B/C	High	B	34.70	79.90
X31F-00695	Motitsi	C	High	B	26.50	43.90
<b>EWR S2</b>	<b>Sabie</b>	<b>C</b>	<b>High</b>	<b>B</b>	<b>28.2</b>	<b>261.7</b>
X31D-00773	Sabani	C/D	Moderate	C/D	19.50	19.20
<b>EWR S5</b>	<b>Marite</b>	<b>B/C</b>	<b>High</b>	<b>B/C</b>	<b>28.57</b>	<b>156.4</b>
X31H-00819	White Waters	C	High	B/C	31.40	28.90
X31J-00774	Noord-Sand	D	Moderate	D	16.00	45.10
X31J-00835	Noord-Sand	D	Moderate	D	31.30	12.00
X31K-00713	Bejani	D	Moderate	D	25.70	2.40
<b>EWR S3</b>	<b>Sabie</b>	<b>A/B</b>	<b>Very High</b>	<b>A/B</b>	<b>37.94</b>	<b>493.69</b>
X31K-00771	Phabeni	B	High	B	39.00	2.50
X31L-00657	Matsavana	C	Moderate	C	16.80	3.80
X31L-00664	Saringwa	C	Moderate	C	24.50	10.90
X31L-00678	Saringwa	B/C	High	B/C	30.80	3.20
X31M-00673	Musutlu	B/C	Moderate	B/C	19.00	1.80
<b>EWR S7</b>	<b>Thulandziteka (Sand)</b>	<b>C</b>	<b>Moderate</b>	<b>C</b>	<b>32.67</b>	<b>28.9</b>
X32B-00551	Motlamogatsana	C	High	C	25.70	15.40
X32C-00558	Nwandlamuhari	C	Moderate	C	20.20	49.70
X32C-00564	Mphyanyana	C	Moderate	C	10.50	3.10
X32C-00606	Nwandlamuhari	C	Moderate	C	23.60	53.20
X32E-00629	Nwarhele	C/D	High	C	26.10	10.60
<b>EWR S6</b>	<b>Mutlumuvi</b>	<b>C</b>	<b>High</b>	<b>C</b>	<b>28.46</b>	<b>44.99</b>
X32F-00628	Nwarhele	C/D	Moderate	C/D	31.30	14.80
X32G-00549	Khokhovela	C	Moderate	C	17.00	3.90
X32H-00560	Phungwe	A	High	A	26.10	7.60

<b>Biophysical nodes</b>	<b>Water Resource</b>	<b>PES</b>	<b>EIS</b>	<b>TEC</b>	<b>Ecological Reserve (%NMAR)</b>	<b>NMAR (MCM)</b>
<b>EWR S8</b>	<b>Sand</b>	<b>B</b>	<b>High</b>	<b>B</b>	<b>25.46</b>	<b>133.61</b>

The bolded quaternary catchments are the EWR Sites

1) NMAR is the Natural Mean Annual Runoff.

2) This amount represents the long term mean based on the NMAR. If the NMAR changes, this volume will also change.

## BASIC HUMAN NEEDS RESERVE

The BHN provides for the essential needs of individuals served directly by the water resource in question and includes water for drinking, food preparation and for personal hygiene. A lifeline amount of 25 litres per person per day was used.

Communities likely to be reliant on run of river were identified per quaternary catchment and using these population sizes, the BHN is calculated.

**Table 4.2: Reserve information on quaternary catchment level**

Quaternary catchment	Water Resource	BHN Reserve (%NMAR)
X11A	Vaalwaterspruit	0.09
X11B	Boesmanspruit	0.16
X11C	Witkloofspruit	0.00
X11D	Komati	0.00
X11E	Komati	0.00
X11F	Bankspruit	0.00
X11G	Upper Komati	0.00
X11J	Gladdespruit	0.00
X11K	Gladdespruit	0.00
X12A	Buffelspruit	0.00
X12B	Hlatjiwe	0.00
X12C	Buffelspruit	0.00
X12D	Seekoeispruit	0.03
X12E	Teespruit	0.00
X12H	Upper Komati	0.01
X12J	Mtsoli	0.01
X12K	Komati	0.02
X13J	Lower Komati	0.14
X13K	Komati	0.04
X13L	Komati	0.01
X14A	Lomati	0.00
X14B	Ugutugulo	0.02
X14H	Lomati	0.12
X21A	Crocodile	0.02

<b>Quaternary catchment</b>	<b>Water Resource</b>	<b>BHN Reserve (%NMAR)</b>
X21B	Lunsklip	0.12
X21B	Crocodile	0.01
X21C	Alexanderspruit	0.11
X21D	Crocodile	0.02
X21E	Crocodile	0.09
X21F	Elands	0.17
X21G	Elands River	0.26
X21H	Ngodwana	0.01
X21J	Elands	0.01
X21K	Elands River	0.01
X22A	Houtbosloop	0.01
X22C	Gladdespruit	0.07
X22D	Nels	0.02
X22E	Kruisfonteinspruit	0.00
X22F	Nels	0.01
X22H	Wit	0.00
X22K	Crocodile	0.01
X23B	Noordkaap	0.01
X23C	Suidkaap	0.01
X23E	Queens	0.01
X23F	Suidkaap	0.45
X23G	Kaap River	0.02
X24A	Nsikazi	4.25
X24B	Nsikazi	3.70
X24C	Nsikazi	3.21
X24D	Crocodile	0.01
X24H	Crocodile	0.01
X31A	Klein	0.73
X31B	Sabie	0.00
X31C	Mac Mac	0.03

Quaternary catchment	Water Resource	BHN Reserve (%NMAR)
X31E	Marite	0.36
X31F	Motitsi	0.05
X31D	Sabie	0.08
X31G	Marite	0.07
X31H	White Waters	0.00
X31J	Noord-Sand	0.63
X31K	Sabie	0.07
X31L	Saringwa	3.45
X31M	Musutlu	10.94
X32B	Motlamogatsana	0.69
X32C	Tlulandziteka	0.57
X32E	Nwarhele	2.87
X32F	Mutlumuvi	0.42
X32G	Khokhovela	8.57
X32H	Phungwe	2.33
X32J	Sand	0.30

## 5. SURFACE-WATER - QUALITY COMPONENT FOR RIVERS

### 5.1 Croc-East Catchment

**Table 5.1.1: EWR 1– Crocodile River: EcoSpecs relating to physico-chemical data (PES and REC)**

River: Crocodile		EWR 1	Monitoring site: X2H074Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.015 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the TWQR as stated in DWAF (1996).	



**Table 5.1.2: EWR 2 –Crocodile River: EcoSpecs relating to physico-chemical data (PES and REC)**

<b>River: Crocodile</b>		<b>EWR Site 2</b>	<b>Monitoring site: X2H074Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 27 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 22 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 39 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 118 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 43 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.015 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the TWQR as stated in DWAF (1996).	

**Table 5.1.3: EWR 3– Crocodile River: EcoSpecs relating to physico-chemical data (PES)**

<b>River: Crocodile</b>		<b>EWR 3</b>	<b>Monitoring site: X2H013Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small to moderate deviation from the natural temperature range. Some highly temperature sensitive species in lower abundances and frequency of occurrence than expected for reference.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 6 mg/L.	
	Turbidity	Moderate changes to the catchment landuse resulting in temporary unnaturally high sediment loads and high turbidity.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 52.5 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the TWQR as stated in DWAF (1996).	

**Table 5.1.4: EWR 4 Crocodile River - EcoSpecs relating to physico-chemical data (PES)**

<b>River: Crocodile</b>		<b>EWR 4</b>	<b>Monitoring site: X2H032Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 38 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 191 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 55 mS/m	
	pH	The 5 <sup>th</sup> percentile of the data must be 5.9 – 6.5, and the 95 <sup>th</sup> percentile 8.0 – 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 1.0 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the CEV as stated in DWAF (1996).	

**Table 5.1.5: EWR 5 Crocodile River: EcoSpecs relating to physico-chemical data (PES)**

<b>River: Crocodile</b>		<b>EWR 5</b>	<b>Monitoring site: X2H017Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.**	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 70 mS/m.***	
	pH	The 5 <sup>th</sup> percentile of the data must be 5.9 – 6.5, and the 95 <sup>th</sup> percentile 8.0 – 8.8.	
	Temperature	Moderate deviation from the natural temperature range. Most highly temperature sensitive species in lower abundances and frequency of occurrence than expected for reference.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the TWQR as stated in DWAF (1996).	

**Table 5.1.6: EWR 6 Crocodile River: EcoSpecs relating to physico-chemical data (PES)**

<b>River: Crocodile</b>		<b>EWR 6</b>	<b>Monitoring site: X2H016Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 57 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 85 mS/m.	
	pH	The 5 <sup>th</sup> percentile of the data must be 5.9 – 6.5, and the 95 <sup>th</sup> percentile 8.0 – 8.8.	
	Temperature	Small to moderate deviation from the natural temperature range. Some highly temperature sensitive species in lower abundances and frequency of occurrence than expected for reference.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the CEV as stated in DWAF (1996)	

**Table 5.1.7: EWR 7 Crocodile River: EcoSpecs relating to physico-chemical data (PES and REC)**

<b>River: Kaap</b>		<b>EWR 7</b>	<b>Monitoring site: X2H022Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	ALL	-	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 100$ mS/m.	
	pH	The 5 <sup>th</sup> percentile of the data must range from 6.5 to 8.0, and the 95 <sup>th</sup> percentile from 8.0 to 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 8$ mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 1.0$ mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.125$ mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $< 10$ $\mu$ g/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 52.5$ mg/m <sup>2</sup> .	
	Toxics	The 95 <sup>th</sup> percentile of the data must be within the TWQR as stated in DWAF (1996).	

## 5.2 Sabie-Sand Catchment

Table 5.2.1: EWR 1 (Upper Sabie): EcoSpecs relating to physico-chemical data (PES and REC)

River: Sabie		EWR 1	Monitoring site: X3H001Q01
Water quality metrics		ECOSPEC: PES and REC	
Inorganic salts	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	No deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 8.0 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L.	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

**Table 5.2.2: EWR 2 (Aan de Vliet): EcoSpecs relating to physico-chemical data (PES and REC)**

<b>River: Sabie</b>		<b>EWR Site: 2</b>	<b>Monitoring site: X3H006Q01</b>
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 118 mg/L (A/B category).	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 84 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	



**Table 5.2.3: EWR 3 (Kidney): EcoSpecs relating to physico-chemical data (PES and REC)**

River: Sabie		EWR 3	Monitoring site: X3H013Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> percentile of the data must range from 6.5 to 8.0, and the 95 <sup>th</sup> percentile from 6.5 to 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Small to moderate changes to the catchment landuse resulting in minor effects of silting of habitats, largely of a temporary nature, with very intermittent <u>temporary</u> unnaturally high sediment loads and high turbidity.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.015 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

**Table 5.2.4: EWR 4 (Mac Mac) - EcoSpecs relating to physico-chemical data (PES)**

River: Mac Mac		EWR 4	Monitoring site: X3H003Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 8.0 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.015 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 84 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

Table 5.2.5: EWR 5 (Marite): EcoSpecs relating to physico-chemical data (PES and REC)

River: Marite		EWR 5	Monitoring site: X3H011Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m.	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 6.5 to 8.0.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L.	
	Turbidity	Vary by a small amount from the natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.015 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 84 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

**Table 5.2.6: EWR 6 (Mutlumuvi): EcoSpecs relating to physico-chemical data (PES)**

River: Mutlumuvi		EWR 6	Monitoring site: X3H008Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 42 mS/m (A/B category).	
	pH	The 5 <sup>th</sup> percentile of the data must range from 6.5 to 8.0, and the 95 <sup>th</sup> percentile from 6.5 to 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L.	
	Turbidity	Small to moderate changes to the catchment landuse resulting in minor effects of silting of habitats, largely of a temporary nature, with very intermittent <u>temporary</u> unnaturally high sediment loads and high turbidity.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 84 mg/m <sup>2</sup>	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

Table 5.2.7: EWR 7 (Tlulandziteka): EcoSpecs relating to physico-chemical data (PES and REC)

River: Tlulandziteka		EWR 7	Monitoring site: X3H008Q01
Water quality metrics		ECOSPEC: PES	
Inorganic salts	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 42 mS/m (A/B category).	
	pH	The 5 <sup>th</sup> percentile of the data must range from 6.5 to 8.0, and the 95 <sup>th</sup> percentile from 6.5 to 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L.	
	Turbidity	Moderate changes to the catchment landuse resulting in <u>temporary</u> unnaturally high sediment loads and high turbidity.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be < 10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 84 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

**Table 5.2.8: EWR 8 (Lower Sand): EcoSpecs relating to physico-chemical data (PES and REC)**

River: Sand		EWR 8	Monitoring site: X3H008Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Inorganic salts</b>	MgSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 20 mg/L.	
	MgCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 15 mg/L.	
	CaCl <sub>2</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 21 mg/L.	
	NaCl	The 95 <sup>th</sup> percentile of the data must be ≤ 45 mg/L.	
	CaSO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 351 mg/L.	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 42 mS/m (A/B category).	
	pH	The 5 <sup>th</sup> percentile of the data must range from 6.5 to 8.0, and the 95 <sup>th</sup> percentile from 6.5 to 8.8.	
	Temperature	Small deviation from the natural temperature range.	
	Dissolved Oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.5 mg/L.	
	Turbidity	Small to moderate changes to the catchment landuse resulting in minor effects of silting of habitats, largely of a temporary nature, with very intermittent <u>temporary</u> unnaturally high sediment loads and high turbidity.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L.	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L.	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be <10 µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup> .	
	Toxics	An impact is expected if the 95 <sup>th</sup> percentile of the data exceeds the TWQR as stated in DWAF (1996).	

5.3 Komati Catchment  
Table 5.3.1: EWR K1 – Upper Komati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	2	RC	X1H033Q01
EWR Site	K1	PES	X1H033Q01
Water Quality Constituents		Present State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	A	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	A	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Nutrients	SRP	B/C (0.025)	0.017 mg/L.
	TIN	A (0.09)	0.129 mg/L.
Physical Variable	pH	B (6.3 – 8.58)	
	Temperature	Expected to increase due to dams and surface runoff	Potential impacts associated with the operational procedure and releases from the Nooitgedacht Dam as there are only surface warm water spills.
	Dissolved Oxygen	No data	
	Turbidity (NTU)	No data- The river banks are eroded due to steep slopes as well as animal trampling. The Dam will reduce turbidity.	
Response variables	Chl-a periphyton	Chlorophyll-a values low (2.9 µg/L) and phaeon phyte (2.5 µg/L) in Nooitgedacht Dam. Diatoms on rocks in river.	
	Chl-a phytoplankton	5 µg/L	
	Biotic community composition - macroinvertebrate	Fish: B/C ASPT: 5.4 – 5.8 SASS5: 134-163	
	Instream toxicity	Not sampled	
Toxics	Fluoride	200 (A)	1500 µg/L (A category)
	Al		20 µg/L (A category)
	Ammonia		15 µg/L (A category)
	As		20 µg/L (A category)
	Atrazine		19 µg/L (A category)
	Cd soft		0.2 µg/L (A category)
	Cd mod		0.2 µg/L (A category)
	Cd hard		0.3 µg/L (A category)
	Chlorine		0.4 µg/L (A category)
	Cr(III)		24 µg/L (A category)
	Cr(VI)		14 µg/L (A category)
	Cu soft		0.5 µg/L (A category)
	Cu mod		1.5 µg/L (A category)
	Cu hard		2.4 µg/L (A category)
Cyanide		4 µg/L (A category)	

Table 5.3.2: EWR K2 – Upper Komati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	3	RC	X1H001Q01
EWR Site	K2	PES	X1H001Q01
Water Quality Constituents		Resent State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	B	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	A	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Nutrients	SRP	B (0.018)	0.017 mg/L.
	TIN	B (0.146)	0.129 mg/L.
Physical Variable	pH	B/C (6.2 – 9.19)	
	Temperature	No data	Impacts expected as a result of warming in the Vygeboom and operational procedures.
	Dissolved Oxygen	No data	
	Turbidity (NTU)	High sediment inputs especially from Seeikoespruit.	
Response variables	Chl-a periphyton	Chlorophyll-a values in Vygeboom Dam low (1.0-1.25 µg/L).	
	Chl-a phytoplankton	< 5 µg/L	
	Biotic community composition - macroinvertebrate	ASPT: 6-8 SASS5 ca.200	
	Instream toxicity	Not sampled	
	Toxics	Fluoride	A (252)
Al		1500 µg/L (A category)	
Ammonia		20 µg/L (A category)	
As		15 µg/L (A category)	
Atrazine		20 µg/L (A category)	
Cd soft		19 µg/L (A category)	
Cd mod		0.2 µg/L (A category)	
Cd hard		0.2 µg/L (A category)	
Chlorine		0.3 µg/L (A category)	
Cr(III)		0.4 µg/L (A category)	
Cr(VI)		24 µg/L (A category)	
Cu soft		14 µg/L (A category)	
Cu mod		0.5 µg/L (A category)	
Cu hard		1.5 µg/L (A category)	
Cyanide	2.4 µg/L (A category)		



Table 5.3.3: EWR K3 – Lower Komati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	7	RC	X1H003Q01
EWR Site	K3	PES	X1H003Q01
Water Quality Constituents		Resent State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	B	20 mg/L.
	MgCl <sub>2</sub>	B	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	B	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Nutrients	SRP	C (0.025)	0.017 mg/L.
	TIN	C (0.32)	0.129 mg/L.
Physical Variable	pH	B (6.01-8.77)	5 <sup>th</sup> Percentile: 6.5-6.8 95 <sup>th</sup> Percentile: 8.0-8.5
	Temperature	No data	Vary not more than 2°C when compared to natural mean monthly.
	Dissoived Oxygen	No data	
	Turbidity (NTU)	Expected high turbidity after rains due to removal of riparian vegetation and the natural steep topography.	7-8 mg/L.
Response variables	Chl-a periphyton	Not sampled/ rocks clogged with filamentous algae.	
	Chl-a phytoplankton		< 5 µg/L
	Biotic community composition - macroinvertebrate	ASPT: 5 SASS5: < 50	ASPT 6
	Instream toxicity	Not sampled	
Toxics	Fluoride	225 (A)	1500 µg/L (A category)
	Al		20 µg/L (A category)
	Ammonia		15 µg/L (A category)
	As		20 µg/L (A category)
	Atrazine		19 µg/L (A category)
	Cd soft		0.2 µg/L (A category)
	Cd mod		0.2 µg/L (A category)
	Cd hard		0.3 µg/L (A category)
	Chlorine		0.4 µg/L (A category)
	Cr(III)		24 µg/L (A category)
	Cr(VI)		14 µg/L (A category)
	Cu soft		0.5 µg/L (A category)
	Cu mod		1.5 µg/L (A category)
	Cu hard		2.4 µg/L (A category)
Cyanide		4 µg/L (A category)	

Table 5.3.4: EWR G1 – Upper Komati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	4	RC	X1H019Q01
EWR Site	G1	PES	X1H019Q01
Water Quality Constituents		Resent State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	A	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	A	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Nutrients	SRP	B/C (0.014)	> 0.125 mg/L.
	TIN	B/C (0.235)	0.75 mg/L.
Physical Variable	pH	B/C (7.25-8.44)	5 <sup>th</sup> Percentile: 6.00-6.25 95 <sup>th</sup> Percentile: 8.37-8.69
	Temperature	No data	
	Dissolved Oxygen	No data	
	Turbidity (NTU)	High TDS values recorded (range 7 to 155).	
Response variables	Chl-a periphyton	None recorded	
	Chl-a phytoplankton	None recorded	
	Biotic community composition - macroinvertebrate	ASPT: 4.21-6.3 SASS5:30-160	ASPT 5
	Instream toxicity	Not sampled	
Toxics	Fluoride	167 (A)	1500 µg/L (A category)
	Al		20 µg/L (A category)
	Ammonia		15 µg/L (A category)
	As		20 µg/L (A category)
	Atrazine		19 µg/L (A category)
	Cd soft		0.2 µg/L (A category)
	Cd mod		0.2 µg/L (A category)
	Cd hard		0.3 µg/L (A category)
	Chlorine		0.4 µg/L (A category)
	Cr(III)		24 µg/L (A category)
	Cr(VI)		14 µg/L (A category)
	Cu soft		0.5 µg/L (A category)
	Cu mod		1.5 µg/L (A category)
	Cu hard		2.4 µg/L (A category)
Cyanide		4 µg/L (A category)	

Table 5.3.5: EWR T1 – Upper Komati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	6	RC	
EWR Site	T1	PES	
Water Quality Constituents		Resent State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	
	Na <sub>2</sub> SO <sub>4</sub>	A	
	MgCl <sub>2</sub>	A	
	CaCl <sub>2</sub>	A	
	NaCl	B	
	CaSO <sub>4</sub>	B	
Nutrients	SRP	C/D (0.04)	
	TIN	A (0.186)	
Physical Variable	pH	A (7.78-7.74)	
	Temperature	No data	No impacts expected
	Dissolved Oxygen	No data	
	Turbidity (NTU)	Expected high turbidity after rains due to removal of riparian vegetation and the natural steep topography.	
Response variables	Chl-a periphyton	Not sampled	
	Chl-a phytoplankton	Not sampled	
	Biotic community composition - macroinvertebrate	ASPT:5.7 7.2 SASS: 163-239	
	Instream toxicity	Not sampled	
Toxics	Fluoride	363 (A)	
	Al	20 µg/L (A category)	
	Ammonia	15 µg/L (A category)	
	As	20 µg/L (A category)	
	Atrazine	19 µg/L (A category)	
	Cd soft	0.2 µg/L (A category)	
	Cd mod	0.2 µg/L (A category)	
	Cd hard	0.3 µg/L (A category)	
	Chlorine	0.4 µg/L (A category)	
	Cr(III)	24 µg/L (A category)	
	Cr(VI)	14 µg/L (A category)	
	Cu soft	0.5 µg/L (A category)	
	Cu mod	1.5 µg/L (A category)	
	Cu hard	2.4 µg/L (A category)	
Cyanide	4 µg/L (A category)		

Table 5.3.6: EWR L1 – Lomati

River	Upper Komati	DWS Water Quality Monitoring Points	
WQU	10	RC	X1HO49Q1
EWR Site	L1	PES	X1HO49Q1
Water Quality Constituents		Resent State	Quality EcoSpecs (Benchmark Classification)
Inorganic Salts	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	A	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	B	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Nutrients	SRP	C (0.022)	0.058 mg/L.
	TIN	B/C (0.277)	<0.25 mg/L.
Physical Variable	pH	B (6.9-8.6)	5 <sup>th</sup> Percentile: 5.75-6.00 95 <sup>th</sup> Percentile: 8.05-8.37
	Temperature	No data	Driekoppies Dam operational procedures will impact on temperatures due to releases from deeper colder water.
	Dissolved Oxygen	No data	
	Turbidity (NTU)	Sediments settled out in dams.	
Response variables	Chl-a periphyton	Not sampled	21 mg/m <sup>2</sup>
	Chl-a phytoplankton		5 µg/L in Driekoppies Dam
	Biotic community composition - macroinvertebrate	ASPT: 5.5-7.0 SASS5:60-250	ASPT > 6
	Instream toxicity	Not sampled	
Toxics	Fluoride	154 (A)	1500 µg/L (A category)
	Al		20 µg/L (A category)
	Ammonia		15 µg/L (A category)
	As		20 µg/L (A category)
	Atrazine		19 µg/L (A category)
	Cd soft		0.2 µg/L (A category)
	Cd mod		0.2 µg/L (A category)
	Cd hard		0.3 µg/L (A category)
	Chlorine		0.4 µg/L (A category)
	Cr(III)		24 µg/L (A category)
	Cr(VI)		14 µg/L (A category)
	Cu soft		0.5 µg/L (A category)
	Cu mod		1.5 µg/L (A category)
	Cu hard		2.4 µg/L (A category)
Cyanide		4 µg/L (A category)	

## 6. GROUNDWATER - QUANTITY COMPONENT

The groundwater quantity component was determined using values (recharge, baseflow, groundwater use and stress index) obtained during the determination of water resource classes and associated resource quality objectives in the Inkomati catchment, (DWS 2015), shown in Table 6.1. The average annual groundwater recharge for the entire catchment based on the Groundwater Resource Assessment project Phase II (GRA II) dataset is estimated to be more than 1 500 Mm<sup>3</sup>/a. The Ecological Water Requirements\_Maintenance Low Flow (EWR\_MLF) values were obtained from the Rapid groundwater Reserve determination study for the Inkomati catchment (AGES, 2010).

Population values were obtained from the Water Services dataset of 2011. The Basic Human Needs Reserve provides for the essential needs of individuals served by the water resource in question and includes water for drinking, food preparation and for personal hygiene. A life-line amount of 25 litres per person per day was used. The current study approach also took cognisance of the GRA II and WARMS 2013 datasets to achieve a more balanced estimate of groundwater use. The total groundwater use for the Inkomati catchment was subsequently estimated at 52.3 Mm<sup>3</sup>/a. The groundwater stress index reflects groundwater used versus recharge.

Table 6.1 Summary of the Reserve

Quaternary	Area(km <sup>2</sup> )	Recharge (Mm <sup>3</sup> /a)	Population	Baseflow (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	BHN Reserve (Mm <sup>3</sup> /a)	Reserve (Mm <sup>3</sup> /a)	Groundwater Use (Mm <sup>3</sup> /a)	Stress Index
X11A	672	24.36	2561	7.21	11.47	0.023	11.49	0.33	1%
X11B	597	22.93	8946	6.96	10.72	0.082	10.80	0.83	4%
X11C	319	13.12	30051*	3.68	5.99	0	5.99	1.56	12%
X11D	590	25.97	30051*	23.59	12.24	0	12.24	0.51	2%
X11E	242	11.38	30051*	9.97	4.77	0	4.77	0.02	0%
X11F	183	9.49	30051*	7.54	4.24	0	4.24	0.15	2%
X11G	264	20.58	30051*	17.25	9.65	0	9.65	0.2	1%
X11H	265	21.55	30051*	17.17	10.09	0	10.09	0.44	2%
X11J	186	15.75	30051*	11.98	7.24	0	7.24	0.26	2%
X11K	211	16.73	30051*	10	7.38	0	7.38	0.82	5%
X12A	244	15.45	30051*	13.94	7.27	0	7.27	0.08	0%
X12B	155	10.3	30051*	12.05	4.84	0	4.84	0.04	0%
X12C	186	13.28	30051*	8.03	6.52	0	6.52	0.08	1%
X12D	223	14.19	2735	7.54	6.23	0.025	6.25	0.29	2%
X12E	333	20.72	1020	11.5	9.63	0.009	9.64	0.09	0%
X12F	313	21.69	59707	10.85	10.63	0.545	11.17	0.13	1%
X12G	239	16.9	13058	3.42	8.11	0.119	8.23	0.05	0%
X12H	286	26.31	6177	9.41	12.6	0.056	12.66	0.05	0%
X12J	296	29.62	246	5.77	14.3	0.002	14.30	0.16	1%
X12K	286	27.93	10338	9.37	13.57	0.094	13.66	0.08	0%
X13J	828	20.68	157637	0	8.63	1.438	10.07	0.7	3%
X13K	621	10.25	56636	6.86	0.13	0.517	0.65	2.56	25%
X13L	286	5.17	3387	2.83	0.36	0.031	0.39	0.98	19%
X14A	141	8.89	30051*	0	4.2	0	4.20	0.09	1%
X14B	185	11.39	457	0	5.41	0.004	5.41	0.09	1%

Quaternary	Area(km <sup>2</sup> )	Recharge (Mm <sup>3</sup> /a)	Population	Baseflow (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	BHN Reserve (Mm <sup>3</sup> /a)	Reserve (Mm <sup>3</sup> /a)	Groundwater Use (Mm <sup>3</sup> /a)	Stress Index
X14F	117	6.89	30051*	4.62	3.36	0	3.36	0.07	1%
X14G	204	6	89074	6.15	2.29	0.813	3.10	0.62	10%
X14H	360	8.67	38790	3.19	3.62	0.354	3.97	6.68	77%
X21A	265	13.85	446	2.69	0.93	0.004	0.93	0.67	5%
X21B	378	18.81	28783*	4.01	3.27	0	3.27	0.45	2%
X21C	311	16.25	869	3.21	7.67	0.008	7.68	0.75	5%
X21D	219	10.95	28783*	2.04	4.84	0	4.84	0.14	1%
X21E	345	29.69	28783*	3.59	16.58	0	16.58	0.2	1%
X21F	397	18.3	9513	3.17	8.83	0.087	8.92	0.83	5%
X21G	347	17.51	14487	4.24	8	0.132	8.13	0.16	1%
X21H	229	21.19	28783*	5.7	10.23	0	10.23	0.08	0%
X21J	355	29.26	120	6.45	14.08	0.001	14.08	0.15	1%
X21K	245	22.78	625	4.16	11.13	0.006	11.14	0.11	0%
X22A	252	23.67	28783*	4.28	11.3	0	11.30	0.07	0%
X22B	227	21.24	28783*	4.36	9.75	0	9.75	0.46	2%
X22C	366	20.69	28783*	7.51	8.43	0	8.43	1.03	5%
X22D	274	25.58	12182	3.84	12.02	0.111	12.13	0.15	1%
X22E	153	13.92	28783*	3.9	6.75	0	6.75	0.04	0%
X22F	212	11.41	947	2.05	3.02	0.009	3.03	1.19	10%
X22G	107	9.39	28783*	3.02	4.72	0	4.72	0.11	1%
X22H	200	10.22	5440	2.09	2.95	0.050	3.00	0.92	9%
X22J	240	12.75	23373	2.56	5.48	0.213	5.69	0.81	6%
X22K	335	14.57	33140	3.55	42.45	0.302	42.75	2.89	20%
X23A	127	10.69	28783*	1.71	4.79	0	4.79	0.07	1%
X23B	229	12.38	28783*	3.18	5.13	0	5.13	0.65	5%
X23C	81	6.98	28783*	3.34	2.93	0	2.93	0.12	2%
X23D	182	12.89	28783*	2.43	6.11	0	6.11	0.17	1%

**CONTINUES ON PAGE 130 - PART 2**





ANNUAL REPORT  
2019

ANNUAL REPORT  
2019



Vol. 649

19 July  
Julie 2019

No. 42584

**PART 2 OF 3**

Quaternary	Area(km <sup>2</sup> )	Recharge (Mm <sup>3</sup> /a)	Population	Baseflow (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	BHN Reserve (Mm <sup>3</sup> /a)	Reserve (Mm <sup>3</sup> /a)	Groundwater Use (Mm <sup>3</sup> /a)	Stress Index
X23E	180	12.02	28783*	3.18	5.32	0	5.32	0.16	1%
X23F	310	20.29	53913	1.63	8.5	0.492	8.99	2.41	12%
X23G	225	11.2	596	2.24	4.97	0.005	4.98	0.26	2%
X23H	306	14.59	3837	1.92	10.78	0.035	10.82	0.66	4%
X24A	249	7.57	54450	2.52	3.42	0.497	3.92	0.4	5%
X24B	335	11.06	171771	2.46	5.13	1.567	6.70	0.82	7%
X24C	286	10.49	184218	1.35	4.87	1.681	6.55	0.09	1%
X24D	302	10.58	340	2.08	52.22	0.003	52.22	0.38	4%
X24E	526	12.28	5073	0	5.56	0.046	5.61	0.22	2%
X24F	262	5.76	323	0	1.89	0.003	1.89	0.72	12%
X24G	620	11.69	28783*	0	4.84	0	4.84	0.12	1%
X24H	769	12.78	28783*	0	90	0	90.00	0.98	8%
X31A	230	39.15	11707	2.14	19.1	0.107	19.21	2.33	6%
X31B	195	32.54	1722	1.81	7.43	0.016	7.45	0.11	0%
X31C	154	25.8	355	1.44	5.21	0.003	5.21	0.11	0%
X31D	192	17.49	2099	0.77	11.35	0.019	11.37	1.16	7%
X31E	214	26.11	31805	1.92	12.42	0.290	12.71	0.37	1%
X31F	94	11.66	2255	1.88	5.41	0.021	5.43	0.08	1%
X31G	169	12.43	22348	1.65	10.04	0.204	10.24	1.4	11%
X31H	60	6.69	26567*	0.6	2.98	0	2.98	0.12	2%
X31J	154	13.54	30984	1.57	5.55	0.283	5.83	0.53	4%
X31K	488	12.58	97372	0	29.39	0.889	30.28	0.58	5%
X31L	304	13.71	41155	0	6.09	0.376	6.47	0.51	4%
X31M	709	12.79	21584	0	4.44	0.197	4.64	0.95	7%
X32A	112	7.4	18850	0	3.24	0.172	3.41	0.5	7%
X32B	55	3.38	11671	1.07	1.28	0.106	1.39	0.32	9%
X32C	233	6.52	57961	0.52	3.32	0.529	3.85	0.91	14%

Quaternary	Area(km <sup>2</sup> )	Recharge (Mm <sup>3</sup> /a)	Population	Baseflow (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	BHN Reserve (Mm <sup>3</sup> /a)	Reserve (Mm <sup>3</sup> /a)	Groundwater Use (Mm <sup>3</sup> /a)	Stress Index
X32D	100	6.75	30860	1.47	2.93	0.282	3.21	0.32	5%
X32E	78	4.68	33350	0.95	1.74	0.304	2.04	2.36	50%
X32F	157	4.71	32638	0.76	2.73	0.298	3.03	0.4	8%
X32G	336	5.48	36640	0.99	1.7	0.334	2.03	1.02	19%
X32H	488	7.21	19418	0	2.84	0.177	3.02	0.28	4%
X32J	355	4.96	26567*	0	9.32	0	9.32	0.09	2%
X33A	600	7.85	26567*	0	3.16	0	3.16	0.05	1%
X33B	311	3.24	26567*	0	0.9	0	0.90	0.02	1%
X33C	183	1.27	26567*	0	0.24	0	0.24	0.03	2%
X33D	350	3.92	26567*	0	1.93	0	1.93	0	0%
X40A	924	9.59	0	0	2.77	0	2.77	0.1	1%
X40B	743	7.71	0	0	2.4	0	2.40	0.07	1%
X40C	941	10.89	7552	0	3.87	0.069	3.94	0.15	1%
X40D	589	4.89	0	0	1.59	0	1.59	0.06	1%

\*Population estimated based on the average of the secondary catchment X1, X2 and X2

## 7. GROUNDWATER - QUALITY COMPONENT

The groundwater quality should comply with the water quality guidelines as shown in Table 7.1. The groundwater quality for the Inkomati catchment was assessed per quaternary catchment (Table 7.2). A summary of the water quality class and parameters of concern per quaternary catchment is shown in Table 7.3. The parameter of concern is the parameter that was used to make a decision about the water quality Class of the quaternary.

**Table 7.1: Assessment guide for the suitability of groundwater for potable use**

Chemical Parameter	Target Water Quality Ranges <sup>1)</sup>			
	Class 0	Class I	Class II	Class III
pH (pH units)	6 – 9	5 – 6 & 9 – 9.5	4 – 5 & > 9.5 – 10	<4 & >10
Electrical Conductivity (mS/m)	< 70	70 - 150	150 – 370	>370
Calcium as Ca	< 80	80 - 150	150 – 300	>300
Magnesium as Mg	< 70	70 - 100	100 – 200	>200
Sodium as Na	< 100	100 - 200	200 – 400	>400
Chloride as Cl	< 100	100 - 200	200 – 600	>600
Sulphate as SO <sub>4</sub>	< 200	200 - 400	400 – 600	>600
Nitrate as NO <sub>x</sub> -N	< 6	6 - 10	10 – 20	>20
Fluoride as F	<0.7	0.7 – 1.0	1.0 – 3.5	>3.5

<sup>1)</sup>Ref: *Quality of Domestic Water Supplies, Volume 1: Assessment Guide, 2<sup>nd</sup> Ed.* 1998. Water Research Commission Report No: TT 101/98. Pretoria, South Africa. Note: all units of measurement are in mg/l, unless otherwise stated.

## Quaternary Catchment

Groundwater quality data was obtained from the WMS and used to determine the quality per quaternary catchment, see Table 7.2 and Table 7.3 for a summary of the water quality class and parameters of concern.

**Table 7.2 Groundwater quality per Quaternary Catchment**

Chemical Parameter	Unit	Quaternary Catchments X11A, X11B, X11C, X11D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X11A*	X11B*	X11C*	X11D*	X11A*	X11B*	X11C*	X11D*		X11A*	X11B*	X11C*	X11D*
pH		44	41	42	42	7.99	8.03	8.02	8.02	5.0 – 9.5	8.79	8.83	8.82	8.82
Electrical Conductivity	mS/m	44	41	42	42	22.75	22.70	22.60	22.60	<150	25.03	24.97	24.86	24.86
Calcium as Ca	mg/l	39	36	37	37	23.07	22.80	22.53	22.53	<150	25.37	25.07	24.78	24.78
Magnesium as Mg	mg/l	39	36	37	37	6.72	6.70	6.68	6.68	<100	7.39	7.37	7.35	7.35
Sodium as Na	mg/l	38	36	37	37	8.78	8.63	8.51	8.51	<200	9.65	9.49	9.36	9.36
Total Alkalinity as CaCO <sub>3</sub>	mg/l	39	36	37	37	98.80	98.43	98.06	98.06	N/A	108.68	108.27	107.87	107.87
Chloride as Cl	mg/l	40	37	38	38	5.38	5.35	5.17	5.17	<200	5.92	5.88	5.69	5.69
Sulphate as SO <sub>4</sub>	mg/l	38	36	37	37	5.89	5.58	5.45	5.45	<400	6.48	6.14	6.00	6.00
Nitrate as NO <sub>x</sub> -N	mg/l	40	37	38	38	0.11	0.11	0.11	0.11	<10	0.12	0.12	0.12	0.12
Fluoride as F	mg/l	39	36	37	37	0.17	0.17	0.17	0.17	<1.0	0.18	0.19	0.19	0.19

Chemical Parameter	Unit	Quaternary Catchments X11E, X11F, X11G, X11H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X11E*	X11F*	X11G*	X11H	X11E*	X11F*	X11G*	X11H		X11E*	X11F*	X11G*	X11H
pH		42	42	4	24	8.02	8.02	7.98	7.54	5.0 – 9.5	8.82	8.82	8.77	8.30
Electrical Conductivity	mS/m	42	42	4	24	22.60	22.60	15.85	17.60	<150	24.86	24.86	17.44	19.36
Calcium as Ca	mg/l	37	37	4	23	22.53	22.53	12.40	12.21	<150	24.78	24.78	13.64	13.43
Magnesium as Mg	mg/l	37	37	4	23	6.68	6.68	11.55	5.70	<100	7.35	7.35	12.71	6.27
Sodium as Na	mg/l	37	37	4	23	8.51	8.51	4.00	10.40	<200	9.36	9.36	4.40	11.44
Total Alkalinity as CaCO <sub>3</sub>	mg/l	37	37	4	23	98.06	98.06	81.80	70.80	N/A	107.87	107.87	89.98	77.88
Chloride as Cl	mg/l	38	38	4	23	5.17	5.17	1.50	5.00	<200	5.69	5.69	1.65	5.50
Sulphate as SO <sub>4</sub>	mg/l	37	37	4	23	5.45	5.45	4.05	4.40	<400	6.00	6.00	4.46	4.84
Nitrate as NO <sub>x</sub> -N	mg/l	38	38	4	23	0.11	0.11	0.13	0.77	<10	0.12	0.12	0.14	0.85
Fluoride as F	mg/l	37	37	4	23	0.17	0.17	0.23	0.16	<1.0	0.19	0.19	0.25	0.17
Chemical Parameter	Unit	Quaternary Catchments X11J, X11K, X12A, X12B												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X11J*	X11K	X12A*	X12B*	X11J*	X11K	X12A*	X12B*		X11J*	X11K	X12A*	X12B*
pH		24	3	10	4	7.54	6.71	7.17	7.98	5.0 – 9.5	8.30	7.38	7.88	8.77
Electrical Conductivity	mS/m	24	3	10	4	17.60	16.2	14.05	15.85	<150	19.36	17.82	15.46	17.44
Calcium as Ca	mg/l	23	3	10	4	12.21	10.1	5.85	12.40	<150	13.43	11.11	6.44	13.64
Magnesium as Mg	mg/l	23	3	10	4	5.70	5.3	3.50	11.55	<100	6.27	5.83	3.85	12.71
Sodium as Na	mg/l	23	3	10	4	10.40	13.4	8.35	4.00	<200	11.44	14.74	9.19	4.40
Total Alkalinity as CaCO <sub>3</sub>	mg/l	23	3	10	4	70.80	75.3	31.50	81.80	N/A	77.88	82.83	34.65	89.98
Chloride as Cl	mg/l	23	3	10	4	5.00	5	3.55	1.50	<200	5.50	5.50	3.91	1.65
Sulphate as SO <sub>4</sub>	mg/l	23	3	10	4	4.40	4.5	4.60	4.05	<400	4.84	4.95	5.06	4.46
Nitrate as NO <sub>x</sub> -N	mg/l	23	3	10	4	0.77	0.29	0.35	0.13	<10	0.85	0.32	0.38	0.14
Fluoride as F	mg/l	23	3	10	4	0.16	0.11	0.12	0.23	<1.0	0.17	0.12	0.13	0.25

Chemical Parameter	Unit	Quaternary Catchments X12C, X12D, X12E, X12F												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X12C*	X12D	X12E*	X12F	X12C*	X12D	X12E*	X12F		X12C*	X12D	X12E*	X12F
pH		51	50	51	11	8.54	8.55	8.54	7.99	5.0 – 9.5	9.39	9.40	9.39	8.79
Electrical Conductivity	mS/m	51	50	51	11	61.00	61.10	61.00	43.80	<150	67.10	67.21	67.10	48.18
Calcium as Ca	mg/l	47	46	47	11	6.10	6.10	6.10	22.80	<150	6.71	6.71	6.71	25.08
Magnesium as Mg	mg/l	46	45	46	11	0.63	0.50	0.63	17.40	<100	0.69	0.55	0.69	19.14
Sodium as Na	mg/l	45	44	45	11	110.40	110.66	110.40	26.80	<200	121.44	121.73	121.44	29.48
Total Alkalinity as CaCO <sub>3</sub>	mg/l	46	45	46	11	54.50	54.60	54.71	170.00	N/A	59.95	60.06	60.18	187.00
Chloride as Cl	mg/l	47	46	47	11	124.82	124.91	124.82	6.70	<200	137.30	137.40	137.30	7.37
Sulphate as SO <sub>4</sub>	mg/l	47	46	47	11	17.38	17.46	17.38	9.70	<400	19.11	19.21	19.11	10.67
Nitrate as NO <sub>x</sub> -N	mg/l	47	46	47	11	0.05	0.05	0.05	0.27	<10	0.06	0.06	0.06	0.30
Fluoride as F	mg/l	45	44	45	11	9.91	9.93	9.91	0.66	<1.0	9.91	9.93	9.91	0.73
Chemical Parameter	Unit	Quaternary Catchments X12G, X12H, X12J, X12K												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X12G	X12H*	X12J*	X12K	X12G	X12H*	X12J*	X12K		X12G	X12H*	X12J*	X12K
pH		3	11	3	9	8.37	8.10	8.37	8.10	5.0 – 9.5	9.21	8.91	9.21	8.91
Electrical Conductivity	mS/m	3	11	3	9	64.90	44.70	64.90	66.70	<150	71.39	49.17	71.39	73.37
Calcium as Ca	mg/l	3	11	3	9	23.90	17.10	23.90	31.70	<150	26.29	18.81	26.29	34.87
Magnesium as Mg	mg/l	3	11	3	9	63.60	26.80	63.60	30.40	<100	69.96	29.48	69.96	33.44
Sodium as Na	mg/l	3	11	3	9	23.20	30.20	23.20	21.70	<200	25.52	33.22	25.52	23.87
Total Alkalinity as CaCO <sub>3</sub>	mg/l	3	11	3	9	349.10	230.90	349.10	293.70	N/A	384.01	253.99	384.01	323.07
Chloride as Cl	mg/l	3	11	3	9	6.50	9.50	6.50	9.50	<200	7.15	10.45	7.15	10.45
Sulphate as SO <sub>4</sub>	mg/l	3	11	3	9	7.60	14.50	7.60	14.50	<400	8.36	15.95	8.36	15.95
Nitrate as NO <sub>x</sub> -N	mg/l	3	11	3	9	0.32	0.60	0.32	0.50	<10	0.36	0.65	0.36	0.55
Fluoride as F	mg/l	3	11	3	9	0.35	0.39	0.35	0.25	<1.0	0.39	0.43	0.39	0.28

Chemical Parameter	Unit	Quaternary Catchments X13J, X13K, X13L, X14A												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X13J	X13K	X13L*	X14A	X13J	X13K	X13L*	X14A		X13J	X13K	X13L*	X14A
pH		60	19	8	31	8.28	8.12	8.54	7.21	5.0 – 9.5	9.11	8.93	9.39	7.93
Electrical Conductivity	mS/m	60	19	8	31	138.00	155.00	76.40	2.80	<150	150	155.00	84.04	3.08
Calcium as Ca	mg/l	60	19	8	27	52.10	58.50	22.20	1.10	<150	57.31	64.35	24.42	1.21
Magnesium as Mg	mg/l	60	19	8	27	45.40	52.70	23.05	0.50	<100	49.94	57.97	25.36	0.55
Sodium as Na	mg/l	60	19	8	27	201.95	200.10	112.30	2.54	<200	201.95	200.10	123.53	2.79
Total Alkalinity as CaCO <sub>3</sub>	mg/l	60	19	8	27	382.85	395.00	281.95	6.70	N/A	421.14	434.50	310.15	7.37
Chloride as Cl	mg/l	60	19	8	27	189.20	292.47	89.30	5.00	<200	200	292.47	98.23	5.50
Sulphate as SO <sub>4</sub>	mg/l	60	19	8	27	14.60	27.86	5.35	2.00	<400	16.06	30.64	5.89	2.20
Nitrate as NO <sub>3</sub> -N	mg/l	60	19	8	27	0.72	0.42	0.86	0.06	<10	0.79	0.47	0.94	0.07
Fluoride as F	mg/l	60	19	8	27	0.51	0.65	0.81	0.12	<1.0	0.57	0.72	0.89	0.14
Chemical Parameter	Unit	Quaternary Catchments X14B, X14F, X14G, X14H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X14B	X14F	X14G	X14H	X14B	X14F	X14G	X14H		X14B	X14F	X14G	X14H
pH		4	4	54	8	7.97	7.79	8.54	8.54	5.0 – 9.5	8.76	8.56	9.39	9.39
Electrical Conductivity	mS/m	4	4	54	8	303.00	37.15	71.40	76.40	<150	333.30	40.87	78.54	84.04
Calcium as Ca	mg/l	4	4	54	8	130.40	38.40	33.95	22.20	<150	143.44	42.24	37.35	24.42
Magnesium as Mg	mg/l	4	4	54	8	99.20	17.60	43.60	23.05	<100	109.12	19.36	47.96	25.36
Sodium as Na	mg/l	4	4	54	8	495.75	25.10	84.35	112.30	<200	495.75	27.61	92.79	123.53
Total Alkalinity as CaCO <sub>3</sub>	mg/l	4	4	54	8	632.95	148.55	276.25	281.95	N/A	696.25	163.41	303.88	310.15
Chloride as Cl	mg/l	4	4	54	8	831.30	9.95	38.70	89.30	<200	831.30	10.95	42.57	98.23
Sulphate as SO <sub>4</sub>	mg/l	4	4	54	8	60.45	14.15	2.00	5.35	<400	66.50	15.57	2.20	5.89
Nitrate as NO <sub>3</sub> -N	mg/l	4	4	54	8	3.01	0.33	2.19	0.86	<10	3.31	0.36	2.41	0.94
Fluoride as F	mg/l	4	4	54	8	0.64	0.35	0.44	0.81	<1.0	0.70	0.39	0.48	0.89



Chemical Parameter	Unit	Quaternary Catchments X21A, X21B, X21C, X21D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X21A*	X21B*	X21C*	X21D*	X21A*	X21B*	X21C*	X21D*		X21A*	X21B*	X21C*	X21D*
pH		8	8	7	8	8.02	8.02	8.03	8.02	5.0 – 9.5	8.82	8.82	8.83	8.82
Electrical Conductivity	mS/m	8	8	7	8	76.85	76.85	95.70	76.85	<150	84.54	84.54	105.27	84.54
Calcium as Ca	mg/l	8	8	7	8	41.78	41.78	43.25	41.78	<150	45.96	45.96	47.58	45.96
Magnesium as Mg	mg/l	8	8	7	8	33.55	33.55	43.04	33.55	<100	36.90	36.90	47.35	36.90
Sodium as Na	mg/l	8	8	7	8	44.65	44.65	56.70	44.65	<200	49.11	49.11	62.37	49.11
Total Alkalinity as CaCO <sub>3</sub>	mg/l	8	8	7	8	114.48	114.48	116.76	141.56	N/A	125.93	125.93	128.44	155.71
Chloride as Cl	mg/l	8	8	7	8	126.78	126.78	161.82	126.78	<200	139.46	139.46	178.00	139.46
Sulphate as SO <sub>4</sub>	mg/l	8	8	7	8	56.22	56.22	69.54	56.22	<400	61.85	61.85	76.49	61.85
Nitrate as NO <sub>x</sub> -N	mg/l	8	8	7	8	0.65	0.48	0.62	0.48	<10	0.72	0.52	0.68	0.52
Fluoride as F	mg/l	8	8	7	8	0.13	0.13	0.13	0.13	<1.0	0.14	0.14	0.14	0.14
Chemical Parameter	Unit	Quaternary Catchments X21E, X21F, X21G, X21H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X21E*	X21F	X21G*	X21H*	X21E*	X21F	X21G*	X21H*		X21E*	X21F	X21G*	X21H*
pH		9	55	55	7	8.03	8.12	8.12	8.03	5.0 – 9.5	8.83	8.93	8.93	8.83
Electrical Conductivity	mS/m	9	55	55	7	58.00	39.20	39.20	95.70	<150	63.80	43.12	43.12	105.27
Calcium as Ca	mg/l	9	49	49	7	40.31	9.86	9.86	43.25	<150	44.34	10.85	10.85	47.58
Magnesium as Mg	mg/l	9	47	47	7	24.06	3.30	3.30	43.04	<100	26.46	3.63	3.63	47.35
Sodium as Na	mg/l	9	46	46	7	32.60	63.85	63.85	56.70	<200	35.86	70.24	70.24	62.37
Total Alkalinity as CaCO <sub>3</sub>	mg/l	9	48	48	7	112.20	103.90	103.90	116.76	N/A	123.42	114.29	114.29	128.44
Chloride as Cl	mg/l	9	47	47	7	91.74	49.02	49.02	161.82	<200	100.92	53.92	53.92	178.00
Sulphate as SO <sub>4</sub>	mg/l	9	49	49	7	42.91	5.15	5.15	69.54	<400	47.20	5.66	5.66	76.49
Nitrate as NO <sub>x</sub> -N	mg/l	9	49	49	7	0.62	0.05	0.05	0.62	<10	0.68	0.06	0.06	0.68
Fluoride as F	mg/l	9	47	47	7	0.13	3.38	3.38	0.13	<1.0	0.14	3.38	3.72	0.14

Chemical Parameter	Unit	Quaternary Catchments X21J, X21K, X22A, X22B												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X21J	X21K*	X22A*	X22B*	X21J	X21K*	X22A*	X22B*		X21J	X21K*	X22A*	X22B*
pH		7	7	7	4	8.03	8.03	8.03	7.58	5.0 – 9.5	8.83	8.83	8.83	8.34
Electrical Conductivity	mS/m	7	7	7	4	95.70	95.70	95.70	9.00	<150	105.27	105.27	105.27	9.90
Calcium as Ca	mg/l	7	7	7	4	43.25	43.25	43.25	6.30	<150	47.58	47.58	47.58	6.93
Magnesium as Mg	mg/l	7	7	7	4	43.04	43.04	43.04	1.75	<100	47.35	47.35	47.35	1.93
Sodium as Na	mg/l	7	7	7	3	56.70	56.70	56.70	2.10	<200	62.37	62.37	62.37	2.31
Total Alkalinity as CaCO <sub>3</sub>	mg/l	7	7	7	4	116.76	116.76	116.76	26.40	N/A	128.44	128.44	128.44	29.04
Chloride as Cl	mg/l	7	7	7	4	161.82	161.82	161.82	3.35	<200	178.00	178.00	178.00	3.69
Sulphate as SO <sub>4</sub>	mg/l	7	7	7	3	69.54	69.54	69.54	2.00	<400	76.49	76.49	76.49	2.20
Nitrate as NO <sub>x</sub> -N	mg/l	7	7	7	4	0.62	0.62	0.62	0.23	<10	0.68	0.68	0.68	0.25
Fluoride as F	mg/l	7	7	7	4	0.13	0.13	0.13	0.11	<1.0	0.14	0.14	0.14	0.12
Chemical Parameter	Unit	Quaternary Catchments X22C, X22D, X22E, X22F												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X22C*	X22D	X22E*	X22F*	X22C*	X22D	X22E*	X22F*		X22C*	X22D	X22E*	X22F*
pH		5	4	4	3	7.42	7.58	7.51	7.31	5.0 – 9.5	8.16	8.34	8.26	8.04
Electrical Conductivity	mS/m	5	4	4	3	45.40	9.00	37.85	45.40	<150	49.94	9.90	41.64	49.94
Calcium as Ca	mg/l	5	4	4	3	18.10	6.30	17.40	16.70	<150	19.91	6.93	19.14	18.37
Magnesium as Mg	mg/l	5	4	4	3	12.00	1.75	11.85	12.00	<100	13.20	1.93	13.04	13.20
Sodium as Na	mg/l	4	3	3	2	49.70	2.10	46.10	49.70	<200	54.67	2.31	50.71	54.67
Total Alkalinity as CaCO <sub>3</sub>	mg/l	5	4	4	3	177.80	26.40	161.95	177.80	N/A	195.58	29.04	178.15	195.58
Chloride as Cl	mg/l	5	4	4	3	16.70	3.35	13.20	16.70	<200	18.37	3.69	14.52	18.37
Sulphate as SO <sub>4</sub>	mg/l	4	3	3	2	15.90	2.00	22.70	24.60	<400	17.49	2.20	24.97	27.06
Nitrate as NO <sub>x</sub> -N	mg/l	5	4	4	3	2.69	0.23	1.25	2.48	<10	2.96	0.25	1.38	2.73
Fluoride as F	mg/l	5	4	4	3	0.56	0.11	0.60	0.44	<1.0	0.62	0.12	0.66	0.48

Chemical Parameter	Unit	Quaternary Catchments X22G, X22H, X22J, X22K												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X22G*	X22H	X22J*	X22K	X22G*	X22H	X22J*	X22K		X22G*	X22H	X22J*	X22K
pH		3	3	6	6	7.31	7.31	7.81	7.81	5.0 – 9.5	8.04	8.04	8.59	8.59
Electrical Conductivity	mS/m	3	3	6	6	45.40	45.40	43.55	43.55	<150	49.94	49.94	47.91	47.91
Calcium as Ca	mg/l	3	3	6	6	16.70	16.70	34.85	34.85	<150	18.37	18.37	38.34	38.34
Magnesium as Mg	mg/l	3	3	6	6	12.00	12.00	10.95	10.95	<100	13.20	13.20	12.05	12.05
Sodium as Na	mg/l	2	2	6	6	49.70	49.70	53.00	53.00	<200	54.67	54.67	58.30	58.30
Total Alkalinity as CaCO <sub>3</sub>	mg/l	3	3	6	6	177.80	177.80	191.65	191.65	N/A	195.58	195.58	210.82	210.82
Chloride as Cl	mg/l	3	3	6	6	16.70	16.70	14.30	14.30	<200	18.37	18.37	15.73	15.73
Sulphate as SO <sub>4</sub>	mg/l	2	2	6	6	24.60	24.60	9.60	9.60	<400	27.06	27.06	10.56	10.56
Nitrate as NO <sub>x</sub> -N	mg/l	3	3	6	6	2.48	2.48	0.92	0.92	<10	2.73	2.73	1.02	1.02
Fluoride as F	mg/l	3	3	6	6	0.44	0.44	1.86	1.86	<1.0	0.48	0.48	1.86	1.86
Chemical Parameter	Unit	Quaternary Catchments X23A, X23B, X23C, X23D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X23A*	X23B	X23C*	X23D	X23A*	X23B	X23C*	X23D		X23A*	X23B	X23C*	X23D
pH		7	4	6	6	7.40	7.45	7.39	7.39	5.0 – 9.5	8.14	8.19	8.12	8.12
Electrical Conductivity	mS/m	7	4	6	6	24.30	42.80	22.50	22.50	<150	26.73	47.08	24.75	24.75
Calcium as Ca	mg/l	7	4	6	6	18.90	29.90	14.80	14.80	<150	20.79	32.89	16.28	16.28
Magnesium as Mg	mg/l	7	4	6	6	10.60	10.85	10.95	10.95	<100	11.66	11.94	12.05	12.05
Sodium as Na	mg/l	7	4	6	6	16.00	16.50	15.60	15.60	<200	17.60	18.15	17.16	17.16
Total Alkalinity as CaCO <sub>3</sub>	mg/l	7	4	6	6	91.20	127.85	73.85	73.85	N/A	100.32	140.64	81.24	81.24
Chloride as Cl	mg/l	7	4	6	6	10.30	5.90	10.60	10.60	<200	11.33	6.49	11.66	11.66
Sulphate as SO <sub>4</sub>	mg/l	7	4	6	6	6.30	9.10	6.70	6.70	<400	6.93	10.01	7.37	7.37
Nitrate as NO <sub>x</sub> -N	mg/l	7	4	6	6	1.33	0.53	2.02	2.02	<10	1.46	0.58	2.22	2.22
Fluoride as F	mg/l	7	4	6	6	0.34	0.55	0.34	0.34	<1.0	0.37	0.60	0.37	0.37

Chemical Parameter	Unit	Quaternary Catchments X23E, X23F, X23G, X23H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X23E*	X23F*	X23G*	X23H	X23E*	X23F*	X23G*	X23H		X23E*	X23F*	X23G*	X23H
pH		6	6	15	13	7.39	7.39	8.06	8.14	5.0 – 9.5	8.12	8.12	8.87	8.95
Electrical Conductivity	mS/m	6	6	15	13	22.50	22.50	64.80	66.70	<150	24.75	24.75	71.28	73.37
Calcium as Ca	mg/l	6	6	15	13	14.80	14.80	31.30	28.70	<150	16.28	16.28	34.43	31.57
Magnesium as Mg	mg/l	6	6	15	13	10.95	10.95	30.80	29.20	<100	12.05	12.05	33.88	32.12
Sodium as Na	mg/l	6	6	15	13	15.60	15.60	48.50	54.60	<200	17.16	17.16	53.35	60.06
Total Alkalinity as CaCO <sub>3</sub>	mg/l	6	6	15	13	73.85	73.85	291.80	291.80	N/A	81.24	81.24	320.98	320.98
Chloride as Cl	mg/l	6	6	15	13	10.60	10.60	23.40	24.60	<200	11.66	11.66	25.74	27.06
Sulphate as SO <sub>4</sub>	mg/l	6	6	15	13	6.70	6.70	18.70	34.70	<400	7.37	7.37	20.57	38.17
Nitrate as NO <sub>3</sub> -N	mg/l	6	6	15	13	2.02	2.02	1.38	0.21	<10	2.22	2.22	1.51	0.24
Fluoride as F	mg/l	6	6	15	13	0.34	0.34	0.38	0.38	<1.0	0.37	0.37	0.42	0.42
Chemical Parameter	Unit	Quaternary Catchments X24A, X24B, X24C, X24D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X24A	X24B	X24C	X24D	X24A	X24B	X24C	X24D		X24A	X24B	X24C	X24D
pH		5	51	5	13	8.48	8.18	8.14	8.45	5.0 – 9.5	9.33	9.00	8.95	9.30
Electrical Conductivity	mS/m	5	51	5	13	37.10	42.80	69.50	74.30	<150	40.81	47.08	76.45	81.73
Calcium as Ca	mg/l	5	44	5	13	39.60	20.88	38.00	19.60	<150	43.56	22.97	41.80	21.56
Magnesium as Mg	mg/l	5	44	5	13	5.94	21.64	31.30	41.90	<100	6.54	23.81	34.43	46.09
Sodium as Na	mg/l	5	44	5	13	57.17	28.99	97.77	37.10	<200	62.89	31.89	107.54	40.81
Total Alkalinity as CaCO <sub>3</sub>	mg/l	5	44	5	13	131.74	145.74	348.30	380.60	N/A	144.92	160.32	383.13	418.66
Chloride as Cl	mg/l	5	45	5	13	23.22	20.80	61.80	28.50	<200	25.54	22.88	67.98	31.35
Sulphate as SO <sub>4</sub>	mg/l	5	45	5	13	5.10	23.33	13.90	18.50	<400	5.61	25.66	15.29	20.35
Nitrate as NO <sub>3</sub> -N	mg/l	5	43	5	12	0.75	2.54	0.07	2.80	<10	0.82	2.79	0.08	3.08
Fluoride as F	mg/l	4	41	5	11	1.09	0.21	0.91	0.23	<1.0	1.09	0.23	1.00	0.25

Chemical Parameter	Unit	Quaternary Catchments X24E, X24F, X24G, X24H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X24E	X24F	X24G	X24H	X24E	X24F	X24G	X24H		X24E	X24F	X24G	X24H
pH		12	5	23	55	8.61	8.62	8.48	8.25	5.0 – 9.5	9.47	9.48	9.33	9.08
Electrical Conductivity	mS/m	12	5	23	55	100.35	119.80	88.50	77.90	<150	110.39	131.78	97.35	85.69
Calcium as Ca	mg/l	12	5	21	49	36.20	64.40	27.30	39.17	<150	39.82	70.84	30.03	43.08
Magnesium as Mg	mg/l	12	5	21	48	29.55	46.40	26.80	29.43	<100	32.51	51.04	29.48	32.37
Sodium as Na	mg/l	12	5	21	47	190.95	155.70	117.50	68.50	<200	210.05	171.27	129.25	75.35
Total Alkalinity as CaCO <sub>3</sub>	mg/l	12	5	21	49	411.60	420.00	369.50	208.14	N/A	452.76	462.00	406.45	228.96
Chloride as Cl	mg/l	12	5	21	49	108.10	171.70	83.70	105.35	<200	118.91	188.87	92.07	115.88
Sulphate as SO <sub>4</sub>	mg/l	12	5	21	49	8.35	9.00	8.10	22.15	<400	9.19	9.90	8.91	24.37
Nitrate as NO <sub>x</sub> -N	mg/l	12	5	21	49	0.02	0.81	0.05	0.57	<10	0.02	0.89	0.06	0.63
Fluoride as F	mg/l	12	4	21	47	0.97	0.51	0.62	0.38	<1.0	1.06	0.56	0.68	0.42
Chemical Parameter	Unit	Quaternary Catchments X31A, X31B, X31C, X31D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X31A*	X31B	X31C	X31D*	X31A*	X31B	X31C	X31D*		X31A*	X31B	X31C	X31D*
pH		4	50	50	52	7.58	8.08	7.54	8.06	5.0 – 9.5	8.34	8.89	8.29	8.87
Electrical Conductivity	mS/m	4	48	49	50	9.00	23.05	6.83	23.13	<150	9.90	25.36	7.51	25.44
Calcium as Ca	mg/l	4	45	45	47	6.30	21.45	5.50	21.41	<150	6.93	23.59	6.05	23.55
Magnesium as Mg	mg/l	4	45	44	47	1.75	12.79	2.99	12.79	<100	1.93	14.07	3.29	14.07
Sodium as Na	mg/l	3	44	43	46	2.10	2.64	2.00	2.69	<200	2.31	2.90	2.20	2.96
Total Alkalinity as CaCO <sub>3</sub>	mg/l	4	43	45	45	26.40	97.70	28.80	97.70	N/A	29.04	107.47	31.68	107.47
Chloride as Cl	mg/l	4	46	46	48	3.35	3.77	3.30	3.80	<200	3.69	4.14	3.63	4.18
Sulphate as SO <sub>4</sub>	mg/l	3	45	46	47	2.00	11.02	2.00	11.01	<400	2.20	12.12	2.20	12.11
Nitrate as NO <sub>x</sub> -N	mg/l	4	45	46	47	0.23	0.66	0.25	0.66	<10	0.25	0.72	0.28	0.73
Fluoride as F	mg/l	4	50	50	46	0.11	8.08	7.54	0.11	<1.0	0.12	8.89	8.29	0.13

Chemical Parameter	Unit	Quaternary Catchments X31E, X31F, X31G, X31H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X31E	X31F*	X31G	X31H*	X31E	X31F*	X31G	X31H*		X31E	X31F*	X31G	X31H*
pH		20	46	46	52	7.31	7.51	7.51	8.06	5.0 – 9.5	8.04	8.26	8.26	8.87
Electrical Conductivity	mS/m	20	46	46	50	8.52	21.60	21.60	23.13	<150	9.37	23.76	23.76	25.44
Calcium as Ca	mg/l	20	46	46	47	5.49	12.10	12.10	21.41	<150	6.04	13.31	13.31	23.55
Magnesium as Mg	mg/l	20	46	46	47	1.71	6.02	6.02	12.79	<100	1.88	6.63	6.63	14.07
Sodium as Na	mg/l	20	46	46	46	7.52	16.77	16.77	2.69	<200	8.28	18.45	18.45	2.96
Total Alkalinity as CaCO <sub>3</sub>	mg/l	20	46	46	45	33.07	68.19	68.19	97.70	N/A	36.38	75.01	75.01	107.47
Chloride as Cl	mg/l	20	46	46	48	5.00	8.85	8.85	3.80	<200	5.50	9.74	9.74	4.18
Sulphate as SO <sub>4</sub>	mg/l	20	46	46	47	7.31	2.00	2.00	11.01	<400	8.04	2.20	2.20	12.11
Nitrate as NO <sub>3</sub> -N	mg/l	20	46	46	47	0.12	2.19	2.19	0.66	<10	0.13	2.40	2.40	0.73
Fluoride as F	mg/l	20	46	46	46	0.14	0.27	0.27	0.11	<1.0	0.16	0.30	0.30	0.13
Chemical Parameter	Unit	Quaternary Catchments X31J, X31K, X31L, X31M												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X31J*	X31K	X31L	X31M	X31J*	X31K	X31L	X31M		X31J*	X31K	X31L	X31M
pH		4	91	68	50	7.31	8.11	8.01	8.17	5.0 – 9.5	8.04	8.92	8.81	8.98
Electrical Conductivity	mS/m	4	92	68	50	29.40	49.75	98.55	113.10	<150	32.34	54.73	108.41	124.41
Calcium as Ca	mg/l	4	87	68	50	12.75	23.70	44.09	50.90	<150	14.03	26.07	48.50	55.99
Magnesium as Mg	mg/l	4	86	68	50	11.85	17.49	31.34	71.86	<100	13.04	19.24	34.47	79.05
Sodium as Na	mg/l	3	85	68	50	39.80	47.10	134.61	91.30	<200	43.78	51.81	148.07	100.43
Total Alkalinity as CaCO <sub>3</sub>	mg/l	4	85	68	50	109.65	204.70	288.47	481.35	N/A	120.62	225.17	317.31	529.49
Chloride as Cl	mg/l	4	87	68	50	13.65	24.91	108.70	82.40	<200	15.02	27.40	119.57	90.64
Sulphate as SO <sub>4</sub>	mg/l	3	87	68	50	22.70	8.00	13.22	11.75	<400	24.97	8.80	14.54	12.93
Nitrate as NO <sub>3</sub> -N	mg/l	4	85	68	50	1.28	1.65	8.60	4.07	<10	1.40	1.82	9.46	4.47
Fluoride as F	mg/l	4	84	68	50	0.41	0.81	0.79	0.58	<1.0	0.45	0.89	0.87	0.63

Chemical Parameter	Unit	Quaternary Catchments X32A, X32B, X32C, X32D												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X32A	X32B	X32C	X32D	X32A	X32B	X32C	X32D		X32A	X32B	X32C	X32D
pH		22	12	91	25	7.56	7.55	7.96	7.55	5.0 – 9.5	8.31	8.31	8.76	8.31
Electrical Conductivity	mS/m	22	12	91	25	17.35	16.15	47.20	16.60	<150	19.09	17.77	51.92	18.26
Calcium as Ca	mg/l	22	12	91	25	10.22	9.10	23.20	9.80	<150	11.24	10.01	25.51	10.78
Magnesium as Mg	mg/l	22	12	91	25	4.05	2.65	10.53	3.54	<100	4.46	2.92	11.58	3.90
Sodium as Na	mg/l	22	12	90	25	16.53	18.71	54.92	17.10	<200	18.19	20.58	60.41	18.81
Total Alkalinity as CaCO <sub>3</sub>	mg/l	22	12	91	25	63.90	62.00	159.20	64.20	N/A	70.29	68.20	175.12	70.62
Chloride as Cl	mg/l	22	12	91	25	6.70	5.05	23.90	6.80	<200	7.37	5.56	26.29	7.48
Sulphate as SO <sub>4</sub>	mg/l	22	12	90	25	3.00	2.00	7.38	2.00	<400	3.30	2.20	8.12	2.20
Nitrate as NO <sub>x</sub> -N	mg/l	22	12	91	25	1.10	1.53	1.80	1.15	<10	1.21	1.68	1.98	1.27
Fluoride as F	mg/l	22	12	91	25	0.25	0.28	0.67	0.26	<1.0	0.27	0.31	0.74	0.29
Chemical Parameter	Unit	Quaternary Catchments X32E, X32F, X32G, X32H												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X32E	X32F	X32G	X32H	X32E	X32F	X32G	X32H		X32E	X32F	X32G	X32H
pH		84	27	96	69	7.72	8.01	8.11	8.12	5.0 – 9.5	8.50	8.81	8.92	8.93
Electrical Conductivity	mS/m	84	27	96	69	37.80	65.90	123.55	162.00	<150	41.58	72.49	135.91	162.00
Calcium as Ca	mg/l	84	27	96	69	20.94	35.25	52.75	55.30	<150	23.03	38.78	58.03	60.83
Magnesium as Mg	mg/l	84	27	96	69	9.42	15.80	39.90	72.70	<100	10.36	17.38	43.89	79.97
Sodium as Na	mg/l	84	27	96	69	31.45	85.60	143.07	226.60	<200	34.60	94.16	157.38	226.60
Total Alkalinity as CaCO <sub>3</sub>	mg/l	84	27	96	69	142.77	219.90	379.15	591.90	N/A	157.04	241.89	417.07	651.09
Chloride as Cl	mg/l	84	27	96	69	16.95	72.60	125.10	140.70	<200	18.65	79.86	137.61	154.77
Sulphate as SO <sub>4</sub>	mg/l	84	27	96	69	5.23	10.00	14.47	15.80	<400	5.75	11.00	15.92	17.38
Nitrate as NO <sub>x</sub> -N	mg/l	84	27	96	68	1.17	0.93	84	27	<10	1.29	1.02	84	27
Fluoride as F	mg/l	84	27	96	69	0.42	0.82	84	27	<1.0	0.46	0.90	84	27

Chemical Parameter	Unit	Quaternary Catchments X32J, X33A, X33B, X33C												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X32J	X33A	X33B	X33C	X32J	X33A	X33B	X33C		X32J	X33A	X33B	X33C
pH		5	13	3	7	8.74	8.70	8.67	8.68	5.0 – 9.5	9.5	9.5	9.5	9.5
Electrical Conductivity	mS/m	5	13	3	7	172.00	320.00	416.00	141.00	<150	172.00	320.00	416.00	150
Calcium as Ca	mg/l	5	13	3	7	42.00	51.20	74.00	57.70	<150	46.20	56.32	81.40	63.47
Magnesium as Mg	mg/l	5	13	3	7	34.50	73.80	95.00	41.00	<100	37.95	81.18	100	45.10
Sodium as Na	mg/l	5	13	3	7	309.60	597.90	627.60	220.00	<200	309.60	597.90	627.60	220.00
Total Alkalinity as CaCO <sub>3</sub>	mg/l	5	13	3	7	569.80	714.70	584.50	542.60	N/A	626.78	786.17	642.95	596.86
Chloride as Cl	mg/l	5	13	3	7	223.40	634.90	1060.90	154.60	<200	223.40	634.90	1060.90	170.06
Sulphate as SO <sub>4</sub>	mg/l	5	13	3	7	16.40	35.20	38.90	4.60	<400	18.04	38.72	42.79	5.06
Nitrate as NO <sub>x</sub> -N	mg/l	5	13	3	7	0.02	0.02	0.36	0.02	<10	0.02	0.02	0.40	0.02
Fluoride as F	mg/l	5	13	3	7	0.97	1.34	1.60	1.18	<1.0	1.0	1.34	1.60	1.18
Chemical Parameter	Unit	Quaternary Catchments X33D, X40A, X40B, X40C												
		No. of Samples				Ambient GW quality or median <sup>1)</sup>				BHN Reserve <sup>2)</sup>	Groundwater Quality Reserve <sup>3)</sup>			
		X33D*	X40A	X40B	X40C	X33D*	X40A	X40B	X40C		X33D*	X40A	X40B	X40C
pH		4	50	10	43	8.65	8.49	8.67	8.50	5.0 – 9.5	9.5	9.34	9.5	9.35
Electrical Conductivity	mS/m	4	51	10	43	331.00	124.40	152.50	199.00	<150	364.10	136.84	152.50	199.00
Calcium as Ca	mg/l	4	46	10	43	90.65	54.10	69.75	50.54	<150	99.72	59.51	76.73	55.60
Magnesium as Mg	mg/l	4	45	10	43	84.35	78.50	88.25	67.70	<100	92.79	86.35	97.08	74.47
Sodium as Na	mg/l	4	43	10	42	512.65	76.75	178.35	338.95	<200	512.65	84.43	196.19	338.95
Total Alkalinity as CaCO <sub>3</sub>	mg/l	4	44	10	43	561.65	446.35	565.30	616.90	N/A	617.82	490.99	621.83	678.59
Chloride as Cl	mg/l	4	46	10	43	706.15	159.28	211.10	288.60	<200	706.15	175.21	211.10	288.60
Sulphate as SO <sub>4</sub>	mg/l	4	46	10	42	30.45	30.60	7.45	22.50	<400	33.50	33.66	8.20	24.75
Nitrate as NO <sub>x</sub> -N	mg/l	4	44	10	37	0.52	1.52	3.73	0.74	<10	0.57	1.67	4.10	0.81
Fluoride as F	mg/l	4	42	10	43	1.42	0.73	1.12	0.74	<1.0	1.42	0.81	1.12	0.81



Chemical Parameter	Unit	Quaternary Catchments X40D			
		No. of Samples	Ambient GW quality or median <sup>1)</sup>	BHN	Groundwater Quality Reserve <sup>3)</sup>
		X40D	X40D	Reserve <sup>2)</sup>	X40D
pH		38	8.37	5.0 – 9.5	9.21
Electrical Conductivity	mS/m	39	192.50	<150	192.50
Calcium as Ca	mg/l	34	68.78	<150	75.66
Magnesium as Mg	mg/l	33	102.13	<100	102.13
Sodium as Na	mg/l	32	183.93	<200	202.32
Total Alkalinity as CaCO <sub>3</sub>	mg/l	33	513.50	N/A	564.85
Chloride as Cl	mg/l	34	312.94	<200	312.94
Sulphate as SO <sub>4</sub>	mg/l	34	18.47	<400	20.32
Nitrate as NO <sub>3</sub> -N	mg/l	33	4.30	<10	4.72
Fluoride as F	mg/l	32	0.95	<1.0	1.04

\*These quaternaries did not have groundwater quality, as a result the data was extrapolated from the neighbouring quaternary with similar geology.

**Table 7.3: Water Quality Class and parameters of concern**

<b>Quaternary</b>	<b>Class</b>	<b>Water Quality parameters of concern</b>
X11A	0	
X11B	0	
X11C	0	
X11D	0	
X11E	0	
X11F	0	
X11G	0	
X11H	0	
X11J	0	
X11K	0	
X12A	0	
X12B	0	
X12C	3	Fluoride
X12D	3	Fluoride
X12E	1	Chloride
X12F	0	
X12G	1	Magnesium
X12H	0	
X12J	1	Magnesium
X12K	1	Magnesium
X13J	1	Chloride, Electrical Conductivity, Magnesium
X13K	2	Chloride, Electrical Conductivity, Sodium
X13L	1	Electrical Conductivity, Sodium
X14A	0	
X14B	3	Sodium, Chloride
X14F	0	
X14G	1	Electrical Conductivity, Magnesium
X14H	1	Electrical Conductivity, Sodium
X21A	1	Chloride, Electrical Conductivity, Magnesium
X21B	1	Chloride, Electrical Conductivity, Magnesium
X21C	1	Chloride, Electrical Conductivity, Magnesium
X21D	1	Chloride, Electrical Conductivity, Magnesium
X21E	0	
X21F	3	Fluoride
X21G	2	Fluoride
X21H	1	Chloride, Electrical Conductivity
X21J	1	Chloride, Electrical Conductivity
X21K	1	Chloride, Electrical Conductivity
X22A	1	Chloride, Electrical Conductivity, Magnesium
X22B	0	
X22C	0	
X22D	0	
X22E	0	
X22F	0	
X22G	0	
X22H	0	
X22J	2	Fluoride
X22K	3	Fluoride
X23A	0	

<b>Quaternary</b>	<b>Class</b>	<b>Water Quality parameters of concern</b>
X23B	0	
X23C	0	
X23D	0	
X23E	0	
X23F	0	
X23G	1	Magnesium
X23H	0	
X24A	2	Fluoride
X24B	0	
X24C	1	Fluoride
X24D	1	Electrical Conductivity
X24E	1	Chloride, Electrical Conductivity, Sodium, Fluoride
X24F	1	Chloride, Electrical Conductivity, Sodium
X24G	1	Electrical Conductivity, Sodium
X24H	1	Chloride, Electrical Conductivity
X31A	0	
X31B	0	
X31C	0	
X31D	0	
X31E	0	
X31F	0	
X31G	0	
X31H	0	
X31J	0	
X31K	1	Fluoride
X31L	1	Sodium, Electrical Conductivity, Chloride, Magnesium, Nitrate
X31M	1	Electrical Conductivity, Magnesium
X32A	0	
X32B	0	
X32C	0	
X32D	0	
X32E	0	
X32F	1	Fluoride
X32G	2	Nitrate
X32H	2	Electrical Conductivity, Sodium
X32J	2	Chloride, Electrical Conductivity, Sodium
X33A	3	Sodium, Chloride
X33B	3	Chloride, Electrical Conductivity, Sodium, Fluoride
X33C	2	Sodium, Fluoride
X33D	3	Chloride, Sodium
X40A	1	Electrical Conductivity, Chloride, Magnesium, Fluoride
X40B	2	Chloride, Electrical Conductivity, Fluoride
X40C	2	Chloride, Electrical Conductivity, Sodium
X40D	2	Chloride, Electrical Conductivity, Magnesium

## 8. Desktop Wetland Typing and Ecoclassification

**Table 8.1:** Summary of Wetland Resource Units, associated wetlands and the PES and EIS results

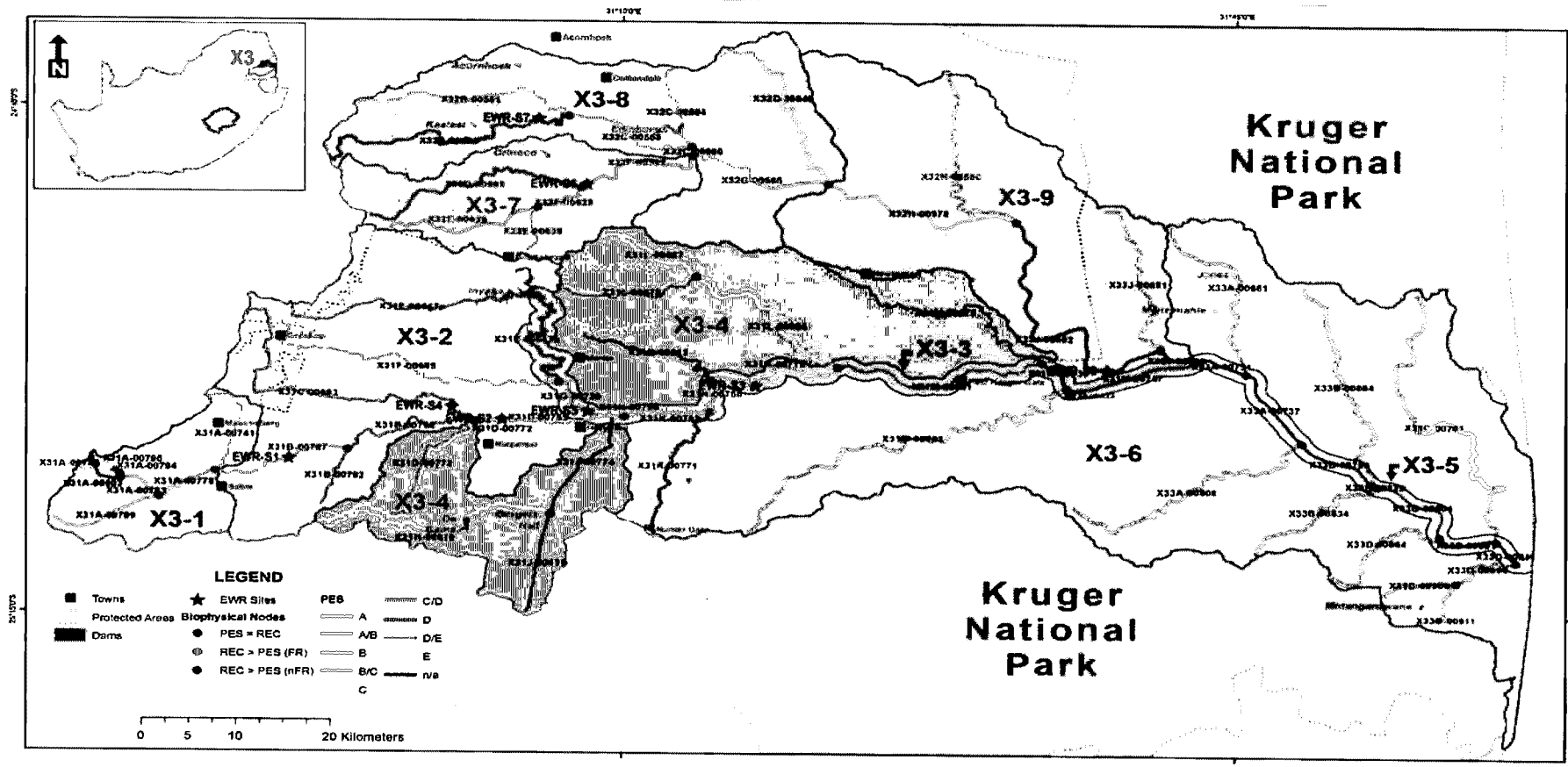
WRU	Quaternary Catchments	Description	Summarised PES and EIS	Impacts
1 – Highveld Grasslands	Portions of catchments X11 and X12.	High density of large wetlands.  Very large pans (rare). The vegetation type is regarded as “Endangered”. Assumed that the wetland - dependent species within this vegetation type are similarly threatened.	Moderate - estimates range from a C to C/D EC.  High EIS	Widespread agriculture (water quality impacts; trampling/grazing, erosion; encroachment into & channelization). Water quality impacts from mining.  Limited impacts from invasive alien plants and the effects of dams drowning some wetlands and reducing water availability.
2 – Escarpment Grasslands	Portions of catchments X11, X12, X21, X23 and X14.	High density of very large wetlands. Vegetation types are “Vulnerable” - assumed that the wetland-dependent species are therefore similarly not critically threatened.	Mostly Moderate EIS scores.  X21A, X21B, X21C and X21F: High EIS scores. In these quaternary catchments diversity of wetland types is higher (number of large pans - rare). Density of wetlands is high. X21A adjacent to the RAMSAR-listed Verloren Vallei.  PES relatively High - estimates range from a B/C to C EC.	Trout farming - dams drowning wetlands & reducing water availability, water quality impacts and canalisation. Agricultural areas - runoff; trampling/grazing & erosion; encroachment & channelization.  Afforestation, invasive alien vegetation, mining.
3 – Bushveld	X22 and portions of catchments X21, X31, X23 & X24.	Moderate (Mountain Bushveld) to low (Sour Bushveld) density. Wetland sites moderate to small. Density & diversity is low, density slightly higher in the Sour Bushveld area. Vegetation type endangered. Vegetation types in the Mountain Bushveld unit - “Least Threatened” - accounts for the slight differences in average EIS scores.	PES of the wetlands is relatively low - Range from a C to D EC.  Quaternary catchments within the Sour Bushveld WRU have Moderate EIS scores, whilst those in the Mountain Bushveld WRU tend to have Low EIS scores.	Extensive afforestation - reduced interflow, reducing water availability for wetlands. Forestry has encroached. Edge effects of forestry & roads disturb wetlands which result in degradation. Irrigation farming, peri-urban areas of the former homelands and invasive alien vegetation have also caused some wetland degradation.

WRU	Quaternary Catchments	Description	Summarised PES and EIS	Impacts
4 – Granite Lowveld	Portions of catchments X31, X32, X40, X33, X24, X14 and X13.	Wetlands are small or cryptic.  Density & diversity is very low – few wetlands. Those that do occur are not rare or high in diversity. The vegetation types are listed as “Vulnerable”. Large areas of this section of the catchment are protected within significant conservation areas.	Low EIS scores.  A wide range of PES: D to A ECs - indicative of the diverse conditions. Entire catchments are impacted by urbanisation of former homeland areas, lower quaternary catchments within Kruger National Park and private conservation areas. Little change from reference conditions in these areas; albeit that very few wetlands are found here.	Afforestation, agriculture and peri-urban areas. Forestry and the extensive agricultural areas have reduced the area of wetlands and the water available. Both landuse activities have encroached in places on the wetlands; whilst peri-urban areas have caused erosion (though increased runoff, grazing pressures and confinement of the drainage lines associated with infrastructure development).
5 – Basalt Lowveld	Portions of catchments X40, X33, X24 and X13.	Wetlands confined to valley bottom positions.  Density and diversity is very low. A few that do occur are not rare types or occur in high diversity relative to one another. The vegetation types are listed as “Least Threatened”.	Low EIS scores.  PES very high – in A & B ECs.  Notable exceptions are the quaternaries X13J, X13K and X13L which have been heavily impacted by urban and peri-urban areas of the former homelands, as well as by extensive irrigation farming.	Most of the quaternaries are located within the Kruger National Park, and no significant impacts at a regional (catchment) scale are likely to have occurred.
6 - Lebombo	Portions of catchments X40, X33 and X24.	No wetlands of any regional importance are expected due to steep slopes, shallow soils, low rainfall and high evaporation demands.  Diversity would be very low, and density/occurrence extremely low.		

**Table 8.2:** Estimated average PES, EIS and REC for the wetlands within the quaternary catchments of the Crocodile, Sabie and Sand River catchments

Quaternary Catchment	Desktop PES	Desktop EIS	Desktop REC
X21A	C	High	B
X21B	C	High	B
X21C	C	High	B
X21D	B/C	Moderate	B/C
X21E	C	Moderate	C
X21F	B/C	High	B
X21G	C	Moderate	C
X21H	C/D	Moderate	C/D
X21J	D	Moderate	D
X21K	D	Moderate	D
X22A	C/D	Moderate	C/D
X22B	C/D	Low	C/D
X22C	D	Moderate	D
X22D	C/D	Moderate	C/D
X22E	C/D	Moderate	C/D
X22F	C	Moderate	C
X22G	C/D	Moderate	C/D
X22H	C	Moderate	C
X22J	D	Low	D
X22K	C	Low	C
X23A	C	Moderate	C
X23B	C	Moderate	C
X23C	C/D	Moderate	C/D
X23D	C	Moderate	C
X23E	C/D	Moderate	C/D
X23F	C	Moderate	C
X23G	C	Moderate	C
X23H	C	Low	C
X24A	D	Low	D
X24B	D	Low	D
X24C	B/C	Low	B/C
X24D	C	Low	C

Quaternary Catchment	Desktop PES	Desktop EIS	Desktop REC
X24E	B	Low	B
X24F	B	Low	B
X24G	A	Low	A
X31A	D	Low	D
X31B	D	Low	D
X31C	D	Moderate	D
X31D	C	Moderate	C
X31E	D	Moderate	D
X31F	C	Moderate	C
X31G	D	Low	D
X31H	C/D	Moderate	C/D
X31J	D	Low	D
X31K	D	Low	D
X31L	D	Low	D
X31M	A	Low	A
X32A	D	Moderate	D
X32B	D	Moderate	D
X32C	D	Low	D
X32D	D	Moderate	D
X32E	D	Moderate	D
X32F	D	Low	D
X32G	D	Low	D
X32H	C	Low	C
X32J	A	Low	A
X33A	A	Low	A
X33B	A	Low	A
X33C	A	Low	A
X33D	A	Low	A
X40A	A	Low	A
X40B	A	Low	A
X40C	C	Low	C
X40D	A	Low	A



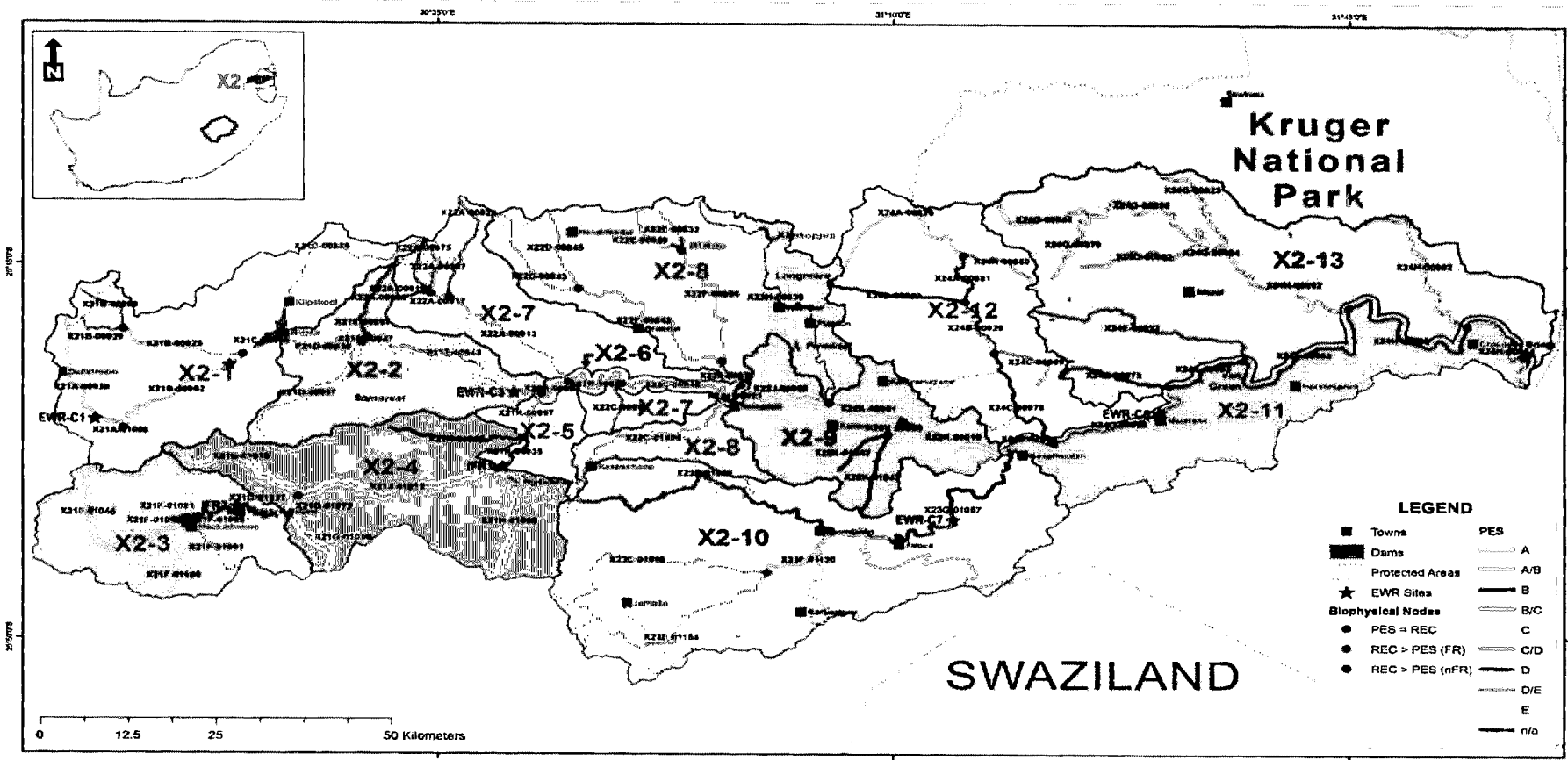
### SABIE [X3]: BIOPHYSICAL NODES

Coordinate System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 08-08-2013

Source data  
 Department of Water Affairs  
[http://www.dwaf.gov.za/hwqs/gis\\_data/rvar/rvs500k.html](http://www.dwaf.gov.za/hwqs/gis_data/rvar/rvs500k.html)  
<http://www.dwaf.gov.za/rvar/wms/data/000key2data.asp>  
[http://www.dwaf.gov.za/Dir\\_BI/S/L/IDownload/](http://www.dwaf.gov.za/Dir_BI/S/L/IDownload/)

Figure 1: Locality of the selected EWR sites in the Sabie-Sand (X3) catchment



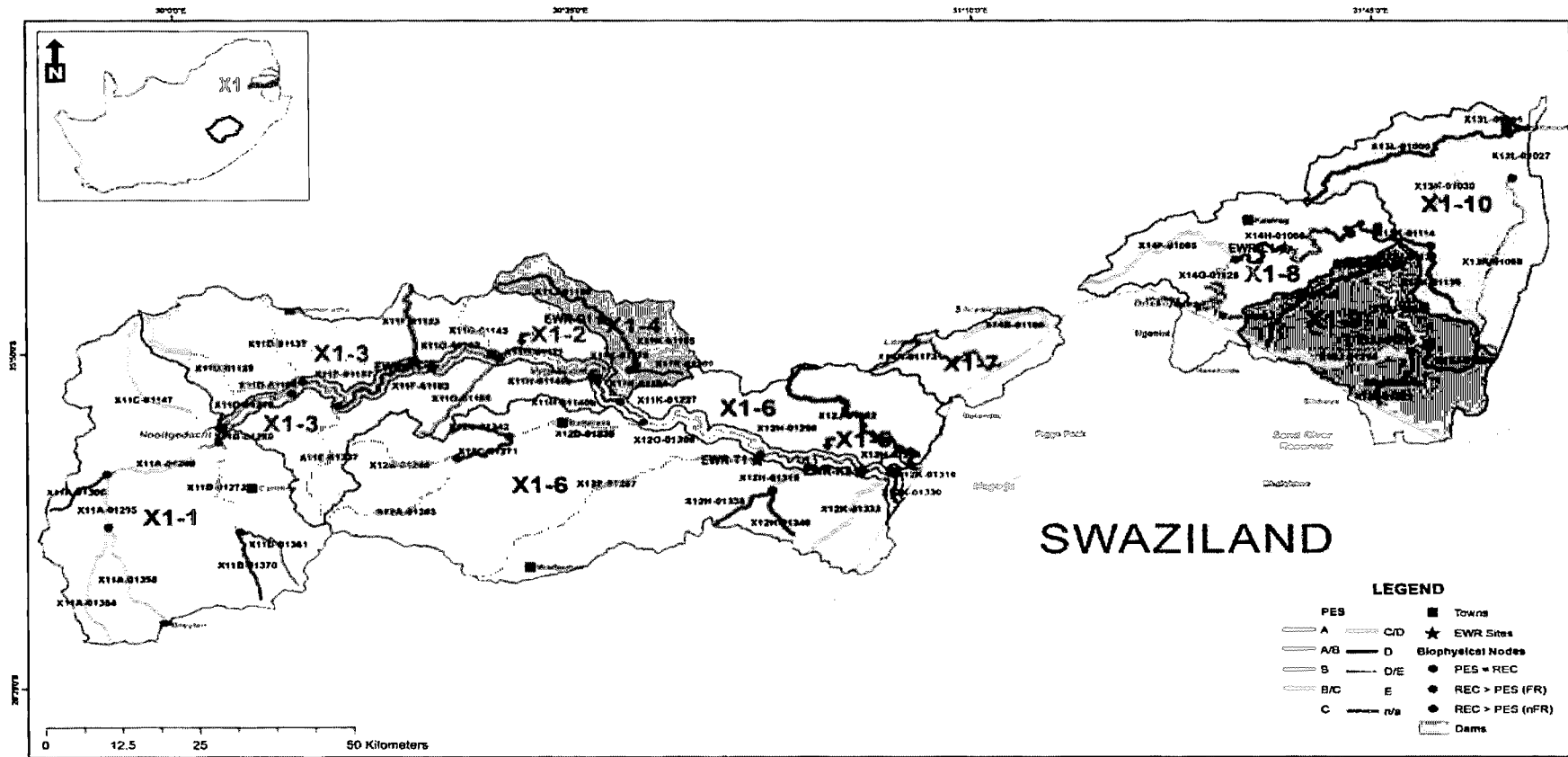


## CROCODILE [X2]: BIOPHYSICAL NODES

Coordinate System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 05-09-2013

Source data:  
 Department of Water Affairs  
[\[http://www.dwaf.gov.za/nqa/gis\\_data/rwr/rvs500k.html\]](http://www.dwaf.gov.za/nqa/gis_data/rwr/rvs500k.html)  
[\[http://www.dwaf.gov.za/nqa/wms/data/000key2data.asp\]](http://www.dwaf.gov.za/nqa/wms/data/000key2data.asp)  
[\[http://www.dwaf.gov.za/Dir\\_BiSL/Download\]](http://www.dwaf.gov.za/Dir_BiSL/Download)

Figure 2: Locality of the selected EWR sites in the Crocodile (X2) catchment



Coordinate System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 09-09-2013

### KOMATI [X1]: BIOPHYSICAL NODES

Source data  
 Department of Water Affairs  
[http://www.dwaf.gov.za/wqs/figs\\_data/mv/mv500k.htm](http://www.dwaf.gov.za/wqs/figs_data/mv/mv500k.htm)  
[http://www.dwaf.gov.za/wqs/figs\\_data/000xv2/data.asp](http://www.dwaf.gov.za/wqs/figs_data/000xv2/data.asp)  
[http://www.dwaf.gov.za/Df\\_Bu/SLIMDownload/](http://www.dwaf.gov.za/Df_Bu/SLIMDownload/)



Figure 3: Locality of the selected EWR sites in the Komati (X1) catchment

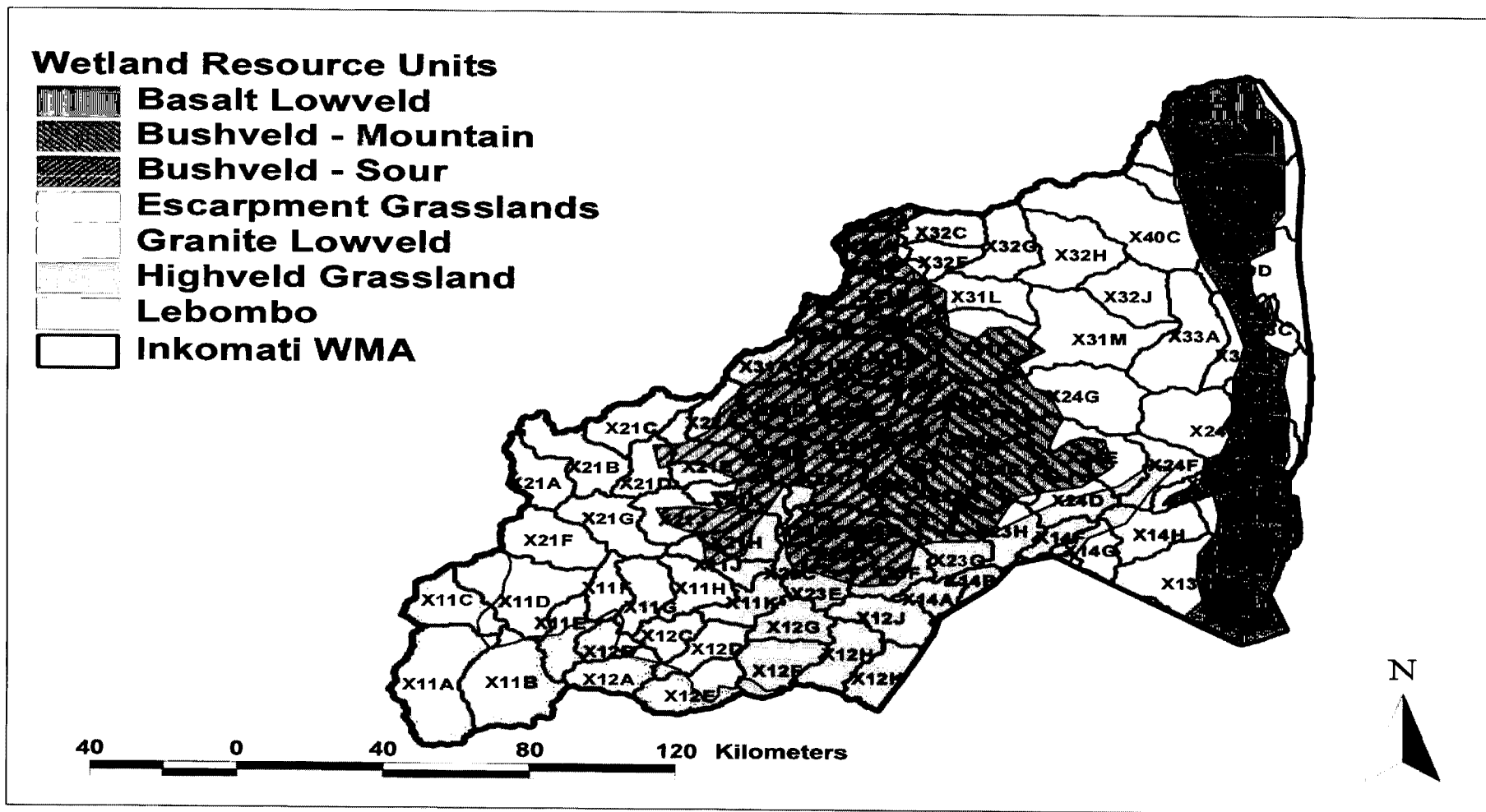


Figure 4: The distribution of quaternary catchments in relation to the Wetland Resource Units

**UMTSETFO WEMANTI WAVELONKHE, 1998  
(UMTSETFO NOMBOLO 36 WANGA-1998)**

**KUNCUNYWA KWESABELO SEMITFOMBOLUSITO YETIGODZI TEMANTI ENKOMAZI**

Mine, Gugile Ernest Nkwinti, esikhundleni sami njengeLibamba leMcondzisi Jikelele weLitiko Letemanti Nekususwe Kwetinsila, ngemuva kwekulandzela sigaba 13 seMtsetfo Wemanti Wavelonkhe, (Umtsetfo nombolo 36 wanga-1998) ("uMtsetfo") kanye neMtsetfotimiso yekusungulwa kweLuhlelo Lwekwehlukana Imitfombolusito Yemanti (nombolo R. 810 Igazethi Yahulumende nombolo 33541, 17 Septemba 2010), futsi ngigunyatwe ngekwenmtsetfo ngekulandzela tigaba 16(1) na 63(1)(a) teMtsetfo, ngemuva kwekutlobela sigaba 16(2) na (3) seMtsetfo, ngitsandza kushicelela sincumo seSabelo semitfombolusito yemanti setigodzi temanti eNkomati.

Umcondzisi: Kuncunywa Kwesabelo  
Ucondziswe: Mnu Yakeen Atwaru  
Litiko Letemanti Nekususwa Kwetinsila  
Ndinaye Building 5084  
178 Francis Baard Street  
Private Bag X313  
EPitoli  
0001

I-imeyili: AtwaruY@dws.gov.za



**NKWINTI GE (MP)**  
**MINISTER OF WATER AND SANITATION**  
DATE: 24/05/2019

## ISHEJULI

### 1. INCHAZELO YEMITFOMBOLUSITO YEMANTI

- 1.1 Lesabelo sincunyelwe yonkhe nobe incenye yonkhe imitfombolusito yemanti lesemcoka ngekhatshi kwesigodzi semanti saseNkomati njengbobe kubekiwe ngaphasi:

Indzawo Yekuphatfwa Kwemanti: Inkomati-Usutu

Tigodzi Lekudvoswa Emanti kuto: X Sigodzi Lekudvoswa kuso lesikhulu

Imifula: Imifula iKomati, Umgwenya, neSabie-Sand

- 1.2 Indvuna ngekulandzela sigaba 16 seMtsetfo Wemanti Wavelonkh, 1998 (Umtsetfo nombolo 36 wanga-1998) ("uMtsetfo"), ubeke luhlelo lwekwehlukana imitfombolusito yemanti ngekukhipha Satiso seGazethi nombolo R. 810, lesishicelelwe kuGazethi Yahulumende nombolo 33541 yangamhlaka 17 Septemba 2010. Ngekulandzela sigaba 16(1) seMtsetfo, iNdvuna kumele, masinyane ngendlela lekhonekalako ngemuva kwesigaba sawo wonkhe nobe incenye yemfombolusito wemanti sewuncunyiwe, ngeSatiso kuGazethi, incume Sabelo sawo wonkhe nobe incenye yemfombolusito wemanti.
- 1.3 Indvuna, ngekulandzela sigaba 16(1) na (2) seMtsetfo, imemetela, leSabelo lesilandzelako yesesigodzi semanti iNkomati.

### 2. EMABINTANA NETINCHAZELO

#### 2.1 Emabintana

BHN	Tidzingo Tebantfu Letisisekelo
BHNR	Siciwu Basic Human Needs Reserve
EcoSpecs	Tinchazelo Letiphatsela Nemvelo
EIS	Kubaluleka Kwemvelo Nekuyinakekela
EWR	Tidzingo Temanti Emvelo
EWR_MLF	Sidzingo Semanti Emvelo_Kulungisa Kugeleta Lokuphasi
WARMS	Luhlelo Lwekuphatsa Kubhalisa Kuniketwa Kwemanti
GRAII	Ungamu Wekuhlola Umtfombolusito Wemanti aphaasi II
GRDM	Tindlela Leticondzisiwe Temtfombolusito Wemanti aphaasi
MAR	I-Mean Annual Runoff
MCM	Emamithih Layikhiyubhu Lasigidzi
PES	Simo Setemvelo Lesikhona
REC	Sigaba Setemvelo Lesinconotiwe
TEC	Sigaba Setemvelo Lesihlosiwe
DWS	Litiko Letemanti Nekususwa Kwetinsila
DWAF	Litiko Letemanti Netemahlatsi
EMpumalanga Kapa	Kuhanjiswa Kwagezi
TIN	Inayithrojini Yalokungaphili Lephelele
SRP	Ifosforasi Lencibilikako
RC	Simo Lekucondziswe kuso
WQU	Ligumbi Lebunjalo Bemanti

## 2.2 Tinchazelo

KuleSincumo, ngaphandle nangabe ingcikitsi isho ngalenywe indlela -

**“Kugeleta lokuphasi”** kusho kugeleta kancane lokutintile emifuleni ngetikhatsi tesimo selitulu lesomile nobe lesifanele, kodvwa akusho kutsi konkhe kubangelwa ngemanti aphaasi futsi kufaka ekhatsi kwengeta kugeleta lokungenako lokubanjelwe kanye nekukhishwa kwemanti aphaasi;

**“EWR”** (Sidzingo Semanti Emvelo) kusho emaphethini ekuhamba emanti (bukhulu, kucaphela sikhatsi budze besikhatsi) kanye nelizinga lemanti lelidzingekele kugcina luhlelo lwemvelo lwemfula esimeni lesitsite;

**“Kuvuselela”** kusho kwengetwa kwemanti endzaweni yekuhwamuka, ngekuchinineka lokuya phasi kwemfomo nobe kwemanti langetulu kanye/nobe kwekuphuma kwemanti lasecadzini eticojeni letisemaceleni.

## 3. KUNCUNYWA KWESABELO

Sifinyeto sencenye lebuningi Bemifula lefaka ekhatsi i-EWR (Sifombe 1 na 2) kanye neBHN yetigodzi temanti teNkomati sibekiwe kuSigaba 4. **Lithebula 4.1** lifaka ekhatsi imiphumela Yetindzawo te-EWR kanye nemanodi etindzawo temvelo kantsi **Lithebula 4.2** lifaka ekhatsi imiphumela yeBHN ngesigodzi sekhwathenari.

Sifinyeto sencenye yebunjalo Bemifula etindzaweni ye-EWR yetigodzi temanti teNkomati njengobe sibekiwe **kuThebula 5.1.1 – 5.3.6**.

Sifinyeto seligalelo lemanti aphaasi kuSabelo Sebunyenti Bemanti kusigodzi semanti seNkomati sibekiwe **kuLithebula 6.1**.

Sifinyeto seligalelo lemanti aphaasi kuSabelo Sebunjalo Bemanti kusigodzi semanti seNkomati sibekiwe **kumaThebula 7.1, 7.2 naku 7.3**.

Sifinyeto seligalelo lemanti aphaasi kuSabelo Sebunjalo Nebunyenti Bemanti kumaChibi lakhetsiwe esigodzi semanti seNkomati sibekiwe **kumaThebula 8.1 na 8.2**.

#### 4. INCENYE-YEBUNYENTI-BEMANTI-ANGETULU YEMIFULA

Imiphumela yekuncunywa kwesabelo kanye nekwehlukana lokuphatselene nemvelo kweSigodzi Semanti seNkomati, lapho khona Sabelo sikhonjiswa njengeliphesenti leNMAR ngetigodzi ngekwehlukana kwato ikhonjiswe ngelithebula ngaphasi.

**Lithebula 4.1:** Sifinyeto sencenye yebunyenti Bemifula lesifaka ekhatsi imiphumela Yetindzawo te-EWR kanye nemanodi etindzawo temvelo.

Emanodi etindzawo temvelo	Umtfombo Wemanti	PES	EIS	TEC	Sabelo Semvelo (%NMAR)	NMAR (MCM)
<b>Sigodzi Semfula iKomati</b>						
X11A-01248	Vaalwaterspruit	C	Emkhatsini	C	23.50	26.30
X11A-01295	Vaalwaterspruit	C	Emkhatsini	C	27.20	15.40
X11A-01300	Vaalwaterspruit	B	Emkhatsini	B	28.10	1.70
X11A-01354	Vaalwaterspruit	C	Emkhatsini	C	24.50	3.90
X11A-01358	Vaalwaterspruit	C	Emkhatsini	C	26.80	6.60
X11B-01272	Boesmanspruit	C	Etulu	B/C	24.20	51.20
X11B-01361	Boesmanspruit	B/C	Emkhatsini	B/C	27.00	4.20
X11B-01370	Boesmanspruit	B	Etulu	B	28.80	4.80
X11C-01147	Witkloofspruit	C	Etulu kakhulu	C	22.10	11.40
X11D-01129	Klein-Komati	C	Etulu	C	27.40	21.00
X11D-01137	Waarkraalloop	C	Emkhatsini	C	27.30	11.70
X11D-01196	Komati	C	Emkhatsini	C	20.10	95.40
X11D-01219	Komati	C/D	Emkhatsini	C/D	12.30	73.60
X11E-01237	Swartspruit	C	Etulu kakhulu	B	27.90	14.80
X11E-01157	Komati	B/C	Etulu	B/C	25.60	118.30
X11F-01133	Bankspruit	B	Etulu	B	30.80	6.50
<b>EWR K1</b>	<b>Komati</b>	<b>B/C</b>	<b>Emkhatsini</b>	<b>C</b>	<b>27.50</b>	<b>158.62</b>
X11G-01143	Gemakstroom	C	Emkhatsini	C	26.10	10.40
X11G-01188	Ndubazi	B/C	Etulu	B	34.90	17.40
<b>EWG1</b>	<b>Gladdespruit</b>	<b>D</b>	<b>Emkhatsini</b>	<b>D</b>	<b>26.90</b>	<b>29.52</b>
X11K-01165	Poponyane	C	Emkhatsini	C	22.70	13.70

Emanodi etinzawo temvelo	Umtfombo Wemanti	PES	EIS	TEC	Sabelo Semvelo (%NMAR)	NMAR (MCM)
X11K-01179	Gladdespruit	C	Emkhatsini	C	20.20	64.40
X11K-01194	Gladdespruit	C	Emkhatsini	C	19.10	71.20
X11K-01199	Gladdespruit	D	Emkhatsini	D	22.30	2.40
X12A-01305	Buffelspruit	C	Etulu kakhulu	B	30.30	32.00
X12B-01246	Hlatjiwe	C	Emkhatsini	C	30.50	22.10
X12C-01242	Phophenyane	B	Etulu	B	37.50	6.30
X12C-01271	Buffelspruit	B	Etulu	B	40.50	71.10
X12D-01235	Seekoeispruit	C	Etulu	C	30.50	97.00
<b>EWRT1</b>	<b>Teespruit</b>	<b>C</b>	<b>Emkhatsini</b>	<b>C</b>	<b>35.30</b>	<b>56.36</b>
<b>EWRK2</b>	<b>Komati</b>	<b>C</b>	<b>Etulu</b>	<b>C</b>	<b>18.30</b>	<b>545.56</b>
X12H-01318	Sandspruit	C	Emkhatsini	C	31.70	13.90
X12H-01338	Sandspruit	B	Etulu	B	36.70	4.40
X12H-01340	Sandspruit	B	Etulu	B	39.50	4.80
X12J-01202	Mtsoli	B	Etulu kakhulu	B	33.50	66.50
X12K-01316	Komati	D	Emkhatsini	D	21.20	577.00
X12K-01332	Mhlangampepa	B	Etulu	B	40.00	3.40
X12K-01333	Mlondozi	C	Etulu	B/C	28.20	22.40
<b>EWR K3A</b>	<b>Komati</b>	<b>D</b>	<b>Emkhatsini</b>	<b>D</b>	<b>17.20</b>	<b>1021.67</b>
X13J-01141	Mzinti	D	Emkhatsini	D	19.10	6.30
X13J-01205	Mbiteni	D	Emkhatsini	D	17.60	5.90
X13J-01221	Komati	D	Emkhatsini	D	19.70	1000.30
X13K-01068	Nkwakwa	C/D	Emkhatsini	C/D	22.70	5.40
X13K-01114	Komati	D	Emkhatsini	D	18.10	1341.40
X13K-01136	Mambane	D	Emkhatsini	D	22.40	1.80
X13L-00995	Komati	D	Emkhatsini	D	11.10	1356.60
X13L-01000	Ngweti	D	Emkhatsini	D	14.50	4.60
X14A-01173	Umlumati	C	Etulu	B/C	36.30	84.40



<b>Emanodi etindzawo temvelo</b>	<b>Umtfombo Wemanti</b>	<b>PES</b>	<b>EIS</b>	<b>TEC</b>	<b>Sabelo Semvelo (%NMAR)</b>	<b>NMAR (MCM)</b>
X14B-01166	Ugutugulo	C	Etulu	C	31.70	20.90
<b>EWR L1</b>	<b>Umlumati</b>	<b>C</b>	<b>Emkhatsini</b>	<b>C</b>	<b>17.30</b>	<b>294.31</b>
<b>Sigodzi Semfula Umgwenya</b>						
<b>EWR C1</b>	<b>UMgwenya</b>	<b>A/B</b>	<b>Emkhatsini</b>	<b>A/B</b>	<b>30.3</b>	<b>15.6</b>
X21B-00898	Lunsklip	C/D	Etulu	C/D	25.80	8.40
X21B-00925	Lunsklip	C	Etulu	C	31.30	25.80
X21B-00929	Gemsbokspruit	C/D	Etulu	C/D	26.30	3.80
<b>EWR C2</b>	<b>UMgwenya</b>	<b>B</b>	<b>Etulu</b>	<b>B</b>	<b>35.63</b>	<b>76.1</b>
X21C-00859	Alexanderspruit	C	Etulu	C	31.50	28.80
X21D-00938	UMgwenya	C	Etulu	C	24.00	124.80
X21D-00957	Buffelskloofspruit	C	Etulu	B/C	32.60	16.90
X21E-00897	Buffelskloofspruit	B	Etulu	B	35.30	8.40
<b>EWR C3</b>	<b>UMgwenya</b>	<b>B/C</b>	<b>Etulu</b>	<b>B/C</b>	<b>48.8</b>	<b>194</b>
X21E-00947	UMgwenya	B	Etulu	B	28.90	125.10
X21F-01046	Elands	C	Emkhatsini	C	35.20	35.10
X21F-01081	Elands	C	Etulu	C	35.50	50.80
X21F-01091	Rietvleispruit	C	Emkhatsini	C	35.40	3.30
X21F-01092	Leeuspruit	C/D	Emkhatsini	C/D	31.20	11.90
X21F-01100	Leeuspruit	C	Emkhatsini	C	35.10	11.90
X21G-01016	Swartkoppiespruit	C	Etulu	C	32.50	11.40
<b>EWR E1</b>	<b>Elands</b>	<b>B</b>	<b>Emkhatsini</b>	<b>B</b>	<b>48.82</b>	<b>50.10</b>
X21G-01090	IWeltevredespruit	C	Emkhatsini	C	32.00	5.50
X21H-01060	Ngodwana	C	Etulu kakhulu	B	22.10	59.60
X21J-01013	Elands	C	Etulu	B/C	30.50	151.50
X21K-01007	Lupelule	B	Etulu	B	32.10	29.40
<b>EWR E2</b>	<b>Elands</b>	<b>B</b>	<b>Etulu</b>	<b>B</b>	<b>45.02</b>	<b>50.10</b>
X22A-00824	Blystaanspruit	B/C	Etulu	B	35.30	21.00

Emanodi etindzawo temvelo	Umtfombo Wemanti	PES	EIS	TEC	Sabelo Semvelo (%NMAR)	NMAR (MCM)
X22A-00875	Houtbosloop	B/C	Etulu	B	34.20	6.90
X22A-00887	Beestekraalspruit	B/C	Etulu	B/C	33.90	3.70
X22A-00913	Houtbosloop	C	Etulu kakhulu	B	41.30	75.30
X22A-00917	Houtbosloop	C	Emkhatsini	C	29.70	14.80
X22A-00919	Houtbosloop	B/C	Emkhatsini	B/C	34.70	10.60
X22A-00920	Houtbosloop	B	Emkhatsini	B	39.40	1.70
X22C-00990	Ivisspruit	B/C	Emkhatsini	B/C	31.10	3.40
X22C-01004	Gladdespruit	C	Etulu	B/C	20.90	16.30
X22D-00843	Nels	C	Emkhatsini	C	29.60	20.60
X22D-00846	Nels	C	Emkhatsini	C	31.90	13.80
X22E-00833	Kruisfonteinspruit	C	Emkhatsini	C	26.60	11.10
X22E-00849	Sand	C	Emkhatsini	C	27.70	8.70
X22F-00842	Nels	C	Etulu	C	19.00	74.90
X22F-00886	Sand	C	Etulu	C	27.40	48.90
X22F-00977	Nels	C/D	Etulu	C/D	24.10	125.40
X22H-00836	Wit	D/E	Etulu	D	14.90	43.00
<b>EWR C4</b>	<b>UMgwenya</b>	<b>C</b>	<b>Etulu</b>	<b>C</b>	<b>31.74</b>	<b>824.8</b>
X22K-01029	Blinkwater	C	Emkhatsini	C	27.20	7.60
X22K-01042	Mbuzulwane	B	Emkhatsini	B	38.50	1.20
X22K-01043	Blinkwater	B	Etulu	B	34.90	5.90
X23B-01052	INoordkaap	D	Etulu kakhulu	C	23.50	50.90
X23C-01098	Suidkaap	C	Etulu	B/C	39.50	61.80
X23E-01154	Queens	C	Etulu	B/C	27.10	39.50
X23F-01120	Suidkaap	C	Emkhatsini	C	31.00	109.80
<b>EWR K7</b>	<b>Kaap</b>	<b>C</b>	<b>Etulu</b>	<b>C</b>	<b>21.84</b>	<b>179.5</b>
X24A-00826	Nsikazi	C	Emkhatsini	C	34.00	2.00
X24A-00881	Nsikazi	B	Etulu	B	40.60	11.70

<b>Emanodi etindzawo temvelo</b>	<b>Umtfombo Wemanti</b>	<b>PES</b>	<b>EIS</b>	<b>TEC</b>	<b>Sabelo Semvelo (%NMAR)</b>	<b>NMAR (MCM)</b>
X24B-00903	Gutshwa	D	Emkhatsini	D	24.40	25.40
X24B-00928	Nsikazi	A/B	Etulu	A/B	44.00	42.40
X24C-00978	Nsikazi	B	Etulu	B	40.50	52.30
<b>EWR C5</b>	<b>UMgwenya</b>	<b>C</b>	<b>Etulu kakhulu</b>	<b>C</b>	<b>22.2</b>	<b>1117.4</b>
<b>EWR C6</b>	<b>UMgwenya</b>	<b>C</b>	<b>Etulu kakhulu</b>	<b>C</b>	<b>12.53</b>	<b>1165.6</b>
<b>Sigodzi Semfula iSapie</b>						
X31A-00741	Klein Sapie	C	Etulu	B/C	23.00	14.60
X31A-00783	Klein Sapie	C	Emkhatsini	C	33.80	12.10
X31A-00786	Klein Sapie	B	Etulu	B	47.80	4.70
<b>EWR S1</b>	<b>Sapie</b>	<b>B/C</b>	<b>Etulu</b>	<b>B</b>	<b>40.31</b>	<b>132</b>
X31B-00792	Goudstroom	B/C	Emkhatsini	B/C	38.90	12.20
<b>EWR S4</b>	<b>Mac Mac</b>	<b>B</b>	<b>Etulu</b>	<b>B</b>	<b>45.31</b>	<b>65.78</b>
X31E-00647	Marite	B/C	Etulu	B	34.70	79.90
X31F-00695	Motitsi	C	Etulu	B	26.50	43.90
<b>EWR S2</b>	<b>Sapie</b>	<b>C</b>	<b>Etulu</b>	<b>B</b>	<b>28.2</b>	<b>261.7</b>
X31D-00773	Sabani	C/D	Emkhatsini	C/D	19.50	19.20
<b>EWR S5</b>	<b>Marite</b>	<b>B/C</b>	<b>Etulu</b>	<b>B/C</b>	<b>28.57</b>	<b>156.4</b>
X31H-00819	White Waters	C	Etulu	B/C	31.40	28.90
X31J-00774	Noord-Sand	D	Emkhatsini	D	16.00	45.10
X31J-00835	Noord-Sand	D	Emkhatsini	D	31.30	12.00
X31K-00713	Bejani	D	Emkhatsini	D	25.70	2.40
<b>EWR S3</b>	<b>Sapie</b>	<b>A/B</b>	<b>Etulu kakhulu</b>	<b>A/B</b>	<b>37.94</b>	<b>493.69</b>
X31K-00771	Phabeni	B	Etulu	B	39.00	2.50
X31L-00657	Matsavana	C	Emkhatsini	C	16.80	3.80
X31L-00664	Saringwa	C	Emkhatsini	C	24.50	10.90
X31L-00678	Saringwa	B/C	Etulu	B/C	30.80	3.20
X31M-00673	Musutlu	B/C	Emkhatsini	B/C	19.00	1.80

<b>Emanodi etindzawo temvelo</b>	<b>Umtfombo Wemanti</b>	<b>PES</b>	<b>EIS</b>	<b>TEC</b>	<b>Sabelo Semvelo (%NMAR)</b>	<b>NMAR (MCM)</b>
<b>EWR S7</b>	<b>Thulanziteka (Sand)</b>	<b>C</b>	<b>Emkhatsini</b>	<b>C</b>	<b>32.67</b>	<b>28.9</b>
X32B-00551	Motlamogatsana	C	Etulu	C	25.70	15.40
X32C-00558	Nwandlamuhari	C	Emkhatsini	C	20.20	49.70
X32C-00564	Mphyanyana	C	Emkhatsini	C	10.50	3.10
X32C-00606	Nwandlamuhari	C	Emkhatsini	C	23.60	53.20
X32E-00629	Nwarhele	C/D	Etulu	C	26.10	10.60
<b>EWR S6</b>	<b>Mutlumuvi</b>	<b>C</b>	<b>Etulu</b>	<b>C</b>	<b>28.46</b>	<b>44.99</b>
X32F-00628	Nwarhele	C/D	Emkhatsini	C/D	31.30	14.80
X32G-00549	Khokhovela	C	Emkhatsini	C	17.00	3.90
X32H-00560	Phungwe	A	Etulu	A	26.10	7.60
<b>EWR S8</b>	<b>Sand</b>	<b>B</b>	<b>Etulu</b>	<b>B</b>	<b>25.46</b>	<b>133.61</b>

**Letigodzi tasemandvulo letibhalwe ngalokukhulu nguLetindzawo teEWR**

1) I-NMAR yiNatural Mean Annual Runoff.

2) Lelinani limele sibalokhatsi sethemu lendze nge-NMAR. Nangabe i-NMAR igucuka, lemtsamo nawo utawugucuka.

**SABELO SETIDZINGO TEBANTFU LETISISEKELO**

I-BHNR iniketa tidzingo letisisekelo tebantfu labaphakelwa ngco ngumtfoombo wemanti lekukhulunywa ngayo futsi tifaka ekhatsi emanti ekunatsa, ekulungiselela kudla kanye nekutihlobisa. Linani lemphilu yonkhe lemalitha langu-25 ngemuntfu lisetjentsiwe.

Imiphakatsi lengatsembela ekugujimeni kwemfula ikhetfwe ngesigodzi semandvulo futsi ngekusebentisa bukhulu belinanibantfu, kubalwa iBHNR.

**Lithebula 4.2:** Umniningwane wesibalo selizinga lesigodzi semanti semandvulo

Sigodzi semant semandvulo	Umtfoombo Wemanti	Sabelo seBHN (%NMAR)
X11A	Vaalwaterspruit	0.09
X11B	Boesmanspruit	0.16
X11C	Witkloofspruit	0.00
X11D	Komati	0.00
X11E	Komati	0.00
X11F	Bankspruit	0.00
X11G	IKomati Lesetulu	0.00
X11J	Gladdespruit	0.00
X11K	Gladdespruit	0.00
X12A	Buffelspruit	0.00
X12B	Hlatjiwe	0.00
X12C	Buffelspruit	0.00
X12D	Seekoeispruit	0.03
X12E	Teespruit	0.00
X12H	IKomati Lesetulu	0.01
X12J	Mtsoli	0.01
X12K	Komati	0.02
X13J	IKomati Lephasi	0.14
X13K	Komati	0.04
X13L	Komati	0.01
X14A	Umlumati	0.00
X14B	Ugutugulo	0.02
X14H	Umlumati	0.12

Sigodzi semant semandvulo	Umtfombo Wemanti	Sabelo seBHN (%NMAR)
X21A	UMgwenya	0.02
X21B	Lunsklip	0.12
X21B	UMgwenya	0.01
X21C	Alexanderspruit	0.11
X21D	UMgwenya	0.02
X21E	UMgwenya	0.09
X21F	Elands	0.17
X21G	Umfula i-Elands	0.26
X21H	Ngodwana	0.01
X21J	Elands	0.01
X21K	Umfula i-Elands	0.01
X22A	Houtbosloop	0.01
X22C	Gladdespruit	0.07
X22D	Nels	0.02
X22E	Kruisfonteinspruit	0.00
X22F	Nels	0.01
X22H	Wit	0.00
X22K	UMgwenya	0.01
X23B	INoordkaap	0.01
X23C	Suidkaap	0.01
X23E	Queens	0.01
X23F	Suidkaap	0.45
X23G	Kaap River	0.02
X24A	Nsikazi	4.25
X24B	Nsikazi	3.70
X24C	Nsikazi	3.21
X24D	UMgwenya	0.01
X24H	UMgwenya	0.01
X31A	Klein	0.73

Sigodzi semant semandvulo	Umtfombo Wemanti	Sabelo seBHN (%NMAR)
X31B	Sabie	0.00
X31C	Mac Mac	0.03
X31E	Marite	0.36
X31F	Motitsi	0.05
X31D	Sabie	0.08
X31G	Marite	0.07
X31H	White Waters	0.00
X31J	Noord-Sand	0.63
X31K	Sabie	0.07
X31L	Saringwa	3.45
X31M	Musutlu	10.94
X32B	Motlamogatsana	0.69
X32C	ITlulandziteka	0.57
X32E	Nwarhele	2.87
X32F	Mutlumuvi	0.42
X32G	Khokhovela	8.57
X32H	Phungwe	2.33
X32J	Sand	0.30

## 5. EMANTI-LANGETULU - INCENYE YELIZINGA LEMIFULU

### 5.1 Sigodzi Lesisempumalanga-seMgwenya

**Lithebula 5.1.1:** EWR 1– Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)

Umfula: Umgwenya		EWR 1	Indzawo yekucaphela: X2H074Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES neREC</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 30$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.5$ mg/L.	
	Kudvungeka	Kwehluka (lokuncane kakhulu) kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.25$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.015$ mg/L.	
<b>Kwehlukana kwetimphehndvulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatshi kweTWQR njengobe siphawuliwe kuDWAF (1996).	



**Lithebula 5.1.2: EWR 2 – Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: Umgwenya		I-EWR Site 2	Indzawo yekucaphela: X2H074Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES neREC</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 27$ mg/L.	
	MgCl <sub>2</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 22$ mg/L.	
	CaCl <sub>2</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 39$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 118$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 43$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.5$ mg/L.	
	Kudvungeka	Kwehluka (lokuncane kakhulu) kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.25$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.015$ mg/L.	
<b>Kwehlukana kwetimphehndvulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatsi kweTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.1.3: EWR 3– Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)**

<b>Umfula: Umgwenya</b>		<b>EWR 3</b>	<b>Indzawo yekucaphela: X2H013Q01</b>
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 20 mg/L.	
	MgCl <sub>2</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 15 mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 21 mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 45 mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 351 mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 30 mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kuya kulokusemkhatsini kusuka eluhlwini lwelizinga lekushisa lemvelo. Letinye tilwane letingavami nelizinga lekushisa lelisetulu temanani lamancane kanye nekwenteka lokuphindzaphindzene kundlula lokulindzelekile.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 6 mg/L.	
	Kudvungeka	Tingucuko letisemkhatsini ngekusetjentiswa kwemhlaba wemfula ekudvungekeni lokusetulu lokungakavami kwesikhashana.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.025 mg/L.	
<b>Kwehlukana kwetimphelelo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku ≤ 10 µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku ≤ 52 mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatshi kweTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.1.4: EWR 4 Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)**

Umfula: Umgwenya		EWR 4	Indzawo yekucaphela: X2H032Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 38$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 191$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 55$ mS/m.	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 5.9 – 6.5, kantsi Sebalo semaphesenti sema-95 kumele sibe ku 8.0 – 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.5$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 1.0$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
<b>Kwehlukana kwetimphephulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatshi kweCEV njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.1.5: EWR 5– Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)**

Umfula: Umgwenya		EWR 5	Indzawo yekucaphela: X2H017Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 70$ mS/m.	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 5.9 – 6.5, kantsi Sebalo semaphesenti sema-95 kumele sibe ku 8.0 – 8.8.	
	Lizingakushisa	Kwehluka lokusemkhatsini kusuka eluhlwini lwelizinga lekushisa lemvelo. Letinyenti tilwane letingavami nelizinga lekushisa lelisetulu temanani lamancane kanye nekwenteka lokuphindzaphindzene kundlula lokulindzelekile.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
<b>Kwehlukana kwetimphelelo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatshi kweTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.1.6: EWR 6 Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)**

Umfula: Umgwenya		EWR 6	Indzawo yekucaphela: X2H016Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES</b>	
<b>Sawoti wetinfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 30$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 57$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 85$ mS/m.	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 5.9 – 6.5, kantsi Sebalo semaphesenti sema-95 kumele sibe ku 8.0 – 8.8.	
	Lizingakushisa	Kwehluka lokuncane kuya kulokusemkhatsini kusuka eluhlwini lwelizinga lekushisa lemvelo. Letinye tilwane letingavami nelizinga lekushisa lelisetulu temanani lamancane kanye nekwenteka lokuphindzaphindzene kundlula lokulindzelekile.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kweliidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhantimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
<b>Kwehlukana kwetimphendvulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tinfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tinfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhati kweCEV njengobe siphawuliwe kuDWAF (1996)	

**Lithebula 5.1.7: EWR 7– Umfula Umgwenya: I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: iKaap		EWR 7	Indzawo yekucaphela: X2H022Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES neREC	
Sawoti wetintfo letingaphili	KONKHE	-	
Umehluko wesimomvelo	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 100$ mS/m.	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 6.5 – 8.0 kantsi Sebalo semaphesenti sema-95 kumele sibe kusuka ku 8.0 – 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 8$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
Takhamtimba	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 1.0$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
Kwehlukana kwetimphephulo	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 52$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Sebalo semaphesenti sema-95 sedatha kumele sibe ngekhatsi kweTWQR njengobe siphawuliwe kuDWAF (1996).	

## 5.2 Sigodzi semanti iSapie-Sand

Lithebula 5.2.1: EWR 1– (iSapie Lesetulu): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)

Umfula: iSapie		EWR 1	Indzawo yekucaphela: X3H001Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES neREC</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 30$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kute kwehluka kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 8.0$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.025$ mg/L.	
<b>Kwehlukana kwetimphelelo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 10$ $\mu$ g/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 21$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.2.2: EWR 2– (Ann de Vliet): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: iSapie		I-EWR Site: 2	Indzawo yekucaphela: X3H006Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES	
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 118$ mg/L (Sigaba A/B).	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
Umehluko wesimomvelo	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 30$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.5$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
Takhamtimba	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.25$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.025$ mg/L.	
Kwehlukana kwetimphendvulo	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 84$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	



**Lithebula 5.2.3: EWR 3– (Kidney): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: iSapie		EWR 3	Indzawo yekucaphela: X3H013Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES neREC	
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 20 mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 15 mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 21 mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 45 mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 351 mg/L.	
Umehluko wesimomvelo	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 30 mS/m.	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 6.5 – 8.0 kantsi Sebalo semaphesenti sema-95 kumele sibe kusuka ku 8.0 kuya ku 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwezinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 7.5 mg/L.	
	Kudvungeka	Tingucuko letincane kuya kuletisemkhatsini ngekusetjentiswa kwemhlaba wemfula ekudvungekeni lokusetulu lokungakavami kwesikhashana, kakhulu ngencane yemvelo yesikhashana, ngekudvungeka lokwenteka nje ngasikhatsi lokungesiko kwemvelo kwesikhashana.	
Takhantimba	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.25 mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.015 mg/L.	
Kwehlukana kwetimphelelo	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 10 µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 21 mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.2.4: EWR 4 U(Mac Mac) - I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)**

Umfula: iMac Mac		EWR 4	Indzawo yekucaphela: X3H003Q01
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 30$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 8.0$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.015$ mg/L.	
<b>Kwehlukana kwetimphendvulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 84$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindiula iTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.2.5: EWR 5– (Marite): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

<b>Umfula: Marite</b>		<b>EWR 5</b>	<b>Indzawo yekucaphela: X3H011Q01</b>
<b>Emamethrikhi elizinga lemanti</b>		<b>I-ECOSPEC: PES neREC</b>	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 30$ mS/m.	
	pH	Tibalo tesi-5 netesi-95 tedatha kumele tisukele ku 6.5 kuya ku 8.0.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.0$ mg/L.	
	Kudvungeka	Kwehluka ngelinani lelincane kusuka kulibanga lekudvungeka; kudvungeka kwelidzaka kwemfula kwemukelekile kubahlali bemfula.	
<b>Takhamtimba</b>	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.015$ mg/L.	
<b>Kwehlukana kwetimphevdulo</b>	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 10$ µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 84$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

## Lithebula 5.2.6: EWR 6 (Mutlumuvi): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES)

Umfula: Mutlumuvi		EWR 6	Indzawo yekucaphela: X3H008Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES	
Sawoti wetinfo letingaphili	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
Umehluko wesimomvelo	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 42$ mS/m (Sigaba A/B).	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 6.5 – 8.0 kantsi Sebalo semaphesenti sema-95 kumele sibe kusuka ku 8.0 kuya ku 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.0$ mg/L.	
	Kudvungeka	Tingucuko letincane kuya kuletisemkhatsini ngekusetjentiswa kwemhlaba wemfula ekudvungekeni lokusetulu lokungakavami kwesikhashana, kakhulu ngencane yemvelo yesikhashana, ngekudvungeka lokwenteka nje ngasikhatsi lokungesiko kwemvelo kwesikhashana.	
Takhamtimba	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
Kwehlukana kwetimphehndvulo	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ $\mu$ g/L.	
	I-Chl-a periphyton (tinfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 84$ mg/m <sup>2</sup>	
	Tinfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.2.7: EWR 7 (Tlulandziteka): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: Tlulandziteka		EWR 7	Indzawo yekucaphela: X3H008Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES	
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 16$ mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 20$ mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 15$ mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku $\leq 21$ mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 45$ mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 351$ mg/L.	
Umehluko wesimomvelo	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku $\leq 42$ mS/m (Sigaba A/B).	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 6.5 – 8.0 kantsi Sebalo semaphesenti sema-95 kumele sibe kusuka ku 8.0 kuya ku 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 7.0$ mg/L.	
	Kudvungeka	Tingucuko letisemkhatsini ngekusetjentiswa kwemhlaba wemfula ekudvungekeni lokusetulu lokungakavami kwesikhashana.	
Takhamtimba	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.7$ mg/L.	
	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku $\leq 0.0125$ mg/L.	
Kwehlukana kwetimphendvulo	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-50 sedatha kumele sibe ku $\leq 10$ $\mu$ g/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatseta etihlahleni)	Sebalo semaphesenti sema-50 sedatha kumele sibe ku $\leq 84$ mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

**Lithebula 5.2.8: EWR 8– (iSabie Lephasi): I-EcoSpecs macondzana nedatha ye-physico-chemical (PES neREC)**

Umfula: ISand		EWR 8	Indzawo yekucaphela: X3H008Q01
Emamethrikhi elizinga lemanti		I-ECOSPEC: PES neREC	
<b>Sawoti wetintfo letingaphili</b>	MgSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 16 mg/L.	
	Na <sub>2</sub> SO <sub>4</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 20 mg/L.	
	MgCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 15 mg/L.	
	CaCl <sub>2</sub>	Sebalo semaphesenti sema-95 sedatha kumele sibe ku ≤ 21 mg/L.	
	NaCl	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 45 mg/L.	
	CaSO <sub>4</sub>	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 351 mg/L.	
<b>Umehluko wesimomvelo</b>	EMpumalanga Kapa	Sibalo lesingu-95 sedatha kumele sibe ku ≤ 42 mS/m (Sigaba A/B).	
	pH	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku 6.5 – 8.0 kantsi Sebalo semaphesenti sema-95 kumele sibe kusuka ku 8.0 kuya ku 8.8.	
	Lizingakushisa	Kwehluka lokuncane kusuka eluhlwini lwelizinga lekushisa lemvelo.	
	I-Oksijini lencibilikile	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 7.5 mg/L.	
<b>Takhamtimba</b>	Kudvungeka	Tingucuko letincane kuya kuletisemkhatsini ngekusetjentiswa kwemhlaba wemfula ekudvungekeni lokusetulu lokungakavami kwesikhashana, kakhulu ngencane yemvelo yesikhashana, ngekudvungeka lokwenteka nje ngasikhatsi lokungesiko kwemvelo kwesikhashana.	
	TIN	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.7 mg/L.	
<b>Kwehlukana kwetimphehndvulo</b>	PO <sub>4</sub> -P	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 0.0125 mg/L.	
	I-Chl-a phytoplankton	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 10 µg/L.	
	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Sebalo semaphesenti sesi-5 sedatha kumele sibe ku ≤ 21 mg/m <sup>2</sup> .	
	Tintfo letiyingoti	Umtselela ulindzelekile nangabe Sebalo semaphesenti sema-95 sedatha sindlula iTWQR njengobe siphawuliwe kuDWAF (1996).	

5.3 Sigodzi Semanti iKomati  
Lithebula 5.3.1: EWR K1 – iKomati Lesetulu

Umfula	iKomati Lesetulu	Tinzawo Tekucephela Lizinga Lemanti teDWS	
WQU	2	RC	X1H033Q01
I-EWR Site	K1	PES	X1H033Q01
Tincenye Telizinga Lemanti		Simo Sanyalo	I-Quality EcoSpecs (Kwehlukana iBenchmark)
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	A	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	A	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Takhantimba	SRP	B/C (0.025)	0.017 mg/L.
	TIN	A (0.09)	0.129 mg/L.
Kwehlukahlukana kwesimomvelo	pH	B (6.3 – 8.58)	Linani lesi-5th: 6.00-6.25 Linani lema-95: 8.37-8.69
	Lizingakushisa	Lilindzeleke kutsi likhule ngenca yemadamu kanye nekuhamba kwemanti ngetulu	Imitselela lengaba khona lehlobene nenchubo yekusebenta kanye nekhishwa kwemanti eNooitgedacht Dam njengobe kucitseka kuphela emanti lafudvumele langetulu.
	I-Oksijini lencibilikile	Kute idatha	7-8 mg/L.
	Kudvungeka (NTU)	Kute idatha - Emasentse emfula agubhekile ngenca yekwehlela lokukhulu kanye nekunyatsela kwetilwane. Lidamu litawunciphisa kudvungeka.	Ingucuko lencane ivumelekile - kakhulu ngetinchobo temvelo futsi letihlobene netinchobo tesigodzi semanti njengekugeleta kwemvula.
Kwehlukana kwetimphephulo	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	I-Chlorophyll-a values iphasi (2.9 µg/L) kanye ne-phaeton phyte (2.5 µg/L) eNooitgedacht Dam. Ema-Diatoms emadvwaleni emfuleni.	< 1.7 mg/m <sup>2</sup>
	I-Chl-a phytoplankton		5 µg/L

	I-Biotic community composition - macroinvertebrate	Timfishi: B/C ASPT: 5.4 – 5.8 SASS5: 134-163	ASPT 6
	Kungena lokungena ngemfudlane	Akukasampulwa	
Tintfo letiyingoti	Iflorayidi	200 (A)	1500 µg/L (Sigaba A)
	Al		20 µg/L (Sigaba A)
	I-amoniya		15 µg/L (Sigaba A)
	As		20 µg/L (Sigaba A)
	I-Atrazine		19 µg/L (Sigaba A)
	Cd soft		0.2 µg/L (Sigaba A)
	Cd mod		0.2 µg/L (Sigaba A)
	Cd hard		0.3 µg/L (Sigaba A)
	Iklorini		0.4 µg/L (Sigaba A)
	Cr(III)		24 µg/L (Sigaba A)
	Cr(VI)		14 µg/L (Sigaba A)
	Cu soft		0.5 µg/L (Sigaba A)
	Cu mod		1.5 µg/L (Sigaba A)
	Cu hard		2.4 µg/L (Sigaba A)
I-Cyanide		4 µg/L (Sigaba A)	



## Lithebula 5.3.2: EWR K2 – IKomati Lesetulu

Umfula	IKomati Lesetulu	Tinzawo Tekucephela Lizinga Lemanti teDWS	
WQU	3	RC	X1H001Q01
I-EWR Site	K2	PES	X1H001Q01
Tincenye Telizinga Lemanti		Simo Lesingatsandzeki	I-Quality EcoSpecs (Kwehlukana iBenchmark)
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	A	20 mg/L.
	MgCl <sub>2</sub>	B	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	A	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Takhantimba	SRP	B (0.018)	0.017 mg/L.
	TIN	B (0.146)	0.129 mg/L.
Kwehlukahlukana kwesimomvelo	pH	B/C (6.2 – 9.19)	
	Lizingakushisa	Kute idatha	Imitselela lelindeleke ngenca yekufudvumala eVygeboom netinchubo tekusebenta.
	I-Oksijini lencibilikile	Kute idatha	Ehluka ngalokungenci ku20C nangabe acatsaniswa sibalokhatsi semvelo sangenyanga.
	Kudvungeka (NTU)	Emagalelo e-sediment lasetulu ikakhulukati kusuka eSeeikoespruit.	7-8 mg/L.
Kwehlukana kwetimphephelo	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	I-Chlorophyll-a values eVygeboom Dam iphasi (1.0-1.25 µg/L).	Ingucuko lencane ivumelekile - kakhulu ngetinchubo temvelo futsi letihlobene netinchubo tesigodzi semanti njengekugeleta kwemvula.
	I-Chl-a phytoplankton		21 mg/m <sup>2</sup>
	I-Biotic community composition - macroinvertebrate	ASPT: 6-8 SASS5 ca.200	< 5 µg/L
	Kungena lokungena ngemfudlane	Akukasampulwa	ASPT 6
	Iflorayidi	A (252)	1500 µg/L (Sigaba A)

Tintfo letiyingoti	Al	20 µg/L (Sigaba A)
	I-amoniya	15 µg/L (Sigaba A)
	As	20 µg/L (Sigaba A)
	I-Atrazine	19 µg/L (Sigaba A)
	Cd soft	0.2 µg/L (Sigaba A)
	Cd mod	0.2 µg/L (Sigaba A)
	Cd hard	0.3 µg/L (Sigaba A)
	Iklorini	0.4 µg/L (Sigaba A)
	Cr(III)	24 µg/L (Sigaba A)
	Cr(VI)	14 µg/L (Sigaba A)
	Cu soft	0.5 µg/L (Sigaba A)
	Cu mod	1.5 µg/L (Sigaba A)
	Cu hard	2.4 µg/L (Sigaba A)
	I-Cyanide	4 µg/L (Sigaba A)

## Lithebula 5.3.3: EWR K3 – IKomati Lesentasi

Umfula	IKomati Lesetulu	Tindzawo Tekucephela Lizinga Lemanti teDWS	
WQU	7	RC	X1H003Q01
I-EWR Site	K3	PES	X1H003Q01
Tincenye Telizinga Lemanti		Simo Lesingatsandzeki	
Sawoti wetinfo letingaphili	MgSO <sub>4</sub>	B	16 mg/L.
	Na <sub>2</sub> SO <sub>4</sub>	B	20 mg/L.
	MgCl <sub>2</sub>	B	15 mg/L.
	CaCl <sub>2</sub>	A	21 mg/L.
	NaCl	B	45 mg/L.
	CaSO <sub>4</sub>	A	351 mg/L.
Takhamtimba	SRP	C (0.025)	0.017 mg/L.
	TIN	C (0.32)	0.129 mg/L.
Kwehlukahlukana kwesimomvelo	pH	B (6.01-8.77)	
	Lizingakushisa	Kute idatha	Linani lemaphesenti lasi-5: 6.5-6.8  Linani lemaphesenti langema-95: 8.0-8.5  Ehluka ngalokungenci ku20C nangabe acatsaniswa sibalokhatsi semvelo sangenyanga.
	I-Oksijini lencibilikile	Kute idatha	
	Kudvungeka (NTU)	Kulindzeleke kudvungeka lokukhulu ngemuva kwetimvula ngenca yekukhishwa kwetilimo temvelo kanye nekwehlela kwemvelo.	
Kwehlukana kwetimphevdulo	I-Chl-a periphyton (tinfo letingaphili letinamatsela etihlahleni)	Not sampled/ rocks clogged with filamentous algae.	
	I-Chl-a phytoplankton	< 5 µg/L	
	I-Biotic community composition - macroinvertebrate	ASPT: 5 SASS5: < 50	ASPT 6
	Kungena lokungena ngemfudlane	Akukasampulwa	
Iflorayidi	225 (A)	1500 µg/L (Sigaba A)	

Tintfo letiyigoti	Al		20 µg/L (Sigaba A)
	I-amoniya		15 µg/L (Sigaba A)
	As		20 µg/L (Sigaba A)
	I-Atrazine		19 µg/L (Sigaba A)
	Cd soft		0.2 µg/L (Sigaba A)
	Cd mod		0.2 µg/L (Sigaba A)
	Cd hard		0.3 µg/L (Sigaba A)
	Iklorini		0.4 µg/L (Sigaba A)
	Cr(III)		24 µg/L (Sigaba A)
	Cr(VI)		14 µg/L (Sigaba A)
	Cu soft		0.5 µg/L (Sigaba A)
	Cu mod		1.5 µg/L (Sigaba A)
	Cu hard		2.4 µg/L (Sigaba A)
	I-Cyanide		4 µg/L (Sigaba A)

Table 5.3.4: EWR G1 – Upper Komati

Umfula	IKomati Lesetulu	Tindzawo Tekucephela Lizinga Lemanti teDWS	
WQU	4	RC	
I-EWR Site	G1	PES	
Tincenye Telizinga Lemanti		Simo Lesingatsandzeki	
		I-Quality EcoSpecs (Kwehlukana iBenchmark)	
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	B	
	Na <sub>2</sub> SO <sub>4</sub>	A	
	MgCl <sub>2</sub>	A	
	CaCl <sub>2</sub>	A	
	NaCl	A	
	CaSO <sub>4</sub>	A	
Takhamtimba	SRP	B/C (0.014)	
	TIN	B/C (0.235)	
Kwehlukahlukana kwesimomvelo	pH	B/C (7.25-8.44)	
	Lizingakushisa	Kute idatha	
	I-Oksijini lencibilikile	Kute idatha	
	Kudvungeka (NTU)	Kurekhodwe ema-values eTDS lasetulu (kusuka ku 7 kuya ku 155).	
Kwehlukana kwetimphehndvulo	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Kute lerekhodiwe	
	I-Chl-a phytoplankton	Kute lerekhodiwe	
	I-Biotic community composition - macroinvertebrate	ASPT: 4.21-6.3 SASS5:30-160	
	Kungena lokungena ngemfudlane	Akukasampulwa	
	Iflorayidi	167 (A)	
	Al		
	I-amoniya		
	As		
	I-Atrazine		
		1500 µg/L (Sigaba A)	
		20 µg/L (Sigaba A)	
		15 µg/L (Sigaba A)	
		20 µg/L (Sigaba A)	
		19 µg/L (Sigaba A)	

Tintfo letiyingoti	Cd soft	0.2 µg/L (Sigaba A)
	Cd mod	0.2 µg/L (Sigaba A)
	Cd hard	0.3 µg/L (Sigaba A)
	Iklorini	0.4 µg/L (Sigaba A)
	Cr(III)	24 µg/L (Sigaba A)
	Cr(VI)	14 µg/L (Sigaba A)
	Cu soft	0.5 µg/L (Sigaba A)
	Cu mod	1.5 µg/L (Sigaba A)
	Cu hard	2.4 µg/L (Sigaba A)
	I-Cyanide	4 µg/L (Sigaba A)

Table 5.3.5: EWR T1 – Upper Komati

Umfuza	IKomati Lesetulu	Tindzawo Tekucephela Lizinga Lemanti teDWS		
WQU	6	RC		
I-EWR Site	T1	PES		
Tincenye Telizinga Lemanti		Simo Lesingatsandzeki		
		I-Quality EcoSpecs (Kwehlukana iBenchmark)		
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	B		
	Na <sub>2</sub> SO <sub>4</sub>	A		
	MgCl <sub>2</sub>	A		
	CaCl <sub>2</sub>	A		
	NaCl	B		
	CaSO <sub>4</sub>	B		
Takhamtimba	SRP	C/D (0.04)		
	TIN	A (0.186)		
Kwehlukahlukana kwesimomvelo	pH	A (7.78-7.74)		
	Lizingakushisa	Kute idatha	Kute imitselela lelindzelekile	
	I-Oksijini lencibilikile	Kute idatha		
	Kudvungeka (NTU)	Kulindzeleke kudvungeka lokukhulu ngemuva kwetimvula ngenca yekukhishwa kwetilimo temvelo kanye nekwehlela kwemvelo.		
Kwehlukana kwetimphendvulo	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Akukasampulwa		
	I-Chl-a phytoplankton			
	I-Biotic community composition - macroinvertebrate	ASPT: 5.7-7.2 SASS: 163-239	ASPT > 6	
	Kungena lokungena ngemfulane	Akukasampulwa		
	I-florayidi	363 (A)		
	Al			
	I-amoniya			
	As			
		1500 µg/L (Sigaba A)		
		20 µg/L (Sigaba A)		
		15 µg/L (Sigaba A)		
		20 µg/L (Sigaba A)		

Tintfo letiyingoti	I-Atrazine	19 µg/L (Sigaba A)
	Cd soft	0.2 µg/L (Sigaba A)
	Cd mod	0.2 µg/L (Sigaba A)
	Cd hard	0.3 µg/L (Sigaba A)
	Iklorini	0.4 µg/L (Sigaba A)
	Cr(III)	24 µg/L (Sigaba A)
	Cr(VI)	14 µg/L (Sigaba A)
	Cu soft	0.5 µg/L (Sigaba A)
	Cu mod	1.5 µg/L (Sigaba A)
	Cu hard	2.4 µg/L (Sigaba A)
	I-Cyanide	4 µg/L (Sigaba A)



Lithebula 5.3.6: EWR L1 – Lomati

Umfuza	IKomati Lesetulu	Tindzawo Tekucephela Lizinga Lemanti teDWS	
WQU	10	RC	
I-EWR Site	L1	PES	
Tincenye Telizinga Lemanti		Simo Lesingatsandzeki	
		I-Quality EcoSpecs (Kwehlukana iBenchmark)	
Sawoti wetintfo letingaphili	MgSO <sub>4</sub>	B	
	Na <sub>2</sub> SO <sub>4</sub>	A	
	MgCl <sub>2</sub>	A	
	CaCl <sub>2</sub>	A	
	NaCl	B	
	CaSO <sub>4</sub>	A	
Takhamtimba	SRP	C (0.022)	
	TIN	B/C (0.277)	
Kwehlukahukana kwesimomvelo	pH	B (6.9-8.6)	
	Lizingakushisa	Kute idatha	Lidami laseDriekoppies tinchubo tekusebenta titawuba nemtselela emazingeni ekushisa ngenca yekuphuma kwemanti labandzabako phakatsi.
	I-Oksijini lencibilikile	Kute idatha	
	Kudvungeka (NTU)	Ema-sediments atintekile emadamini.	
Kwehlukana kwetimphephulo	I-Chl-a periphyton (tintfo letingaphili letinamatsela etihlahleni)	Akukasampulwa	
	I-Chl-a phytoplankton		
	I-Biotic community composition - macroinvertebrate	ASPT: 5.5-7.0 SASS5:60-250	
	Kungena lokungena ngemfudlane	Akukasampulwa	
	Iflorayidi	154 (A)	
		1500 µg/L (Sigaba A)	

Tintfo letiyingoti	Al	20 µg/L (Sigaba A)
	I-amoniya	15 µg/L (Sigaba A)
	As	20 µg/L (Sigaba A)
	I-Atrazine	19 µg/L (Sigaba A)
	Cd soft	0.2 µg/L (Sigaba A)
	Cd mod	0.2 µg/L (Sigaba A)
	Cd hard	0.3 µg/L (Sigaba A)
	Iklorini	0.4 µg/L (Sigaba A)
	Cr(III)	24 µg/L (Sigaba A)
	Cr(VI)	14 µg/L (Sigaba A)
	Cu soft	0.5 µg/L (Sigaba A)
	Cu mod	1.5 µg/L (Sigaba A)
	Cu hard	2.4 µg/L (Sigaba A)
	I-Cyanide	4 µg/L (Sigaba A)

## 6. EMANTI APHASI - INCENYE YEBUNYENTI

Incenye yebunyenti bemanti aphasi incunye ngekusebentisa ema-values (i-recharge, kuhamba kwemanti phasi, kusetjentiswa kwemanti aphasi kanye ne-stress index) lesifolwe ngekuncunye kwetigaba temfombo wemanti kanye netinjongo temfombo lohlobene esigodzini semanti iNkomati, (DWS 2015), letikhonjiswe kuLithebula 6.1. Lizinga lelisemkhatsini le-recharge yemanti aphasi emnyaka kuso sonkhe sigodzi semanti ngekuya ngemklamo weGroundwater Resource Assessment Phase II (GRA II) idataset ilinganiselwa kuba ngetulu kwa 1 500 Mm<sup>3</sup>/a. Emagugu e-Ecological Water Requirements\_Maintenance Low Flow (EWR\_MLF) atfolwe kusifundvo sesincumo seSabelo semanti aphasi laphangisako esigodzi se-Inkomati (AGES, 2010).

Emagugu elinanibantfu latfolwe kudaset Yetinsita Temanti tanga-2011. Sabelo Setidzingo Tebantfu Letisisekelo siniketa tidzingo letisisekelo tebantfu labaphakelwa ngco ngumfombo wemanti lekukhulunywa ngayo futsi tifaka ekhatsi emanti ekunatsa, ekulungiselela kudla kanye nekutihlobisa. Linani lekuphila lemalitha langu-25 ngemuntfu lisetjentisiwe. Indlela yesifundvo yamanje nayo itsatse ibuke emadaset eGRA II nema-WARMS anga 2013 kutfolo silinganiso lesifanele sekusetjentiswa kwemanti aphasi. Kusetjentiswa kwemanti aphasi lokuphelele kwesigodzi semanti Inkomati kulinganiswe ku 52.3 Mm<sup>3</sup>/a. Inkhomba yekucineka kwemanti aphasi kukhombisa kusetjentiswa kwemanti aphasi kanye neku-recharge.

Lithebula 6.1 Sifinyeto Sesabelo

Sigodzi semanti semandvulo	Area(km <sup>2</sup> )	I-Recharge (Mm <sup>3</sup> /a)	Linanibantfu	Kuhamba kwaphasi (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	Sabelo seBHN (Mm <sup>3</sup> /a)	Sabelo (Mm <sup>3</sup> /a)	Kusetjentiswa kwemanti aphaasi (Mm <sup>3</sup> /a)	Inkhomba Yekucineka
X11A	672	24.36	2561	7.21	11.47	0.023	11.49	0.33	1%
X11B	597	22.93	8946	6.96	10.72	0.082	10.80	0.83	4%
X11C	319	13.12	30051*	3.68	5.99	0	5.99	1.56	12%
X11D	590	25.97	30051*	23.59	12.24	0	12.24	0.51	2%
X11E	242	11.38	30051*	9.97	4.77	0	4.77	0.02	0%
X11F	183	9.49	30051*	7.54	4.24	0	4.24	0.15	2%
X11G	264	20.58	30051*	17.25	9.65	0	9.65	0.2	1%
X11H	265	21.55	30051*	17.17	10.09	0	10.09	0.44	2%
X11J	186	15.75	30051*	11.98	7.24	0	7.24	0.26	2%
X11K	211	16.73	30051*	10	7.38	0	7.38	0.82	5%
X12A	244	15.45	30051*	13.94	7.27	0	7.27	0.08	0%
X12B	155	10.3	30051*	12.05	4.84	0	4.84	0.04	0%
X12C	186	13.28	30051*	8.03	6.52	0	6.52	0.08	1%
X12D	223	14.19	2735	7.54	6.23	0.025	6.25	0.29	2%
X12E	333	20.72	1020	11.5	9.63	0.009	9.64	0.09	0%
X12F	313	21.69	59707	10.85	10.63	0.545	11.17	0.13	1%
X12G	239	16.9	13058	3.42	8.11	0.119	8.23	0.05	0%
X12H	286	26.31	6177	9.41	12.6	0.056	12.66	0.05	0%
X12J	296	29.62	246	5.77	14.3	0.002	14.30	0.16	1%
X12K	286	27.93	10338	9.37	13.57	0.094	13.66	0.08	0%
X13J	828	20.68	157637	0	8.63	1.438	10.07	0.7	3%
X13K	621	10.25	56636	6.86	0.13	0.517	0.65	2.56	25%
X13L	286	5.17	3387	2.83	0.36	0.031	0.39	0.98	19%
X14A	141	8.89	30051*	0	4.2	0	4.20	0.09	1%
X14B	185	11.39	457	0	5.41	0.004	5.41	0.09	1%

Sigodzi semanti semandvulo	Area(km <sup>2</sup> )	I-Recharge (Mm <sup>3</sup> /a)	Linanibantfu	Kuhamba kwaphasi (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	Sabelo seBHN (Mm <sup>3</sup> /a)	Sabelo (Mm <sup>3</sup> /a)	Kusetjentiswa kwemanti aphasi (Mm <sup>3</sup> /a)	Inkhomba Yekucineka
X14F	117	6.89	30051*	4.62	3.36	0	3.36	0.07	1%
X14G	204	6	89074	6.15	2.29	0.813	3.10	0.62	10%
X14H	360	8.67	38790	3.19	3.62	0.354	3.97	6.68	77%
X21A	265	13.85	446	2.69	0.93	0.004	0.93	0.67	5%
X21B	378	18.81	28783*	4.01	3.27	0	3.27	0.45	2%
X21C	311	16.25	869	3.21	7.67	0.008	7.68	0.75	5%
X21D	219	10.95	28783*	2.04	4.84	0	4.84	0.14	1%
X21E	345	29.69	28783*	3.59	16.58	0	16.58	0.2	1%
X21F	397	18.3	9513	3.17	8.83	0.087	8.92	0.83	5%
X21G	347	17.51	14487	4.24	8	0.132	8.13	0.16	1%
X21H	229	21.19	28783*	5.7	10.23	0	10.23	0.08	0%
X21J	355	29.26	120	6.45	14.08	0.001	14.08	0.15	1%
X21K	245	22.78	625	4.16	11.13	0.006	11.14	0.11	0%
X22A	252	23.67	28783*	4.28	11.3	0	11.30	0.07	0%
X22B	227	21.24	28783*	4.36	9.75	0	9.75	0.46	2%
X22C	366	20.69	28783*	7.51	8.43	0	8.43	1.03	5%
X22D	274	25.58	12182	3.84	12.02	0.111	12.13	0.15	1%
X22E	153	13.92	28783*	3.9	6.75	0	6.75	0.04	0%
X22F	212	11.41	947	2.05	3.02	0.009	3.03	1.19	10%
X22G	107	9.39	28783*	3.02	4.72	0	4.72	0.11	1%
X22H	200	10.22	5440	2.09	2.95	0.050	3.00	0.92	9%
X22J	240	12.75	23373	2.56	5.48	0.213	5.69	0.81	6%
X22K	335	14.57	33140	3.55	42.45	0.302	42.75	2.89	20%
X23A	127	10.69	28783*	1.71	4.79	0	4.79	0.07	1%
X23B	229	12.38	28783*	3.18	5.13	0	5.13	0.65	5%
X23C	81	6.98	28783*	3.34	2.93	0	2.93	0.12	2%

Sigodzi semanti semandvulo	Area(km <sup>2</sup> )	I-Recharge (Mm <sup>3</sup> /a)	Linanibantfu	Kuhamba kwaphasi (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	Sabelo seBHN (Mm <sup>3</sup> /a)	Sabelo (Mm <sup>3</sup> /a)	Kusetjentiswa kwemanti aphasi (Mm <sup>3</sup> /a)	Inkhomba Yekucineka
X23D	182	12.89	28783*	2.43	6.11	0	6.11	0.17	1%
X23E	180	12.02	53913	3.18	5.32	0	5.32	0.16	1%
X23F	310	20.29	596	1.63	8.5	0.492	8.99	2.41	12%
X23G	225	11.2	3837	2.24	4.97	0.005	4.98	0.26	2%
X23H	306	14.59	54450	1.92	10.78	0.035	10.82	0.66	4%
X24A	249	7.57	171771	2.52	3.42	0.497	3.92	0.4	5%
X24B	335	11.06	184218	2.46	5.13	1.567	6.70	0.82	7%
X24C	286	10.49	340	1.35	4.87	1.681	6.55	0.09	1%
X24D	302	10.58	5073	2.08	52.22	0.003	52.22	0.38	4%
X24E	526	12.28	323	0	5.56	0.046	5.61	0.22	2%
X24F	262	5.76	28783*	0	1.89	0.003	1.89	0.72	12%
X24G	620	11.69	28783*	0	4.84	0	4.84	0.12	1%
X24H	769	12.78	11707	0	90	0	90.00	0.98	8%
X31A	230	39.15	1722	2.14	19.1	0.107	19.21	2.33	6%
X31B	195	32.54	355	1.81	7.43	0.016	7.45	0.11	0%
X31C	154	25.8	2099	1.44	5.21	0.003	5.21	0.11	0%
X31D	192	17.49	31805	0.77	11.35	0.019	11.37	1.16	7%
X31E	214	26.11	2255	1.92	12.42	0.290	12.71	0.37	1%
X31F	94	11.66	22348	1.88	5.41	0.021	5.43	0.08	1%
X31G	169	12.43	26567*	1.65	10.04	0.204	10.24	1.4	11%
X31H	60	6.69	30984	0.6	2.98	0	2.98	0.12	2%
X31J	154	13.54	97372	1.57	5.55	0.283	5.83	0.53	4%
X31K	488	12.58	41155	0	29.39	0.889	30.28	0.58	5%
X31L	304	13.71	21584	0	6.09	0.376	6.47	0.51	4%
X31M	709	12.79	18850	0	4.44	0.197	4.64	0.95	7%
X32A	112	7.4	11671	0	3.24	0.172	3.41	0.5	7%

Sigodzi semanti semandvulo	Area(km <sup>2</sup> )	I-Recharge (Mm <sup>3</sup> /a)	Linanibantfu	Kuhamba kwaphasi (Mm <sup>3</sup> /a) (DWS, 2015)	EWR_MLF (Mm <sup>3</sup> /a)	Sabelo seBHN (Mm <sup>3</sup> /a)	Sabelo (Mm <sup>3</sup> /a)	Kusetjentiswa kwemanti aphasi (Mm <sup>3</sup> /a)	Inkhomba Yekucineka
X32B	55	3.38	30860	1.07	1.28	0.106	1.39	0.32	9%
X32C	233	6.52	33350	0.52	3.32	0.529	3.85	0.91	14%
X32D	100	6.75	32638	1.47	2.93	0.282	3.21	0.32	5%
X32E	78	4.68	36640	0.95	1.74	0.304	2.04	2.36	50%
X32F	157	4.71	19418	0.76	2.73	0.298	3.03	0.4	8%
X32G	336	5.48	26567*	0.99	1.7	0.334	2.03	1.02	19%
X32H	488	7.21	26567*	0	2.84	0.177	3.02	0.28	4%
X32J	355	4.96	26567*	0	9.32	0	9.32	0.09	2%
X33A	600	7.85	26567*	0	3.16	0	3.16	0.05	1%
X33B	311	3.24	26567*	0	0.9	0	0.90	0.02	1%
X33C	183	1.27	0	0	0.24	0	0.24	0.03	2%
X33D	350	3.92	0	0	1.93	0	1.93	0	0%
X40A	924	9.59	7552	0	2.77	0	2.77	0.1	1%
X40B	743	7.71	0	0	2.4	0	2.40	0.07	1%
X40C	941	10.89	30860	0	3.87	0.069	3.94	0.15	1%
X40D	589	4.89	33350	0	1.59	0	1.59	0.06	1%

\*Population estimated based on the average of the secondary catchment X1, X2 and X2

## 7. EMANTI APHASI - INCENYE YEBUNJALO

Bunjalo bemanti aphasu kumele butfobele tinkhombandlela tebungalo bemanti aphasu njengobe bukhonjisiwe kuLithebula 7.1. Bunjalo bemanti aphasu esigodzini semanti Inkomati buhlolwe ngesigodzi semanti sasemandvulo (Lithebula 7.2). Sifinyeto sesigaba sebunjalo bemanti kanye netilinganiso tetinkinga ngekuya ngesigodzi semanti sasemandvulo kuLithebula 7.3. Silinganisi senkinga ngulesilinganiso lesilinganisi lesasetjentiswa kwenta sincumo ngesigaba sebunjalo bemanti bemfulo wasemandvulo.

**Lithebula 7.1: Insitabhuku yekuhlola kufaneleka kwemanti aphasu ekusetjentiswa kahle**

Silinganisi Yemakhemikhali	I-Target Water Quality Ranges 1)			
	Sigaba 0	Sigaba I	Sigaba II	Sigaba III
pH (emayunithi e-pH)	6 – 9	5 – 6 & 9 – 9.5	4 – 5 & > 9.5 – 10	<4 & >10
Kuhanjiswa Kwagezi (mS/m)	< 70	70 - 150	150 – 370	>370
Ikhalsiyamu njenge Ca	< 80	80 - 150	150 – 300	>300
Imagizeziyamu njenge Mg	< 70	70 - 100	100 – 200	>200
Isodiyamu njenge Na	< 100	100 - 200	200 – 400	>400
Ikloriyadi njenge Cl	< 100	100 - 200	200 – 600	>600
Isaliphiyethi njenge SO <sub>4</sub>	< 200	200 - 400	400 – 600	>600
Inayithrethi njenge NO <sub>x</sub> -N	< 6	6 - 10	10 – 20	>20
Iflorayidi njenge F	<0.7	0.7 – 1.0	1.0 – 3.5	>3.5

1) Irefurensi: Bunjalo Bekuphakelwa Kwemanti Asemakhayo, Ivolumu 1: Insitabhuku Yekuhlola, 2nd Ed. 1998. Umbiko Wekhomishini Yakuphenya Emanti nombolo: TT 101/98. Pitoli, Ningizimu Afrika. Khumbula: onkho emayunithi ekulinganisa aku mg/l, ngaphandle nangabe kuphewulwe ngelendlela.



## Sigodzi semant semandvulo

Idatha yebunjalo bemanti aphaasi yatfolwa ku WMS futsi yasetjentiswa kuncuma bunjalo besigodzi semfula wasemandvulo, buka Lithebula 7.2 neLithebula 7.3 kutfola sifinyeto sesigaba sebunjalo bemanti kanye netilinganisi tetinkinga.

Lithebula 7.2 Bunjalo bemanti aphaasi ngeSigodzi semanti sasemandvulo

Silinganisi Yemakhemikhali	Iyunithi	Tigodzi Temanti Asemandvulo X11A, X11B, X11C, X11D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphaasi <sup>3)</sup>			
		X11A*	X11B*	X11C*	X11D*	X11A*	X11B*	X11C*	X11D*		X11A*	X11B*	X11C*	X11D*
pH		44	41	42	42	7.99	8.03	8.02	8.02	5.0 – 9.5	8.79	8.83	8.82	8.82
Kuhanjiswa Kwagezi	mS/m	44	41	42	42	22.75	22.70	22.60	22.60	<150	25.03	24.97	24.86	24.86
Ikhalsiyamu njenge Ca	mg/l	39	36	37	37	23.07	22.80	22.53	22.53	<150	25.37	25.07	24.78	24.78
Imagineziyamu njenge Mg	mg/l	39	36	37	37	6.72	6.70	6.68	6.68	<100	7.39	7.37	7.35	7.35
Isodiyamu njenge Na	mg/l	38	36	37	37	8.78	8.63	8.51	8.51	<200	9.65	9.49	9.36	9.36
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	39	36	37	37	98.80	98.43	98.06	98.06	Ayidzingeke	108.68	108.27	107.87	107.87
Ikloriyadi njenge Cl	mg/l	40	37	38	38	5.38	5.35	5.17	5.17	<200	5.92	5.88	5.69	5.69
Isaliphithi njenge SO <sub>4</sub>	mg/l	38	36	37	37	5.89	5.58	5.45	5.45	<400	6.48	6.14	6.00	6.00
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	40	37	38	38	0.11	0.11	0.11	0.11	<10	0.12	0.12	0.12	0.12
Iflorayidi njenge F	mg/l	39	36	37	37	0.17	0.17	0.17	0.17	<1.0	0.18	0.19	0.19	0.19

Silinganisi Yemakhemikhali	Iyunithi	Tigodzi Temanti Asemandvulo X11E, X11F, X11G, X11H												
		Nombolo Yemasampuli				Tigodzi Burjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X11E*	X11F*	X11G*	X11H	X11E*	X11F*	X11G*	X11H		X11E*	X11F*	X11G*	X11H
pH		42	42	4	24	8.02	8.02	7.98	7.54	5.0 – 9.5	8.82	8.82	8.77	8.30
Kuhanjiswa Kwagezi	mS/m	42	42	4	24	22.60	22.60	15.85	17.60	<150	24.86	24.86	17.44	19.36
Ikhalsiyamu njenge Ca	mg/l	37	37	4	23	22.53	22.53	12.40	12.21	<150	24.78	24.78	13.64	13.43
Imagineziyamu njenge Mg	mg/l	37	37	4	23	6.68	6.68	11.55	5.70	<100	7.35	7.35	12.71	6.27
Isodiyamu njenge Na	mg/l	37	37	4	23	8.51	8.51	4.00	10.40	<200	9.36	9.36	4.40	11.44
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	37	37	4	23	98.06	98.06	81.80	70.80	Ayidzingeke	107.87	107.87	89.98	77.88
Ikloriyadi njenge Cl	mg/l	38	38	4	23	5.17	5.17	1.50	5.00	<200	5.69	5.69	1.65	5.50
Isaliphithi njenge SO <sub>4</sub>	mg/l	37	37	4	23	5.45	5.45	4.05	4.40	<400	6.00	6.00	4.46	4.84
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	38	38	4	23	0.11	0.11	0.13	0.77	<10	0.12	0.12	0.14	0.85
Iforayidi njenge F	mg/l	37	37	4	23	0.17	0.17	0.23	0.16	<1.0	0.19	0.19	0.25	0.17

Silinganisi Yemakhemikhali	Iyuniti	Tigodzi Temanti Asemandvulo X11J, X11K, X12A, X12B												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X11J*	X11K	X12A*	X12B*	X11J*	X11K	X12A*	X12B*		X11J*	X11K	X12A*	X12B*
pH		24	3	10	4	7.54	6.71	7.17	7.98	5.0 – 9.5	8.30	7.38	7.88	8.77
Kuhanjiswa Kwagezi	mS/m	24	3	10	4	17.60	16.2	14.05	15.85	<150	19.36	17.82	15.46	17.44
Ikhalsiyamu njenge Ca	mg/l	23	3	10	4	12.21	10.1	5.85	12.40	<150	13.43	11.11	6.44	13.64
Imagineziyamu njenge Mg	mg/l	23	3	10	4	5.70	5.3	3.50	11.55	<100	6.27	5.83	3.85	12.71
Isodiyamu njenge Na	mg/l	23	3	10	4	10.40	13.4	8.35	4.00	<200	11.44	14.74	9.19	4.40
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	23	3	10	4	70.80	75.3	31.50	81.80	Ayidzingeke	77.88	82.83	34.65	89.98
Ikloriyadi njenge Cl	mg/l	23	3	10	4	5.00	5	3.55	1.50	<200	5.50	5.50	3.91	1.65
Isaliphithi njenge SO <sub>4</sub>	mg/l	23	3	10	4	4.40	4.5	4.60	4.05	<400	4.84	4.95	5.06	4.46
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	23	3	10	4	0.77	0.29	0.35	0.13	<10	0.85	0.32	0.38	0.14
Iflorayidi njenge F	mg/l	23	3	10	4	0.16	0.11	0.12	0.23	<1.0	0.17	0.12	0.13	0.25

Silinganisi Yemakhemikhali	Iyunithi	Tigodzi Temanti Asemandvulo X12C, X12D, X12E, X12F												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X12C*	X12D	X12E*	X12F	X12C*	X12D	X12E*	X12F		X12C*	X12D	X12E*	X12F
pH		51	50	51	11	8.54	8.55	8.54	7.99	5.0 – 9.5	9.39	9.40	9.39	8.79
Kuhanjiswa Kwagezi	mS/m	51	50	51	11	61.00	61.10	61.00	43.80	<150	67.10	67.21	67.10	48.18
Ikhalsiyamu njenge Ca	mg/l	47	46	47	11	6.10	6.10	6.10	22.80	<150	6.71	6.71	6.71	25.08
Imagineziyamu njenge Mg	mg/l	46	45	46	11	0.63	0.50	0.63	17.40	<100	0.69	0.55	0.69	19.14
Isodiyamu njenge Na	mg/l	45	44	45	11	110.40	110.66	110.40	26.80	<200	121.44	121.73	121.44	29.48
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	46	45	46	11	54.50	54.60	54.71	170.00	Ayidzingeki	59.95	60.06	60.18	187.00
Ikloriyadi njenge Cl	mg/l	47	46	47	11	124.82	124.91	124.82	6.70	<200	137.30	137.40	137.30	7.37
Isaliphithi njenge SO <sub>4</sub>	mg/l	47	46	47	11	17.38	17.46	17.38	9.70	<400	19.11	19.21	19.11	10.67
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	47	46	47	11	0.05	0.05	0.05	0.27	<10	0.06	0.06	0.06	0.30
Iforayidi njenge F	mg/l	45	44	45	11	9.91	9.93	9.91	0.66	<1.0	9.91	9.93	9.91	0.73

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X12G, X12H, X12J, X12K												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphas <sup>3)</sup>			
		X12G	X12H*	X12J*	X12K	X12G	X12H*	X12J*	X12K		X12G	X12H*	X12J*	X12K
pH		3	11	3	9	8.37	8.10	8.37	8.10	5.0 – 9.5	9.21	8.91	9.21	8.91
Kuhanjiswa Kwagezi	mS/m	3	11	3	9	64.90	44.70	64.90	66.70	<150	71.39	49.17	71.39	73.37
Ikhaliyamu njenge Ca	mg/l	3	11	3	9	23.90	17.10	23.90	31.70	<150	26.29	18.81	26.29	34.87
Imagineziamu njenge Mg	mg/l	3	11	3	9	63.60	26.80	63.60	30.40	<100	69.96	29.48	69.96	33.44
Isodiyamu njenge Na	mg/l	3	11	3	9	23.20	30.20	23.20	21.70	<200	25.52	33.22	25.52	23.87
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	3	11	3	9	349.10	230.90	349.10	293.70	Ayidzingeke	384.01	253.99	384.01	293.7
Ikloriyadi njenge Cl	mg/l	3	11	3	9	6.50	9.50	6.50	9.50	<200	7.15	10.45	7.15	10.45
Isaliphithi njenge SO <sub>4</sub>	mg/l	3	11	3	9	7.60	14.50	7.60	14.50	<400	8.36	15.95	8.36	15.95
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	3	11	3	9	0.32	0.60	0.32	0.50	<10	0.36	0.65	0.36	0.55
Iflorayidi njenge F	mg/l	3	11	3	9	0.35	0.39	0.35	0.25	<1.0	0.39	0.43	0.39	0.28

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X13J, X13K, X13L, X14A												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebungjalo Bemanti aphasi <sup>3)</sup>			
		X13J	X13K	X13L*	X14A	X13J	X13K	X13L*	X14A		X13J	X13K	X13L*	X14A
pH		60	19	8	31	8.28	8.12	8.54	7.21	5.0 – 9.5	9.11	8.93	9.39	7.93
Kuhanjiswa Kwagezi	mS/m	60	19	8	31	138.00	155.00	76.40	2.80	<150	150	155.00	84.04	3.08
Ikhalsiyamu njenge Ca	mg/l	60	19	8	27	52.10	58.50	22.20	1.10	<150	57.31	64.35	24.42	1.21
Imagineziyamu njenge Mg	mg/l	60	19	8	27	45.40	52.70	23.05	0.50	<100	49.94	57.97	25.36	0.55
Isodiyamu njenge Na	mg/l	60	19	8	27	201.95	200.10	112.30	2.54	<200	201.95	200.10	123.53	2.79
I-Alkalinity Lephelole njenge CaCO <sub>3</sub>	mg/l	60	19	8	27	382.85	395.00	281.95	6.70	Ayidzingeke	421.14	434.50	310.15	7.37
Ikloriyadi njenge Cl	mg/l	60	19	8	27	189.20	292.47	89.30	5.00	<200	200	292.47	98.23	5.50
Isaliphithi njenge SO <sub>4</sub>	mg/l	60	19	8	27	14.60	27.86	5.35	2.00	<400	16.06	30.64	5.89	2.20
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	60	19	8	27	0.72	0.42	0.86	0.06	<10	0.79	0.47	0.94	0.07
Iflorayidi njenge F	mg/l	60	19	8	27	0.51	0.65	0.81	0.12	<1.0	0.57	0.72	0.89	0.14

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X14B, X14F, X14G, X14H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphas <sup>3)</sup>			
		X14B	X14F	X14G	X14H	X14B	X14F	X14G	X14H		X14B	X14F	X14G	X14H
pH		4	4	54	8	7.97	7.79	8.54	8.54	5.0 – 9.5	8.76	8.56	9.39	9.39
Kuhanjiswa Kwagezi	mS/m	4	4	54	8	303.00	37.15	71.40	76.40	<150	333.30	40.87	78.54	84.04
Ikhalsiyamu njenge Ca	mg/l	4	4	54	8	130.40	38.40	33.95	22.20	<150	143.44	42.24	37.35	24.42
Imagineziyamu njenge Mg	mg/l	4	4	54	8	99.20	17.60	43.60	23.05	<100	109.12	19.36	47.96	25.36
Isodiyamu njenge Na	mg/l	4	4	54	8	495.75	25.10	84.35	112.30	<200	495.75	27.61	92.79	123.53
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	4	4	54	8	632.95	148.55	276.25	281.95	Ayidzingeke	696.25	163.41	303.88	310.15
Ikloriyadi njenge Cl	mg/l	4	4	54	8	831.30	9.95	38.70	89.30	<200	831.30	10.95	42.57	98.23
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	4	4	54	8	60.45	14.15	2.00	5.35	<400	66.50	15.57	2.20	5.89
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	4	4	54	8	3.01	0.33	2.19	0.86	<10	3.31	0.36	2.41	0.94
Iflorayidi njenge F	mg/l	4	4	54	8	0.64	0.35	0.44	0.81	<1.0	0.70	0.39	0.48	0.89

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X21A, X21B, X21C, X21D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphas <sup>3)</sup>			
		X21A*	X21B*	X21C*	X21D*	X21A*	X21B*	X21C*	X21D*		X21A*	X21B*	X21C*	X21D*
pH		8	8	7	8	8.02	8.02	8.03	8.02	5.0 – 9.5	8.82	8.82	8.83	8.82
Kuhanjiswa Kwagezi	mS/m	8	8	7	8	76.85	76.85	95.70	76.85	<150	84.54	84.54	105.27	84.54
Ikhalsiyamu njenge Ca	mg/l	8	8	7	8	41.78	41.78	43.25	41.78	<150	45.96	45.96	47.58	45.96
Imagineziyamu njenge Mg	mg/l	8	8	7	8	33.55	33.55	43.04	33.55	<100	36.90	36.90	47.35	36.90
Isodiyamu njenge Na	mg/l	8	8	7	8	44.65	44.65	56.70	44.65	<200	49.11	49.11	62.37	49.11
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	8	8	7	8	114.48	114.48	116.76	141.56	Ayidzingeki	125.93	125.93	128.44	155.71
Ikloriyadi njenge Cl	mg/l	8	8	7	8	126.78	126.78	161.82	126.78	<200	139.46	139.46	178.00	139.46
Isaliphityethi njenge SO <sub>4</sub>	mg/l	8	8	7	8	56.22	56.22	69.54	56.22	<400	61.85	61.85	76.49	61.85
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	8	8	7	8	0.65	0.48	0.62	0.48	<10	0.72	0.52	0.68	0.52
Iflorayidi njenge F	mg/l	8	8	7	8	0.13	0.13	0.13	0.13	<1.0	0.14	0.14	0.14	0.14



Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X21E, X21F, X21G, X21H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasisi <sup>3)</sup>			
		X21E*	X21F	X21G*	X21H*	X21E*	X21F	X21G*	X21H*		X21E*	X21F	X21G*	X21H*
pH		9	55	55	7	8.03	8.12	8.12	8.03	5.0 – 9.5	8.83	8.93	8.93	8.83
Kuhanjiswa Kwagezi	mS/m	9	55	55	7	58.00	39.20	39.20	95.70	<150	63.80	43.12	43.12	105.27
Ikhalsiyamu njenge Ca	mg/l	9	49	49	7	40.31	9.86	9.86	43.25	<150	44.34	10.85	10.85	47.58
Imagineziyamu njenge Mg	mg/l	9	47	47	7	24.06	3.30	3.30	43.04	<100	26.46	3.63	3.63	47.35
Isodiyamu njenge Na	mg/l	9	46	46	7	32.60	63.85	63.85	56.70	<200	35.86	70.24	70.24	62.37
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	9	48	48	7	112.20	103.90	103.90	116.76	Ayidzingeke	123.42	114.29	114.29	128.44
Ikloriyadi njenge Cl	mg/l	9	47	47	7	91.74	49.02	49.02	161.82	<200	100.92	53.92	53.92	178.00
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	9	49	49	7	42.91	5.15	5.15	69.54	<400	47.20	5.66	5.66	76.49
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	9	49	49	7	0.62	0.05	0.05	0.62	<10	0.68	0.06	0.06	0.68
Iflorayidi njenge F	mg/l	9	47	47	7	0.13	3.38	3.38	0.13	<1.0	0.14	3.38	3.72	0.14

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X21J, X21K, X22A, X22B												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>(1)</sup>				Sabelo seBHN <sup>(2)</sup>	Sabelo Sebunjalo Bemanti aphas <sup>(3)</sup>			
		X21J	X21K*	X22A*	X22B*	X21J	X21K*	X22A*	X22B*		X21J	X21K*	X22A*	X22B*
pH		7	7	7	4	8.03	8.03	8.03	7.58	5.0 – 9.5	8.83	8.83	8.83	8.34
Kuhanjiswa Kwagezi	mS/m	7	7	7	4	95.70	95.70	95.70	9.00	<150	105.27	105.27	105.27	9.90
Ikhaliyamu njenge Ca	mg/l	7	7	7	4	43.25	43.25	43.25	6.30	<150	47.58	47.58	47.58	6.93
Imagineziamu njenge Mg	mg/l	7	7	7	4	43.04	43.04	43.04	1.75	<100	47.35	47.35	47.35	1.93
Isodiyamu njenge Na	mg/l	7	7	7	3	56.70	56.70	56.70	2.10	<200	62.37	62.37	62.37	2.31
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	7	7	7	4	116.76	116.76	116.76	26.40	Ayidzingeke	128.44	128.44	128.44	29.04
Ikloriyadi njenge Cl	mg/l	7	7	7	4	161.82	161.82	161.82	3.35	<200	178.00	178.00	178.00	3.89
Isaliphithi njenge SO <sub>4</sub>	mg/l	7	7	7	3	69.54	69.54	69.54	2.00	<400	76.49	76.49	76.49	2.20
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	7	7	7	4	0.62	0.62	0.62	0.23	<10	0.68	0.68	0.68	0.25
Iflorayidi njenge F	mg/l	7	7	7	4	0.13	0.13	0.13	0.11	<1.0	0.14	0.14	0.14	0.12

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X22C, X22D, X22E, X22F												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasisi <sup>3)</sup>			
		X22C*	X22D	X22E*	X22F*	X22C*	X22D	X22E*	X22F*		X22C*	X22D	X22E*	X22F*
pH		5	4	4	3	7.42	7.58	7.51	7.31	5.0 – 9.5	8.16	8.34	8.26	8.04
Kuhanjiswa Kwagezi	mS/m	5	4	4	3	45.40	9.00	37.85	45.40	<150	49.94	9.90	41.64	49.94
Ikhalsiyamu njenge Ca	mg/l	5	4	4	3	18.10	6.30	17.40	16.70	<150	19.91	6.93	19.14	18.37
Imagineziyamu njenge Mg	mg/l	5	4	4	3	12.00	1.75	11.85	12.00	<100	13.20	1.93	13.04	13.20
Isodiyamu njenge Na	mg/l	4	3	3	2	49.70	2.10	46.10	49.70	<200	54.67	2.31	50.71	54.67
I-Alkalinity Lephelole njenge CaCO <sub>3</sub>	mg/l	5	4	4	3	177.80	26.40	161.95	177.80	Ayidzingeke	195.58	29.04	178.15	195.58
Ikloriyadi njenge Cl	mg/l	5	4	4	3	16.70	3.35	13.20	16.70	<200	18.37	3.69	14.52	18.37
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	4	3	3	2	15.90	2.00	22.70	24.60	<400	17.49	2.20	24.97	27.06
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	5	4	4	3	2.69	0.23	1.25	2.48	<10	2.96	0.25	1.38	2.73
Iforayidi njenge F	mg/l	5	4	4	3	0.56	0.11	0.60	0.44	<1.0	0.62	0.12	0.66	0.48

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X22G, X22H, X22J, X22K												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti apha <sup>3)</sup>			
		X22G*	X22H	X22J*	X22K	X22G*	X22H	X22J*	X22K		X22G*	X22H	X22J*	X22K
pH		3	3	6	6	7.31	7.31	7.81	7.81	5.0 – 9.5	8.04	8.04	8.59	8.59
Kuhanjiswa Kwagezi	mS/m	3	3	6	6	45.40	45.40	43.55	43.55	<150	49.94	49.94	47.91	47.91
Ikhaliyamu njenge Ca	mg/l	3	3	6	6	16.70	16.70	34.85	34.85	<150	18.37	18.37	38.34	38.34
Imagineziyamu njenge Mg	mg/l	3	3	6	6	12.00	12.00	10.95	10.95	<100	13.20	13.20	12.05	12.05
Isodiyamu njenge Na	mg/l	2	2	6	6	49.70	49.70	53.00	53.00	<200	54.67	54.67	58.30	58.30
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	3	3	6	6	177.80	177.80	191.65	191.65	Ayidzingeke	195.58	195.58	210.82	210.82
Ikloriyadi njenge Cl	mg/l	3	3	6	6	16.70	16.70	14.30	14.30	<200	18.37	18.37	15.73	15.73
Isaliphithi njenge SO <sub>4</sub>	mg/l	2	2	6	6	24.60	24.60	9.60	9.60	<400	27.06	27.06	10.56	10.56
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	3	3	6	6	2.48	2.48	0.92	0.92	<10	2.73	2.73	1.02	1.02
Iflorayidi njenge F	mg/l	3	3	6	6	0.44	0.44	1.86	1.86	<1.0	0.48	0.48	1.86	1.86

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X23A, X23B, X23C, X23D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebungalo Bemanti aphas <sup>3)</sup>			
		X23A*	X23B	X23C*	X23D	X23A*	X23B	X23C*	X23D		X23A*	X23B	X23C*	X23D
pH		7	4	6	6	7.40	7.45	7.39	7.39	5.0 – 9.5	8.14	8.19	8.12	8.12
Kuhanjiswa Kwagezi	mS/m	7	4	6	6	24.30	42.80	22.50	22.50	<150	26.73	47.08	24.75	24.75
Ikhalsiyamu njenge Ca	mg/l	7	4	6	6	18.90	29.90	14.80	14.80	<150	20.79	32.89	16.28	16.28
Imagineziyamu njenge Mg	mg/l	7	4	6	6	10.60	10.85	10.95	10.95	<100	11.66	11.94	12.05	12.05
Isodiyamu njenge Na	mg/l	7	4	6	6	16.00	16.50	15.60	15.60	<200	17.60	18.15	17.16	17.16
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	7	4	6	6	91.20	127.85	73.85	73.85	Ayidzingeke	100.32	140.64	81.24	81.24
Ikloriyadi njenge Cl	mg/l	7	4	6	6	10.30	5.90	10.60	10.60	<200	11.33	6.49	11.66	11.66
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	7	4	6	6	6.30	9.10	6.70	6.70	<400	6.93	10.01	7.37	7.37
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	7	4	6	6	1.33	0.53	2.02	2.02	<10	1.46	0.58	2.22	2.22
Iflorayidi njenge F	mg/l	7	4	6	6	0.34	0.55	0.34	0.34	<1.0	0.37	0.60	0.37	0.37

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X23E, X23F, X23G, X23H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyan <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphas <sup>3)</sup>			
		X23E*	X23F*	X23G*	X23H	X23E*	X23F*	X23G*	X23H		X23E*	X23F*	X23G*	X23H
pH		6	6	15	13	7.39	7.39	8.06	8.14	5.0 – 9.5	8.12	8.12	8.87	8.95
Kuhanjiswa Kwagezi	mS/m	6	6	15	13	22.50	22.50	64.80	66.70	<150	24.75	24.75	71.28	73.37
Ikhalsiyamu njenge Ca	mg/l	6	6	15	13	14.80	14.80	31.30	28.70	<150	16.28	16.28	34.43	31.57
Imagineziyamu njenge Mg	mg/l	6	6	15	13	10.95	10.95	30.80	29.20	<100	12.05	12.05	33.88	32.12
Isodiyamu njenge Na	mg/l	6	6	15	13	15.60	15.60	48.50	54.60	<200	17.16	17.16	53.35	60.06
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	6	6	15	13	73.85	73.85	291.80	291.80	Ayidzingeke	81.24	81.24	320.98	320.98
Ikloriyadi njenge Cl	mg/l	6	6	15	13	10.60	10.60	23.40	24.60	<200	11.66	11.66	25.74	27.06
Isaliphithi njenge SO <sub>4</sub>	mg/l	6	6	15	13	6.70	6.70	18.70	34.70	<400	7.37	7.37	20.57	38.17
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	6	6	15	13	2.02	2.02	1.38	0.21	<10	2.22	2.22	1.51	0.24
Iflorayidi njenge F	mg/l	6	6	15	13	0.34	0.34	0.38	0.38	<1.0	0.37	0.37	0.42	0.42

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X24A, X24B, X24C, X24D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti apha <sup>3)</sup>			
		X24A	X24B	X24C	X24D	X24A	X24B	X24C	X24D		X24A	X24B	X24C	X24D
pH		5	51	5	13	8.48	8.18	8.14	8.45	5.0 – 9.5	9.33	9.00	8.95	9.30
Kuhanjiswa Kwagezi	mS/m	5	51	5	13	37.10	42.80	69.50	74.30	<150	40.81	47.08	76.45	81.73
Ikhalsiyamu njenge Ca	mg/l	5	44	5	13	39.60	20.88	38.00	19.60	<150	43.56	22.97	41.80	21.56
Imagineziyamu njenge Mg	mg/l	5	44	5	13	5.94	21.64	31.30	41.90	<100	6.54	23.81	34.43	46.09
Isodiyamu njenge Na	mg/l	5	44	5	13	57.17	28.99	97.77	37.10	<200	62.89	31.89	107.54	40.81
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	5	44	5	13	131.74	145.74	348.30	380.60	Ayidzingeki	144.92	160.32	383.13	418.66
Ikloriyadi njenge Cl	mg/l	5	45	5	13	23.22	20.80	61.80	28.50	<200	25.54	22.88	67.98	31.35
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	5	45	5	13	5.10	23.33	13.90	18.50	<400	5.61	25.66	15.29	20.35
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	5	43	5	12	0.75	2.54	0.07	2.80	<10	0.82	2.79	0.08	3.08
Iflorayidi njenge F	mg/l	4	41	5	11	1.09	0.21	0.91	0.23	<1.0	1.09	0.23	1.00	0.25

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X24E, X24F, X24G, X24H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyanj <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X24E	X24F	X24G	X24H	X24E	X24F	X24G	X24H		X24E	X24F	X24G	X24H
pH		12	5	23	55	8.61	8.62	8.48	8.25	5.0 – 9.5	9.47	9.48	9.33	9.08
Kuhanjiswa Kwagezi	mS/m	12	5	23	55	100.35	119.80	88.50	77.90	<150	110.39	131.78	97.35	85.69
Ikhaliyamu njenge Ca	mg/l	12	5	21	49	36.20	64.40	27.30	39.17	<150	39.82	70.84	30.03	43.08
Imagineziyamu njenge Mg	mg/l	12	5	21	48	29.55	46.40	26.80	29.43	<100	32.51	51.04	29.48	32.37
Isodiyamu njenge Na	mg/l	12	5	21	47	190.95	155.70	117.50	68.50	<200	210.05	171.27	129.25	75.35
I-Alkalinity Lephelile njenge CaCO <sub>3</sub>	mg/l	12	5	21	49	411.60	420.00	369.50	208.14	Ayidzingeke	452.76	462.00	406.45	228.96
Ikloriyadi njenge Cl	mg/l	12	5	21	49	108.10	171.70	83.70	105.35	<200	118.91	188.87	92.07	115.88
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	12	5	21	49	8.35	9.00	8.10	22.15	<400	9.19	9.90	8.91	24.37
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	12	5	21	49	0.02	0.81	0.05	0.57	<10	0.02	0.89	0.06	0.63
Iflorayidi njenge F	mg/l	12	4	21	47	0.97	0.51	0.62	0.38	<1.0	1.06	0.56	0.68	0.42



Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X31A, X31B, X31C, X31D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X31A*	X31B	X31C	X31D*	X31A*	X31B	X31C	X31D*		X31A*	X31B	X31C	X31D*
pH		4	50	50	52	7.58	8.08	7.54	8.06	5.0 – 9.5	8.34	8.89	8.29	8.87
Kuhanjiswa Kwagezi	mS/m	4	48	49	50	9.00	23.05	6.83	23.13	<150	9.90	25.36	7.51	25.44
Ikhaliyamu njenge Ca	mg/l	4	45	45	47	6.30	21.45	5.50	21.41	<150	6.93	23.59	6.05	23.55
Imageneziyamu njenge Mg	mg/l	4	45	44	47	1.75	12.79	2.99	12.79	<100	1.93	14.07	3.29	14.07
Isodiyamu njenge Na	mg/l	3	44	43	46	2.10	2.64	2.00	2.69	<200	2.31	2.90	2.20	2.96
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	4	43	45	45	26.40	97.70	28.80	97.70	Ayldzingeki	29.04	107.47	31.68	107.47
Ikloriyadi njenge Cl	mg/l	4	46	46	48	3.35	3.77	3.30	3.80	<200	3.69	4.14	3.63	4.18
Isaliphithi njenge SO <sub>4</sub>	mg/l	3	45	46	47	2.00	11.02	2.00	11.01	<400	2.20	12.12	2.20	12.11
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	4	45	46	47	0.23	0.66	0.25	0.66	<10	0.25	0.72	0.28	0.73
Iflorayidi njenge F	mg/l	4	50	50	46	0.11	8.08	7.54	0.11	<1.0	0.12	8.89	8.29	0.13

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X31E, X31F, X31G, X31H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphaasi <sup>3)</sup>			
		X31E	X31F*	X31G	X31H*	X31E	X31F*	X31G	X31H*		X31E	X31F*	X31G	X31H*
pH		20	46	46	52	7.31	7.51	7.51	8.06	5.0 – 9.5	8.04	8.26	8.26	8.87
Kuhanjiswa Kwagezi	mS/m	20	46	46	50	8.52	21.60	21.60	23.13	<150	9.37	23.76	23.76	25.44
Ikhaliyamu njenge Ca	mg/l	20	46	46	47	5.49	12.10	12.10	21.41	<150	6.04	13.31	13.31	23.55
Imagineziyamu njenge Mg	mg/l	20	46	46	47	1.71	6.02	6.02	12.79	<100	1.88	6.63	6.63	14.07
Isodiyamu njenge Na	mg/l	20	46	46	46	7.52	16.77	16.77	2.69	<200	8.28	18.45	18.45	2.96
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	20	46	46	45	33.07	68.19	68.19	97.70	Ayidzingeke	36.38	75.01	75.01	107.47
Ikloriyadi njenge Cl	mg/l	20	46	46	48	5.00	8.85	8.85	3.80	<200	5.50	9.74	9.74	4.18
Isaliphithi njenge SO <sub>4</sub>	mg/l	20	46	46	47	7.31	2.00	2.00	11.01	<400	8.04	2.20	2.20	12.11
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	20	46	46	47	0.12	2.19	2.19	0.66	<10	0.13	2.40	2.40	0.73
Iforayidi njenge F	mg/l	20	46	46	46	0.14	0.27	0.27	0.11	<1.0	0.16	0.30	0.30	0.13

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X31J, X31K, X31L, X31M												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphasi <sup>3)</sup>			
		X31J*	X31K	X31L	X31M	X31J*	X31K	X31L	X31M		X31J*	X31K	X31L	X31M
pH		4	91	68	50	7.31	8.11	8.01	8.17	5.0 – 9.5	8.04	8.92	8.81	8.98
Kuhanjiswa Kwagezi	mS/m	4	92	68	50	29.40	49.75	98.55	113.10	<150	32.34	54.73	108.41	124.41
Ikhaliyamu njenge Ca	mg/l	4	87	68	50	12.75	23.70	44.09	50.90	<150	14.03	26.07	48.50	55.99
Imagineziyamu njenge Mg	mg/l	4	86	68	50	11.85	17.49	31.34	71.86	<100	13.04	19.24	34.47	79.05
Isodiyamu njenge Na	mg/l	3	85	68	50	39.80	47.10	134.61	91.30	<200	43.78	51.81	148.07	100.43
I-Alkalinity Lephetele njenge CaCO <sub>3</sub>	mg/l	4	85	68	50	109.65	204.70	288.47	481.35	Ayidzingeke	120.62	225.17	317.31	529.49
Ikloriyadi njenge Cl	mg/l	4	87	68	50	13.65	24.91	108.70	82.40	<200	15.02	27.40	119.57	90.64
Isaliphithi njenge SO <sub>4</sub>	mg/l	3	87	68	50	22.70	8.00	13.22	11.75	<400	24.97	8.80	14.54	12.93
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	4	85	68	50	1.28	1.65	8.60	4.07	<10	1.40	1.82	9.46	4.47
Iflorayidi njenge F	mg/l	4	84	68	50	0.41	0.81	0.79	0.58	<1.0	0.45	0.89	0.87	0.63

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X32A, X32B, X32C, X32D												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>(1)</sup>				Sabelo seBHN <sup>(2)</sup>	Sabelo Sebungjalo Bemanti aphas <sup>(3)</sup>			
		X32A	X32B	X32C	X32D	X32A	X32B	X32C	X32D		X32A	X32B	X32C	X32D
pH		22	12	91	25	7.56	7.55	7.96	7.55	5.0 – 9.5	8.31	8.31	8.76	8.31
Kuhanjiswa Kwagezi	mS/m	22	12	91	25	17.35	16.15	47.20	16.60	<150	19.09	17.77	51.92	18.26
Ikhaliyamu njenge Ca	mg/l	22	12	91	25	10.22	9.10	23.20	9.80	<150	11.24	10.01	25.51	10.78
Imagineziyamu njenge Mg	mg/l	22	12	91	25	4.05	2.65	10.53	3.54	<100	4.46	2.92	11.58	3.90
Isodiyamu njenge Na	mg/l	22	12	90	25	16.53	18.71	54.92	17.10	<200	18.19	20.58	60.41	18.81
I-Alkalinity Lephelole njenge CaCO <sub>3</sub>	mg/l	22	12	91	25	63.90	62.00	159.20	64.20	Ayidzingeki	70.29	68.20	175.12	70.62
Ikloriyadi njenge Cl	mg/l	22	12	91	25	6.70	5.05	23.90	6.80	<200	7.37	5.56	26.29	7.48
Isaliphithi njenge SO <sub>4</sub>	mg/l	22	12	90	25	3.00	2.00	7.38	2.00	<400	3.30	2.20	8.12	2.20
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	22	12	91	25	1.10	1.53	1.80	1.15	<10	1.21	1.68	1.98	1.27
Iflorayidi njenge F	mg/l	22	12	91	25	0.25	0.28	0.67	0.26	<1.0	0.27	0.31	0.74	0.29

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemandvulo X32E, X32F, X32G, X32H												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>(1)</sup>				Sabelo seBHN <sup>(2)</sup>	Sabelo Sebunjalo Bemanti apha <sup>(3)</sup>			
		X32E	X32F	X32G	X32H	X32E	X32F	X32G	X32H		X32E	X32F	X32G	X32H
pH		84	27	96	69	7.72	8.01	8.11	8.12	5.0 – 9.5	8.50	8.81	8.92	8.93
Kuhanjiswa Kwagezi	mS/m	84	27	96	69	37.80	65.90	123.55	162.00	<150	41.58	72.49	135.91	162.00
Ikhalsiyamu njenge Ca	mg/l	84	27	96	69	20.94	35.25	52.75	55.30	<150	23.03	38.78	58.03	60.83
Imagineziyamu njenge Mg	mg/l	84	27	96	69	9.42	15.80	39.90	72.70	<100	10.36	17.38	43.89	79.97
Isodiyamu njenge Na	mg/l	84	27	96	69	31.45	85.60	143.07	226.60	<200	34.60	94.16	157.38	226.60
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	84	27	96	69	142.77	219.90	379.15	591.90	Ayidzingeke	157.04	241.89	417.07	651.09
Ikloriyadi njenge Cl	mg/l	84	27	96	69	16.95	72.60	125.10	140.70	<200	18.65	79.86	137.61	154.77
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	84	27	96	69	5.23	10.00	14.47	15.80	<400	5.75	11.00	15.92	17.38
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	84	27	96	68	1.17	0.93	84	27	<10	1.29	1.02	84	27
Iflorayidi njenge F	mg/l	84	27	96	69	0.42	0.82	84	27	<1.0	0.46	0.90	84	27

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X32J, X33A, X33B, X33C												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani1)				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphas3)			
		X32J	X33A	X33B	X33C	X32J	X33A	X33B	X33C		X32J	X33A	X33B	X33C
pH		5	13	3	7	8.74	8.70	8.67	8.68	5.0 – 9.5	9.5	9.5	9.5	9.5
Kuhanjiswa Kwagezi	mS/m	5	13	3	7	172.00	320.00	416.00	141.00	<150	172.00	320.00	416.00	150
Ikhaliyamu njenge Ca	mg/l	5	13	3	7	42.00	51.20	74.00	57.70	<150	46.20	56.32	81.40	63.47
Imagineziyamu njenge Mg	mg/l	5	13	3	7	34.50	73.80	95.00	41.00	<100	37.95	81.18	100	45.10
Isodiyamu njenge Na	mg/l	5	13	3	7	309.60	597.90	627.60	220.00	<200	309.60	597.90	627.60	220.00
I-Alkalinity Lephhelele njenge CaCO <sub>3</sub>	mg/l	5	13	3	7	569.80	714.70	584.50	542.60	Ayidzingeke	626.78	786.17	642.95	596.86
Ikloriyadi njenge Cl	mg/l	5	13	3	7	223.40	634.90	1060.90	154.60	<200	223.40	634.90	1060.90	170.06
Isaliphithi njenge SO <sub>4</sub>	mg/l	5	13	3	7	16.40	35.20	38.90	4.60	<400	18.04	38.72	42.79	5.06
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	5	13	3	7	0.02	0.02	0.36	0.02	<10	0.02	0.02	0.40	0.02
Iflorayidi njenge F	mg/l	5	13	3	7	0.97	1.34	1.60	1.18	<1.0	1.0	1.34	1.60	1.18

Silinganisi Yemakhemikhali	Iyunit hi	Tigodzi Temanti Asemadvulo X33D, X40A, X40B, X40C												
		Nombolo Yemasampuli				Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>				Sabelo seBHN <sup>2)</sup>	Sabelo Sebunjalo Bemanti aphi <sup>3)</sup>			
		X33D*	X40A	X40B	X40C	X33D*	X40A	X40B	X40C		X33D*	X40A	X40B	X40C
pH		4	50	10	43	8.65	8.49	8.67	8.50	5.0 – 9.5	9.5	9.34	9.5	9.35
Kuhanjiswa Kwagezi	mS/m	4	51	10	43	331.00	124.40	152.50	199.00	<150	364.10	136.84	152.50	199.00
Ikhalsiyamu njenge Ca	mg/l	4	46	10	43	90.65	54.10	69.75	50.54	<150	99.72	59.51	76.73	55.60
Imagineziyamu njenge Mg	mg/l	4	45	10	43	84.35	78.50	88.25	67.70	<100	92.79	86.35	97.08	74.47
Isodiyamu njenge Na	mg/l	4	43	10	42	512.65	76.75	178.35	338.95	<200	512.65	84.43	196.19	338.95
I-Alkalinity Laphetele njenge CaCO <sub>3</sub>	mg/l	4	44	10	43	561.65	446.35	565.30	616.90	Ayidzingeke	617.82	490.99	621.83	678.59
Ikloriyadi njenge Cl	mg/l	4	46	10	43	706.15	159.28	211.10	288.60	<200	706.15	175.21	211.10	288.60
Isaliphithi njenge SO <sub>4</sub>	mg/l	4	46	10	42	30.45	30.60	7.45	22.50	<400	33.50	33.66	8.20	24.75
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	4	44	10	37	0.52	1.52	3.73	0.74	<10	0.57	1.67	4.10	0.81
Iflorayidi njenge F	mg/l	4	42	10	43	1.42	0.73	1.12	0.74	<1.0	1.42	0.81	1.12	0.81

Silinganisi Yemakhemikhali	Iyunithi	Tigodzi Temanti Asemadvulo X40D			
		Nombolo Yemasampuli	Tigodzi Bunjalo be-Ambient GW nobe imediyani <sup>1)</sup>	Sabelo seBHN <sup>2)</sup>	Sabelo Sebungjalo Bemanti apha <sup>3)</sup>
		X40D	X40D		X40D
pH		38	8.37	5.0 – 9.5	9.21
Kuhanjiswa Kwagezi	mS/m	39	192.50	<150	192.50
Ikhaliyamu njenge Ca	mg/l	34	68.78	<150	75.66
Imagineziyamu njenge Mg	mg/l	33	102.13	<100	102.13
Isodiyamu njenge Na	mg/l	32	183.93	<200	202.32
I-Alkalinity Lephelele njenge CaCO <sub>3</sub>	mg/l	33	513.50	Ayidzingeke	564.85
Ikloriyadi njenge Cl	mg/l	34	312.94	<200	312.94
Isaliphiyethi njenge SO <sub>4</sub>	mg/l	34	18.47	<400	20.32
Inayithrethi njenge NO <sub>x</sub> -N	mg/l	33	4.30	<10	4.72
Iforayidi njenge F	mg/l	32	0.95	<1.0	1.04

\*These quaternaries did not have groundwater quality, as a result the data was extrapolated from the neighbouring quaternary with similar geology.



**Lithebula 7.3: Sigaba Sebunjalo Bemanti kanye netilinganisi letiyinkinga**

<b>Sigodzi semanti semandvulo</b>	<b>Sigaba</b>	<b>Tilinganisi Tebunjalo bemanti letiyinkinga</b>
X11A	0	
X11B	0	
X11C	0	
X11D	0	
X11E	0	
X11F	0	
X11G	0	
X11H	0	
X11J	0	
X11K	0	
X12A	0	
X12B	0	
X12C	3	Iflorayidi njenge
X12D	3	Iflorayidi njenge
X12E	1	Ikloriyadi njenge
X12F	0	
X12G	1	Imagineziyamu njenge
X12H	0	
X12J	1	Imagineziyamu njenge
X12K	1	Imagineziyamu njenge
X13J	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge
X13K	2	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge
X13L	1	Kuhanjiswa Kwagezi, Isodiyamu njenge
X14A	0	
X14B	3	Isodiyamu njenge, Ikloriyadi njenge
X14F	0	
X14G	1	Kuhanjiswa Kwagezi, Imagineziyamu njenge
X14H	1	Kuhanjiswa Kwagezi, Isodiyamu njenge
X21A	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge
X21B	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge

<b>Sigodzi semanti semandvulo</b>	<b>Sigaba</b>	<b>Tilinganisi Tebunjalo bemanti letiyinkinga</b>
X21C	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge
X21D	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge
X21E	0	
X21F	3	Iflorayidi njenge
X21G	2	Iflorayidi njenge
X21H	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi
X21J	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi
X21K	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi
X22A	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge
X22B	0	
X22C	0	
X22D	0	
X22E	0	
X22F	0	
X22G	0	
X22H	0	
X22J	2	Iflorayidi njenge
X22K	3	Iflorayidi njenge
X23A	0	
X23B	0	
X23C	0	
X23D	0	
X23E	0	
X23F	0	
X23G	1	Imagineziyamu njenge
X23H	0	
X24A	2	Iflorayidi njenge
X24B	0	
X24C	1	Iflorayidi njenge
X24D	1	Kuhanjiswa Kwagezi
X24E	1	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge, Imagineziyamu njenge

<b>Sigodzi semanti semandvulo</b>	<b>Sigaba</b>	<b>Tilinganisi Tebunjalo bemanti letiyinkinga</b>
X24F	I	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge,
X24G	I	Kuhanjiswa Kwagezi, Isodiyamu njenge
X24H	I	Ikloriyadi njenge, Kuhanjiswa Kwagezi
X31A	0	
X31B	0	
X31C	0	
X31D	0	
X31E	0	
X31F	0	
X31G	0	
X31H	0	
X31J	0	
X31K	I	Iflorayidi njenge
X31L	I	Isodiyamu njenge, Kuhanjiswa Kwagezi, Ikloriyadi njenge, Imagineziyamu njenge, Inayithrethi njenge
X31M	I	Kuhanjiswa Kwagezi, Imagineziyamu njenge
X32A	0	
X32B	0	
X32C	0	
X32D	0	
X32E	0	
X32F	I	Iflorayidi njenge
X32G	2	Inayithrethi njenge
X32H	2	Kuhanjiswa Kwagezi, Isodiyamu njenge
X32J	2	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge
X33A	3	Isodiyamu njenge, Ikloriyadi njenge
X33B	3	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge, Iflorayidi njenge
X33C	2	Isodiyamu njenge, Iflorayidi njenge
X33D	3	Ikloriyadi njenge, Isodiyamu njenge
X40A	I	Kuhanjiswa Kwagezi, Ikloriyadi njenge, Imagineziyamu njenge, Iflorayidi njenge
X40B	2	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Iflorayidi njenge

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<b>Sigodzi semanti semandvulo</b>	<b>Sigaba</b>	<b>Tilinganisi Tebunjalo bemanti letiyinkinga</b>
X40C	2	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Isodiyamu njenge
X40D	2	Ikloriyadi njenge, Kuhanjiswa Kwagezi, Imagineziyamu njenge

**8. I-Desktop Wetland Typing kanye neKwahlukanisa imvelo**

**Lithebula 8.1:** Sifinyeto Semayunithi Emtfombo Wesitete, titete lethlobene kanye nePES nemiphumela ye-EIS

WRU	Tigodzi Temanti Temandvulo	Inchazelo	I-PES lefinyetiwe ne-EIS	Imitselela
1 – I-Highveld Grasslands	Tincenye tetigodzi temanti X11 and X12.	Umtsamo losetulu wetitete letikhulu.  Emapani lamakhulu kakhulu (langakavani). Loluhlobo lwetimila lotsantfwa “Njengalolusengcuphelweni yekuphela”. Cabana kwekutsi sitete - ngekuya ngetinhlobo ngekhatshi kwaloluhlobo lwetimila tisengcuphelweni ngalokufanako.	Semkhatsini - tilinganiso kusuka ku C kuya ku C/D EC.  I-EIS Lesetulu	Kwandza kwetekulima (imitselela yebunjalo bemanti; kunyatselwa/kudliwa tilwane, kuguguleka; kuntjontjwa nekujikiswa). Imitselela yebunjalo bemanti etikwekumayina.  Imitselela lejutjelwe yetitjalo tekuchamuka lethlaselako kanye nemitselela yemadamu kuncwilisa letinye titete kanye nekunciphisa kuba khona kwemanti.
2 – Tindzawo Tetjani Emaphetfonkhangala	Tincenye tetigodzi temanti X11, X12, X21, X23 and X14.	Umtsamo losetulu wetitete letikhulu kakhulu. Tinhlobo tetimila “Tinekulimateka” - kusatfwa kwekutsi letinhlobo letitsembele etiteteni ngako-ke etikho engcuphelweni kakhulu.	Emaphuzu Lasemkhatsini lamanye e-EIS  X21A, X21B, X21C kanye X21F: Emaphusu lasetulu e-EIS Kuletigodzi temanti tasemandvulo kwehlukahlukana kwetihlobo tetitete kusetulu (Sebalo semaphesenti semapani lasetulu - asikavami). Umtsamo wetitete usetulu. X21A edvute ne-RAMSAR-listed Verloren Vallei.  I-PES isetulu - ilinganiselwa kusuka ku B/C kuya ku C EC.	Kulinywa kwethrawuthi - emadamu ancwilisa titete futsi anciphisa kuba khona kwemanti, imitselela yebunjalo bemanti kanye nekuba nemisele. Tindzawo tetekulima - kuguguleka; kunyatselwa/kudliwa kwetjani nekugedvuleka; kuntjontjwa kwemanti nekujikiswa kwemifula.  Kuhlanyelwa kwemahlatsi, timila tekuchamuka lethlaselako, timayini.
3 - Lihlanze	I-X22 netincenye tetigodzi temanti X21, X31, X23 & X24.	Kuminyana (Mountani Bushveld) lokusemkhatsini (Sour Bushveld) kuya kulokuphasi. Tindzawo tetitete letisemkhatsini kuya kuletincane. Kuminyana nekwahlukahlukana kuphasi, kuminyana kungetudlala endzaweni yaseSour Bushveld. Luhlobo lwetimila	I-PES yetitete iphasi kakhulu - Kusuka ku C kuya ku D EC.  Tigodzi temanti temandvulo ngekhatshi kweSour Bushveld WRU tinemaphuzu e-EIS	Kuhlanyelwa kwemahlatsi lokukhulu - kunciphisa kungena kwemanti, kunciphisa kuba khona kwemanti kwetitete. Kuhlanyelwa kwemahlatsi kuyahlasela. Imitselela yemaphetselo ekuhlanyelwa kwetihlahla nemigwaco kutsikameta titete bese kuholela

WRU	Tigodzi Temanti Temandvulo	Inchazelo	I-PES ne-EIS lefinyetiwe	Imitselela
		letisengotini yekushabalala. Tinhlobo tetimila egunjini leMountain Bushveld - "Letisengotini Kancane" - tenta umehluko lomncanyana kumaphuzu e-EIS lesemkhatsini.	Lesemkhatsini, bese kutsi leti letikuMountain Bushveld WRU tinemaphuzu e-EIS lephasi.	ekululateni. Kulima kwekunisela, tindzawo temadolobha tetabelo takudzala kanye netimila tekuchamuka letihlaselako nato tibangele lokunye kululateka kwetitete.
4 – IGranite Lowveld	Tincenye tetigodzi temanti X31, X32, X40, X33, X24, X14 na X13.	Titete tincane. Minyana nekwahlukahlukana kwetimila kuncane kakhulu - titete letimbalwa. Loku lokwentekako akukavami nobe kusetulu ngekwehlukahlukana kwetimila. Luhlobo lwetimila lubalwe "Letinekulimateka". Tindzawo letikhulu talesigaba nesigodzi semanti tivikelekile ngekhati kwetindzawo tekulondvolotwa kakhulu.	Emaphuzu e-EIS laphasi. Luhla lolubanti lwePES: D kuya kuma A EC - inkhomba yetimo letahlukahlukene. Tonkhe tigodzi temanti titsintfwa ngulokwentiwa kwemadolobha kwetindzawo tetabelo takudzala, tigodzi temanti tasemandvulo letiphasi ngekhati kweKruger National Park nasetindzawo tekugcina imvelo tangasese. Ingucuko lencane etimeni taletindzawo; ngesizatfu sekutsi kunetitete letincane kakhulu letifolakala lapho.	Kuhlanyelwa kwetihlahla, kulima kanye nekweniwa kwemadolobha. Tindzawo tetihlahla kanye nekulima lokukhulu kunciphisa indzawo yetitete kanye nemanti lakhona. Kokubili imisebenti yekusetjentiswa kwemalanga kungene nasetindzawo tetitete; bese kutsi tindzawo temadolobha tibangele kuguguleka (ngekuguguleka lokukhulu, tingcindzetelo tekudla kwetilwane kanye nekufakwa kwemaphayiphi lokuhlobene nekutfukiswa kwetakhiwoncanti).
5 – I-Basalt Lowveld	Tincenye tetigodzi temanti X40, X33, X24 na X13.	Titete letisetindzawo letiphasi kwetihosha. Kuminyana nekwahlukahlukana kwetimila kuphasi kakhulu. Loku lokuncane lokwentekako akukavami nobe kwenteka ngelizinga lelisetulu kulokunye. Loluhlobo lwetimila lubalwe "Njengalolusengcuphelweni Kancane".	Emaphuzu e-EIS laphasi. I-PES isetulu kakhulu - ku A nakuma B EC. Letingakava letibonakalako nguletigodzi temandvulo X13J, X13K na X13L letitsintfwe kakhulu nguletindzawo tasemadolobheni naleti letentiwa emadolobha tasetabelweni takudzala, kanye nekuniselwa kakhulu kwemapulazi.	Tigodzi temandvulo letinyenti titfolakala ngekhati kweKruger National Park, futsi kute imitselela lemikhulu kakhulu ezingeni lesigodzi (sigodzi semanti) lekungenteka yentekile.

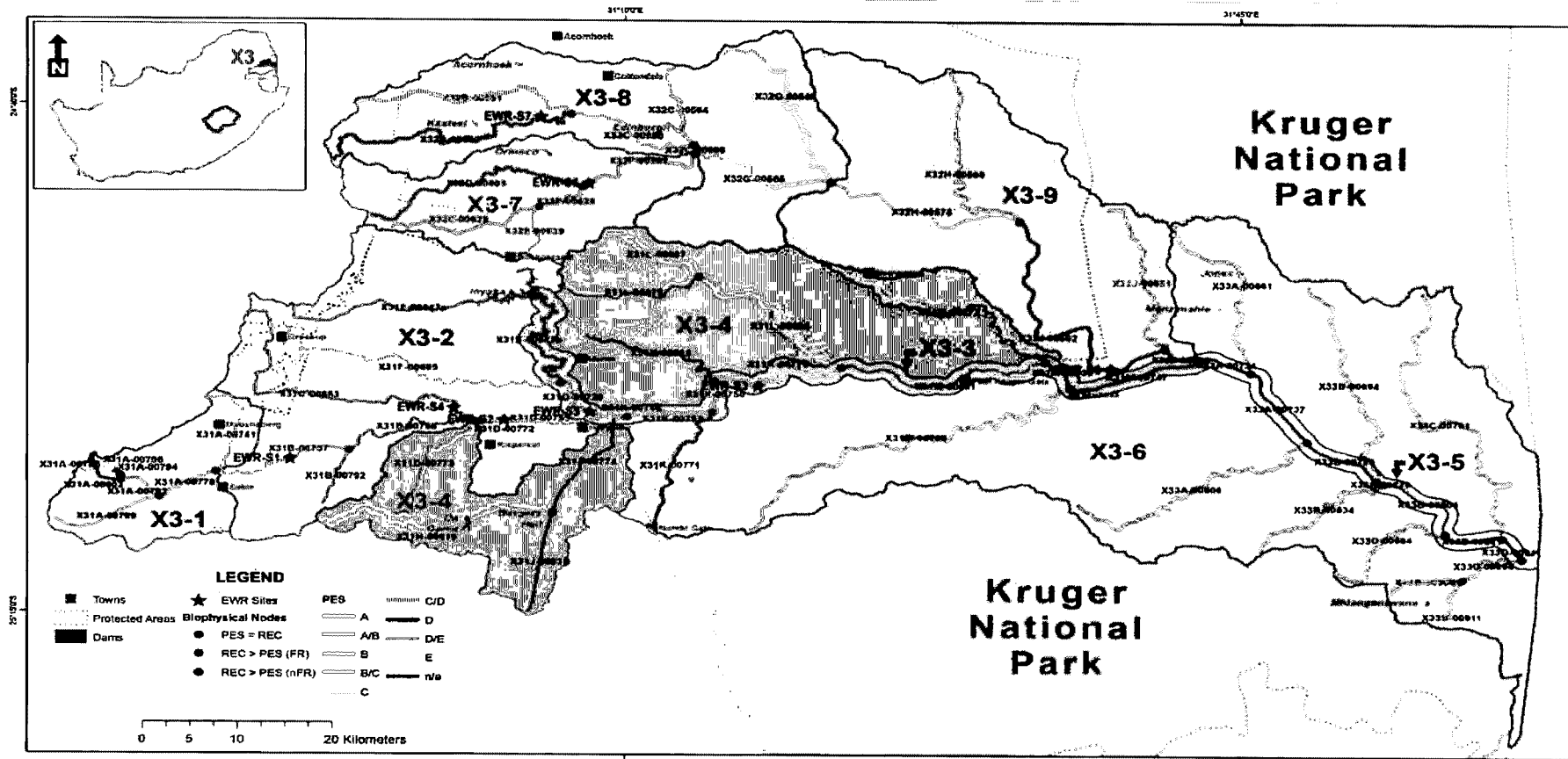
WRU	Tigodzi Temanti Temandvulo	Inchazelo	I-PES lefinyetiwe	ne-EIS Imitselela
6 - ELebombo	Tincenye tetigodzi temanti X40, X33 na X24.	<p>Kute titete tekubaluleka kwanobe ngusiphi sigodzi letilindzelekile ngenca yekwehlela kakhulu, imihlaba lengashoni, kuna lokuncane kwemvula kanye netidzingo tekuhwamuka lokukhulu.</p> <p>Kwehlukahlukana kwetimilo kutawuba phasi kakhulu, futsi kuminyana kutawuba phasi kakhulu.</p>		

**Lithebula 8.2: Sibalokhatsi lesilinganisiwe sePES, EIS neREC setitete ngekhatso kwetigodzi temandvulo tetigodzi temanti Umgwenya, iSabie neSand River**

Sigodzi Semanti Semandvulo	Desktop PES	Desktop EIS	Desktop REC
X21A	C	Etulu	B
X21B	C	Etulu	B
X21C	C	Etulu	B
X21D	B/C	Emkhatsini	B/C
X21E	C	Emkhatsini	C
X21F	B/C	Etulu	B
X21G	C	Emkhatsini	C
X21H	C/D	Emkhatsini	C/D
X21J	D	Emkhatsini	D
X21K	D	Emkhatsini	D
X22A	C/D	Emkhatsini	C/D
X22B	C/D	Phasi	C/D
X22C	D	Emkhatsini	D
X22D	C/D	Emkhatsini	C/D
X22E	C/D	Emkhatsini	C/D
X22F	C	Emkhatsini	C
X22G	C/D	Emkhatsini	C/D
X22H	C	Emkhatsini	C
X22J	D	Phasi	D
X22K	C	Phasi	C
X23A	C	Emkhatsini	C
X23B	C	Emkhatsini	C
X23C	C/D	Emkhatsini	C/D
X23D	C	Emkhatsini	C
X23E	C/D	Emkhatsini	C/D
X23F	C	Emkhatsini	C
X23G	C	Emkhatsini	C
X23H	C	Phasi	C
X24A	D	Phasi	D
X24B	D	Phasi	D
X24C	B/C	Phasi	B/C
X24D	C	Phasi	C



<b>Sigodzi Semanti Semandvulo</b>	<b>Desktop PES</b>	<b>Desktop EIS</b>	<b>Desktop REC</b>
X24E	B	Phasi	B
X24F	B	Phasi	B
X24G	A	Phasi	A
X31A	D	Phasi	D
X31B	D	Phasi	D
X31C	D	Emkhatsini	D
X31D	C	Emkhatsini	C
X31E	D	Emkhatsini	D
X31F	C	Emkhatsini	C
X31G	D	Phasi	D
X31H	C/D	Emkhatsini	C/D
X31J	D	Phasi	D
X31K	D	Phasi	D
X31L	D	Phasi	D
X31M	A	Phasi	A
X32A	D	Emkhatsini	D
X32B	D	Emkhatsini	D
X32C	D	Phasi	D
X32D	D	Emkhatsini	D
X32E	D	Emkhatsini	D
X32F	D	Phasi	D
X32G	D	Phasi	D
X32H	C	Phasi	C
X32J	A	Phasi	A
X33A	A	Phasi	A
X33B	A	Phasi	A
X33C	A	Phasi	A
X33D	A	Phasi	A
X40A	A	Phasi	A
X40B	A	Phasi	A
X40C	C	Phasi	C
X40D	A	Phasi	A



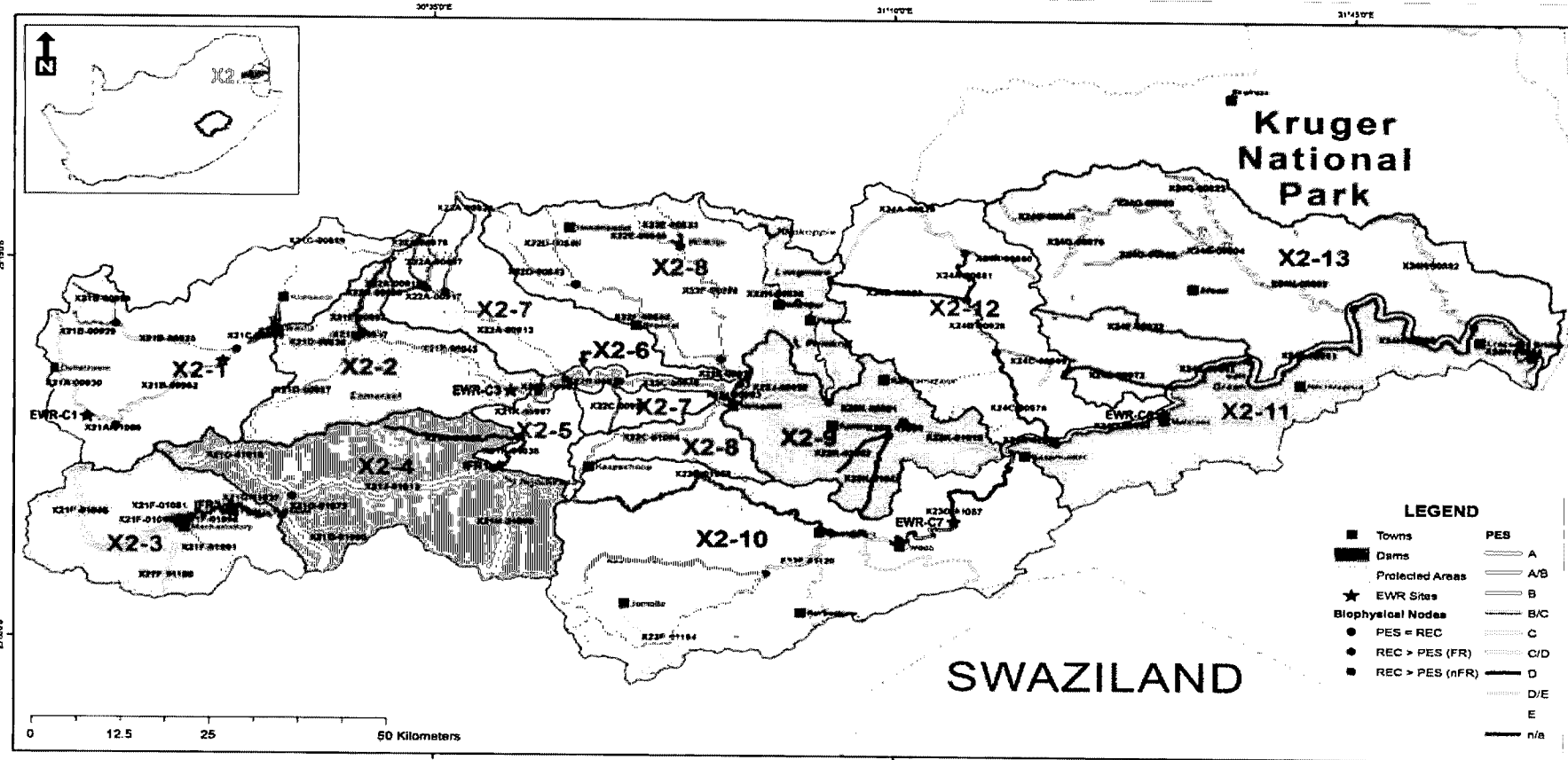
Coordinate System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 09-09-2013



### SABIE [X3]: BIOPHYSICAL NODES

Source data  
 Department of Water Affairs  
[\[http://www.dwaf.gov.za/wqs/gis\\_data/river/rivs500k.htm\]](http://www.dwaf.gov.za/wqs/gis_data/river/rivs500k.htm)  
[\[http://www.dwaf.gov.za/wqs/wrms/data/000key2data.asp\]](http://www.dwaf.gov.za/wqs/wrms/data/000key2data.asp)  
[\[http://www.dwaf.gov.za/Dir\\_BI/SLIMDownload/\]](http://www.dwaf.gov.za/Dir_BI/SLIMDownload/)

Undwebo 1: Indzawo yemasayithi lakhetsiwe e-EWR esigodzini semanti iSabie-Sand (X3)



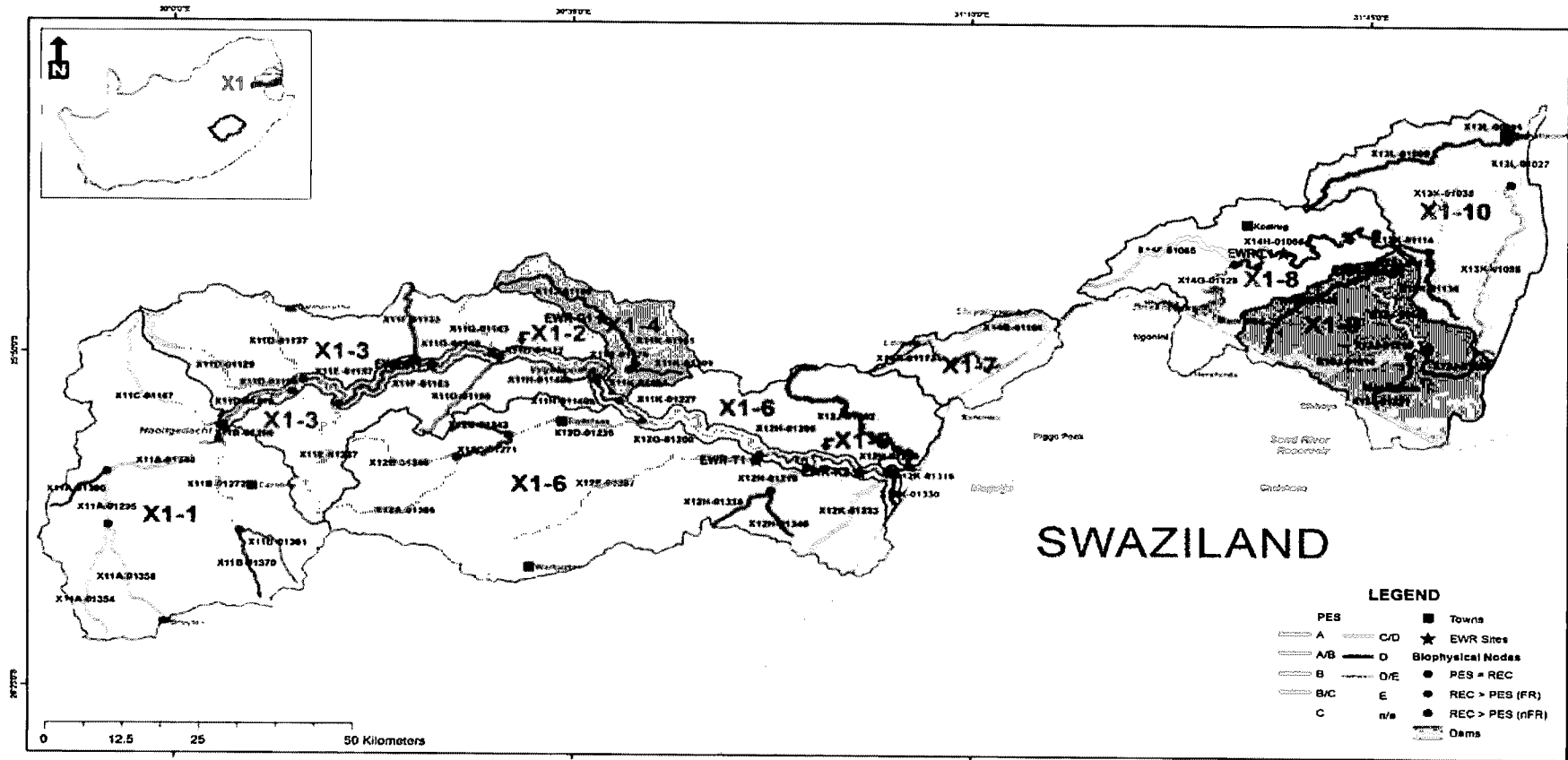
Coordinate System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 05-09-2013



## CROCODILE [X2]: BIOPHYSICAL NODES

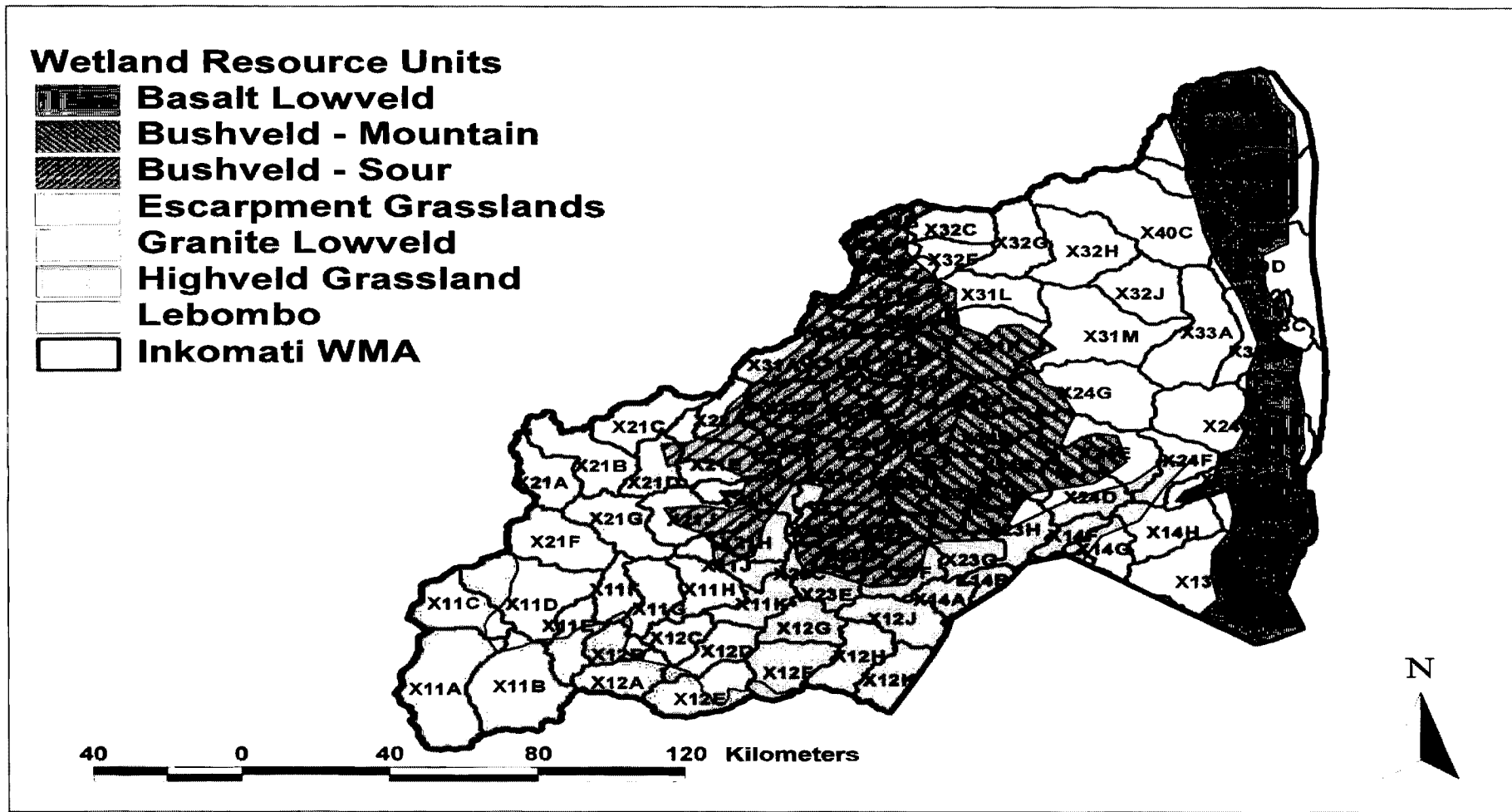
Source data:  
 Department of Water Affairs  
[\[http://www.dwaf.gov.za/wqa/gis\\_data/river/nrives500k.html\]](http://www.dwaf.gov.za/wqa/gis_data/river/nrives500k.html)  
[\[http://www.dwaf.gov.za/wqa/wms/dela/G00key2data.asp\]](http://www.dwaf.gov.za/wqa/wms/dela/G00key2data.asp)  
[\[http://www.dwaf.gov.za/Dir\\_BI/SIMDownload/\]](http://www.dwaf.gov.za/Dir_BI/SIMDownload/)

Undwebo 2: Indzawo yemasayithi lakhetsiwe e-EWR esigodzini semanti Umgwenya (X3)



## KOMATI [X1]: BIOPHYSICAL NODES

Undwebo 3: Indzawo yemasayithi lakhetsiwe e-EWR esigodzini semanti iKomati (X3)



Umdwebo 4: Kusatjalaliswa kwetigodzi temanti temandvulo macondzana neMagumbi Emtfombo Wetitete

## GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES  
NOTICE 385 OF 2019

Block A | 4th Floor | Meintjiesplein Building | 536 Francis Baard Street | Arcadia | 0002  
Private Bag X935 | Pretoria | 0001  
Tel: 012 341 1115 | Fax: 012 341 1811/1911  
<http://www.namc.co.za>

NEWS STATEMENT BY THE NATIONAL AGRICULTURAL MARKETING COUNCIL  
(NAMC)REQUEST FOR THE CONTINUATION AND AMENDMENT OF STATUTORY MEASURES  
IN THE SOUTH AFRICAN PECAN NUT INDUSTRY, IN TERMS OF THE MARKETING OF  
AGRICULTURAL PRODUCTS ACT, ACT NO 47 OF 1996*INVITATION TO DIRECTLY AFFECTED GROUPS IN THE PECAN NUT INDUSTRY TO  
FORWARD COMMENTS TO THE NAMC*

On 27 June 2019, the South African Pecan Nut Producers' Association (SAPPA), on behalf of the directly affected groups in the pecan nut industry, applied to the Minister of Agriculture, Land Reform and Rural Development, for the approval of the proposed continuation of the following statutory measures, for a four year period:

- The **registration** of all producers, growers, processors, packers, importers and exporters of pecan nuts and/or pecan nut products.
- The **keeping of records and submission of returns** by all producers, processors, importers and exporters of pecan nuts and/or pecan nut products, as may be required by SAPPA, relating to:
  - Pecan nut trees;
  - Volumes of pecan nuts and/or pecan nut products produced; and
  - Volumes of pecan nuts and/or pecan nut products imported and/or exported.
- Furthermore, that the **levy** of R0.30 per kilogram (excluding VAT), that will lapse on 28 February 2020, be continued and amended to the following levy rates per kg of pecan nuts for the next four year period:

	1 March 2020 to 28 February 2021	1 March 2021 to 28 February 2022	1 March 2022 to 28 February 2023	1 March 2023 to 29 February 2024
In shell pecan nuts	35 c/Kg	35 c/Kg	40 c/Kg	40 c/Kg
Pecan nut kernels	70 c/Kg	70 c/Kg	80 c/Kg	80 c/Kg

**Council Members:** Mr. H. Prinsloo (Acting Chairperson), Mr. S. Faku, Ms. F. Mkile,  
Mr. H. Mohane, Mr. B. Mokgatle, Ms. N. Mokose, Prof. D. Rangaka, Mr. G. Schutte, Mr. Z. Wapi

These proposed levies will be payable to SAPPa by producers, processors, packers, importers or exporters on all pecan nuts (that include in shell pecan nuts and pecan nut kernels). If supported and approved, this could create an income of between R7.7 million and R11.2 million per year over the next four years based on a pecan nut production estimate of between 22 000 tons and 28 000 tons per year. SAPPa proposed that approximately 42% of levy funds be used to fund research projects; 15% on market information and statistics; at least 20% on transformation; and the rest on crop protection, market development and other important industry functions, on behalf of the pecan nut industry. The proposed levies would represent approximately 0.5% of the domestic producers' selling price (first point of sale) of pecan nuts.

Registration, records and returns to SAPPa are necessary to:

- Ensure the availability and provision of continuous, timeous and accurate information relating to locally produced and imported pecan nuts and pecan nut products to all stakeholders in the industry, which is essential in ensuring informed decision making and a stable and profitable industry;
- Ensure adherence to sound product handling, quality control systems and ethical trading; as well as transformation of the industry, and
- Administer the proposed levy.

No records or returns shall be required in terms of this measure which discloses confidential information of a marketing nature, and in particular, no returns disclosing, *inter alia*, contracting parties; purchasers of pecan nut products; prices of services or the prices obtained for products, or any similar information.

The proposed continuation and amendment of statutory measures will assist in promoting the efficiency of the marketing of pecan nuts and pecan nut products. The viability of the pecan nuts industry would thus be enhanced. The measures will not be detrimental to the number of employment opportunities or fair labour practice.

**Directly affected groups in the pecan nut industry are kindly requested to submit any comments regarding support or objections relating to the proposed continuation and amendment of statutory measures to the NAMC in writing (fax 012 341 1911 or e-mail to [lizettem@namc.co.za](mailto:lizettem@namc.co.za)) before or on 2 August 2019, to enable the Council to finalise its recommendation to the Minister in this regard.**

ENQUIRIES: Ms Lizette Mellet

National Agricultural Marketing Council

[lizettem@namc.co.za](mailto:lizettem@namc.co.za)

DEPARTMENT OF JUSTICE AND CONSTITUTIONAL DEVELOPMENT  
NOTICE 386 OF 2019

**PROMOTION OF ACCESS TO INFORMATION ACT, 2000**

**DESCRIPTION SUBMITTED IN TERMS OF SECTION 15(1)**

I, Ronald Lamola, Minister of Justice and Correctional Services, hereby publish under section 15(2) of the Promotion of Access to Information Act, 2000 (Act No. 2 of 2000), the descriptions submitted to me in terms of section 15(1) of the said Act by the –

**COUNCIL FOR MEDICAL SCHEMES**

As set out in the Schedule



**MR RONALD LAMOLA, MP**

**MINISTER FOR JUSTICE AND CORRECTIONAL SERVICES**





REPUBLIC OF SOUTH AFRICA

**FORM D**  
**AUTOMATICALLY AVAILABLE RECORDS AND ACCESS TO SUCH RECORDS:**  
 (Section 15 of the Promotion of Access to Information Act, 2000 (Act 2 of 2000))  
 [Regulation 5A]

DESCRIPTION OF CATEGORY OF RECORDS AUTOMATICALLY AVAILABLE IN TERMS OF SECTION 15(1)(a) OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000	MANNER OF ACCESS TO RECORDS (e.g. website) (SECTION 15(1)(b))
<b>FOR INSPECTION IN TERMS OF SECTION 15(1)(a)(i):</b>	
1. Medical Schemes mergers - Exposition Documents ..... 2. Medical Schemes Liquidations & Distribution Accounts ..... ..... .....	Records may be viewed/accessed by visiting Council for ..... Medical Schemes Offices - Knowledge Centre ..... Telephone: 012 431 0500 ..... Telephone: 012 431 0530 ..... <a href="http://www.medicalschemes.com">http://www.medicalschemes.com</a> .....
<b>FOR PURCHASING IN TERMS OF SECTION 15(1)(a)(ii):</b>	
1. Medical Schemes Rules ..... 2. Medical Schemes Annual Financial Statements ..... 3. Medical Schemes Annual Statutory Returns ..... .....	Records may be viewed/accessed by visiting Council for ..... Medical Schemes Offices - Knowledge Centre ..... Telephone: 012 431 0530 ..... <a href="http://www.medicalschemes.com">http://www.medicalschemes.com</a> .....
<b>FOR COPYING IN TERMS OF SECTION 15(1)(a)(ii):</b>	
1. Medical Schemes Rules ..... 2. Medical Schemes Annual Financial Statements ..... 3. Medical Schemes Annual Statutory Returns ..... 4. Research Reports and findings .....	Records may be obtained by visiting Council for Medical ..... Schemes Offices ..... Tel: 012 431 0530 ..... <a href="http://www.medicalschemes.com">http://www.medicalschemes.com</a> .....
<b>AVAILABLE FREE OF CHARGE IN TERMS OF SECTION 15(1)(a)(iii):</b>	
1. List of Accredited Broker/Administrators, Managed Care Org ..... 2. List of Registered Medical Schemes ..... 3. Council for Medical Schemes Annual Report ..... 4. Medical schemes Act, and all amendments ..... 5. Circulars, Judgments & Appeals, manuals, CMS News .....	Records may be obtained by visiting Council for Medical ..... Schemes Offices, alternatively from our website ..... <a href="http://www.medicalschemes.com">http://www.medicalschemes.com</a> ..... Tel: 012 4310 0530 ..... Fax: 012 431 0630 .....

DEPARTMENT OF JUSTICE AND CONSTITUTIONAL DEVELOPMENT  
NOTICE 387 OF 2019

**PROMOTION OF ACCESS TO INFORMATION ACT, 2000**

**DESCRIPTION SUBMITTED IN TERMS OF SECTION 15(1)**

I, Ronald Lamola, Minister of Justice and Correctional Services, hereby publish under section 15(2) of the Promotion of Access to Information Act, 2000 (Act No. 2 of 2000), the descriptions submitted to me in terms of section 15(1) of the said Act by the –

**SOUTH AFRICAN POLICE SERVICE**

As set out in the Schedule



**MR RONALD LAMOLA, MP**

**MINISTER FOR JUSTICE AND CORRECTIONAL SERVICES**

## CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE

DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE IN TERMS OF SECTION 15(1) OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000	MANNER OF ACCESS TO RECORDS
<b>7.1 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR INSPECTION IN TERMS OF SECTION 15(1)(a)(i)</b>	
<b>ALL DIVISIONS AND COMPONENTS</b>	
National Instructions (The following records are excluded: <ul style="list-style-type: none"> <li>• training material;</li> <li>• training guidelines;</li> <li>• training manuals; or</li> <li>• records of which the disclosure may reasonably be expected to jeopardise the effectiveness of a testing, examining or auditing procedure or method used by the Service.</li> </ul> The normal request procedure in terms of the Act is applicable when access to such records are requested.)	The records may be inspected at the relevant sub-section head on request in writing to the relevant divisional commissioner.
<b>COMPONENT: CORPORATE COMMUNICATION HERITAGE SERVICES</b>	
(1) All displays at the SAPS Heritage Services (2) Archival records at the SAPS Heritage Services (excluding records contained in dockets and personal information of persons or information that may be refused on the grounds of refusal provided for in the Act)	The records may be inspected at the office of the Curator, SAPS Heritage Services on request in writing to the Curator: Heritage Services, PO Box 4866, PRETORIA, 0001.
<b>ALL DIVISIONS AND COMPONENTS</b>	
Master Copy of the Filing System	The records may be inspected at the relevant division.
<b>FINANCIAL MANAGEMENT AND ADMINISTRATION: BUDGETS</b>	
Estimates of National Expenditure — Department of Police	The records may be inspected at the office of the Section Head: Budgets on request in writing to Financial Management and Administration: Section Head: Budgets, Private Bag X 94, PRETORIA, 0001.
<b>DIVISION: HUMAN RESOURCE UTILISATION</b>	
<b>EMPLOYMENT EQUITY</b>	
National and Divisional Employment Equity Section 20 Plans and Section 21 Reports  The Divisional, Provincial and Components Employment Equity Implementation Plans and Section 21 Quarterly Reports	The records may be inspected at the office of the Section Head: Employment Equity on request in writing to the relevant Divisional Commissioner: Human Resource Utilisation, Private Bag X 94, PRETORIA, 0001.

<b>PERFORMANCE MANAGEMENT</b>	
(1) Performance Management Systems for the Service (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act)	(1) The records may be inspected at the office of the Component Head: Performance Management on request in writing to the Divisional Commissioner: Human Resource Utilisation, Private Bag X 94, PRETORIA, 0001
<b>DIVISION: OPERATIONAL RESPONSE SERVICES</b>	
Records consisting of general correspondence (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to: Peace Keeping	The records may be inspected at the office of Operational Response Services, between 07:30 and 16:00 on request in writing to the Divisional Commissioner: Operational Response Services, Private Bag X 30, SUNNYSIDE, 0132.
<b>DEPUTY NATIONAL COMMISSIONER: MANAGEMENT ADVISORY SERVICES</b>	
Job Evaluation (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act): <ul style="list-style-type: none"> <li>• Job evaluation reports</li> <li>• Panel results</li> </ul>	The records may be inspected at the office of the Section Head: Organizational Corporate and Design, Management Advisory Services on request in writing to the Head: Management Advisory Services, Private Bag X 94, PRETORIA, 0001.
<b>DIVISION: PERSONNEL MANAGEMENT</b>	
<b>PROMOTION SERVICES AND REWARD SYSTEMS</b>	
Records relating to Incentive and Reward Schemes (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act)	The records may be inspected at the office of the Section Head: Promotion Services and Reward Systems on request in writing to the Divisional Commissioner: Personnel Management, Private Bag X 94, PRETORIA, 0001.
<b>DIVISION: SUPPLY CHAIN MANAGEMENT</b>	
General conditions and procedures	The records may be inspected at Supply Chain Management on request in writing to the Divisional Commissioner: Supply Chain Management, Private Bag X 254, PRETORIA, 0001.
<b>DIVISION: VISIBLE POLICING</b>	
<b>FIREARMS, LIQUOR AND SECOND-HAND GOODS CONTROL</b>	
Consideration Policy 1994 Firearms Control Act, 2000 ( Act No 60 of 2000) Firearms Control Regulation 2004	The records may be inspected at the office of the Head: Firearms, Liquor and Second-hand Goods Control on request in writing to the Head: Central Firearm Control Register, Private Bag X 811, PRETORIA, 0001.

<b>PARTNERSHIP POLICING SECTOR POLICING</b>	
Records relating to — (1) Partnership Policing <ul style="list-style-type: none"> <li>• Police Community Projects</li> <li>• Policy Framework and Guidelines on Community Policing</li> </ul> (2) Sector Policing <ul style="list-style-type: none"> <li>• Pilot Projects</li> </ul>	The records may be inspected at the office of Visible Policing on request in writing to the Divisional Commissioner: Visible Policing, Private Bag X 540, PRETORIA, 0001.
<b>FLYING SQUAD</b>	
Records consisting of general correspondence (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to: (1) Police Emergency Services <ul style="list-style-type: none"> <li>• Flying Squad or Highway Patrol</li> <li>• 10111 Centres</li> </ul>	The records may be inspected at the office of Visible Policing, between 07:30 and 16:00 on request in writing to the Divisional Commissioner: Visible Policing, Private Bag X 540, PRETORIA, 0001.
(2) Community Services (3) Accident Combating (4) Specialised Uniform Support <ul style="list-style-type: none"> <li>• Hostage Negotiation</li> <li>• Divers</li> <li>• Water Wing</li> <li>• Disaster Management</li> </ul> (5) Equestrian (6) Dogs	
<b>7.2 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR PURCHASING IN TERMS OF SECTION 15(1)(a)(ii)</b>	
<b>ALL DIVISIONS</b>	
Legislation (bills, acts, regulations, proclamations and Government Notices)	Copies of legislation can be purchased at Government Printers at the cost determined by the Government Printers
<b>DIVISION: SUPPLY CHAIN MANAGEMENT</b>	
<b>PROCUREMENT AND INVENTORY MANAGEMENT</b>	
State Tender Bulletins	Published weekly by the State Tender Board and can be purchased at the State Tender Board at the cost determined by the State Tender Board.

<b>7.3 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR COPYING IN TERMS OF SECTION 15(1)(a)(ii)</b> (on payment of the fees prescribed in Part II of Annexure A of the Regulations regarding the Promotion of Access to Information, 15 February 2002)	
<b>ALL DIVISIONS AND COMPONENTS</b>	
<p>(1) Policy Documents and National Instructions            (The following records are excluded:</p> <ul style="list-style-type: none"> <li>• training material;</li> <li>• training guidelines;</li> <li>• training manuals; or</li> <li>• records of which the disclosure may reasonably be expected to jeopardise the effectiveness of a testing, examining or auditing procedure or method used by the Service.</li> </ul> <p>The normal request procedure in terms of the Act is applicable when access to such records is requested.)</p>	<p>(1) The records may be obtained on request in writing addressed to the relevant section head or the relevant divisional commissioner.</p>
<p>(2) Collective Agreements</p>	<p>(2) The records may be obtained on request in writing addressed to the Section Head:            Labour Relations, Human Resource Utilisation, Private Bag X 94, PRETORIA, 0001.</p>

<p>3) <b>ACCIDENT REPORT (NEW OR OLD REPORTS): COPY OR PHOTOCOPY</b></p> <p><i>Note that —</i> with the term “copy” is meant where reproduction is done manually; a copy of a completed accident report will only be furnished to the authorised person;</p> <p>when a request is received in writing from the Road Accident Fund, provincial hospitals or ambulance services from provincial hospitals, they are regarded as public bodies or institutions who are entitled to immediately receive a copy of an accident report free of charge.</p>	<p>(3) If the record is still in the possession or under control of the Service, the records may be obtained by the authorised person on request in writing on the prescribed request form or the SAPS 512(n) addressed to the relevant office of the Service.</p> <p><i>Note that —</i> The following persons are deemed to be authorised persons:</p> <p>(a) an involved party in the accident (eg driver, passenger, pedestrian, cyclist, owner of the vehicle, owner of the animal involved in the accident, etc) if he or she can prove that he or she is an involved party;</p> <p>(b) any private ambulance service, medical service provider, emergency service or towing service that provided such a service to a party involved in an accident, if such private service can provide written proof that such service was rendered; or</p> <p>(c) a person who is not an involved party or the private ambulance service, medical service provider, emergency service or towing service referred to above, only if he or she has written permission or authority of an involved party (eg an attorney who provides the relevant power of attorney to act on behalf of the person).</p>
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<b>CORPORATE COMMUNICATION: HERITAGE SERVICES</b>	
Archival records and photo's at Heritage Services (excluding records contained in dockets and personal information of persons or information that may be refused on the grounds of refusal provided for in the Act)	The records may be obtained on request in writing addressed to the Curator, SAPS Heritage Services, PO Box 4866, Pretoria, 0001.
	The records may be obtained from the relevant division.
<b>FINANCIAL MANAGEMENT AND ADMINISTRATION: BUDGETS</b>	
Estimates of National Expenditure — Department of Police	The records may be obtained on request in writing addressed to Financial Management and Administration, Section Head: Budgets, Private Bag X 94, PRETORIA, 0001.

<b>DIVISION: FORENSIC SERVICES</b>	
Only Photographs and Identikits released by the Service and published by the media	The records may be obtained from the Forensic Services on request in writing addressed to the Head: Forensic Services, SAPS Head Office, Private Bag X 322, PRETORIA, 0001.
<b>DIVISION: HUMAN RESOURCE UTILISATION</b>	
<b>EMPLOYMENT EQUITY</b>	
National and Divisional Employment Equity Section 20 Plans and Section 21 Report	The records may be obtained on request in writing addressed to the Divisional Commissioner: Human Resource Utilisation, Employment Equity at Private Bag X 94, PRETORIA, 0001.
<b>COMPENSATION MANAGEMENT</b>	
Human Resource Utilisation Project Centre Project Reports	Projects funded by government can be provided to public on request in writing addressed to the Divisional Commissioner: Human Resource Utilisation, Compensation Management at Private Bag X 94, PRETORIA, 0001.
<b>PERFORMANCE MANAGEMENT</b>	
(1) Certain records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to — Performance management systems: <ul style="list-style-type: none"> <li>• Projects</li> <li>• Project names</li> <li>• Project plans</li> <li>• Project budgets</li> <li>• Project status reports</li> <li>• Project and programme operating manuals</li> <li>• Project and programme functions and activities</li> <li>• Programme Management Board activities</li> <li>• Project and programme registered users</li> <li>• Number of registered project centres</li> </ul>	(1) The records may be obtained from the office of the Component Head: Performance Management on request in writing addressed to Divisional Commissioner: Human Resource Utilisation, SAPS, Head Office, Private Bag X 94, PRETORIA, 0001.



<b>DIVISION: OPERATIONAL RESPONSE SERVICES</b>	
<b>SECTION HEAD: AIR WING</b>	
Certain records relating to — (1) Monthly successes achieved (2) Policy and minimum requirements for appointment as pilot and crew	The records may be obtained on request in writing addressed to the Section Head: Air Wing Response Services, Private Bag X30, SUNNYSIDE, 0132
<b>OPERATIONAL INFORMATION MANAGEMENT CENTRE</b>	
Records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to certain parts of — (1) Policy on: <ul style="list-style-type: none"> <li>• Crowd Management</li> <li>• National Intervention Unit</li> <li>• Borderline Police</li> <li>• Air Wing</li> <li>• Specialized Skills Development</li> <li>• Special Task Force</li> </ul> (2) Crowd Management Incidents (3) Successes of: <ul style="list-style-type: none"> <li>• Crowd Management</li> <li>• National Intervention Unit</li> <li>• Borderline Police</li> <li>• Air Wing</li> <li>• Specialized Skills Development</li> <li>• Special Task Force</li> </ul> (4) Peace Keeping	The records may be obtained on request in writing addressed to the Deputy Information Officer: Operational Response Services, Private Bag X 30, SUNNYSIDE, 0132.
<b>DIVISION: PERSONNEL MANAGEMENT</b>	
<b>RECRUITMENT AND STAFFING</b>	
Records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to appointment requirement of appointments of personnel on salary level 1-12 and/or salary bands A –MMS	The records may be obtained on request in writing addressed to the Section Head: Recruitment And Staffing, Private Bag X 94, PRETORIA, 0001.
<b>SENIOR MANAGEMENT APPOINTMENTS</b>	
Records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to appointment requirement of appointments of personnel on salary level 13 and up and/or salary bands on SMS	The records may be obtained on request in writing addressed to the Sub-section Head: Senior Management Appointments, Private Bag X 986, PRETORIA, 0001.
<b>DIVISION: SUPPLY CHAIN MANAGEMENT</b>	
General conditions and procedures	The records may be obtained from Supply Chain Management on request in writing addressed to the Divisional Commissioner: Supply Chain Management, Private Bag X 254, PRETORIA, 0001.

<b>COMPONENT: STRATEGIC MANAGEMENT</b>	
<p>Although the following records are available free of charge on the Web page of the Service, it may be photocopied on request:</p> <p>(1) Annual Report for the South African Police Service</p> <p>(2) Strategic Plan for the South African Police Service</p> <p>Annual Performance Plan for the South African Police Service</p>	<p>The records may be obtained on request in writing addressed to the Head: Strategic Management, Private Bag X 94, Pretoria, 0001.</p>
<b>DIVISION: FINANCIAL MANAGEMENT AND ADMINISTRATION</b>	
<b>DOCUMENT CENTRE MANAGEMENT: ARCHIVES AND REGISTRY</b>	
<p>Master Copy of the Filing System</p>	<p>The records may be obtained from the relevant division.</p>
<b>COMPONENT: ORGANISATIONAL DEVELOPMENT</b>	
<p>Job Evaluation (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) :</p> <ul style="list-style-type: none"> <li>• Pre-interview questionnaire</li> <li>• Results of Job evaluation</li> </ul>	<p>The records may be obtained from the office of the Section Head: Organizational Development on request in writing to the Head: Organizational Development, Private Bag X 94, PRETORIA, 0001.</p>
<b>DIVISION: VISIBLE POLICING</b>	
<b>PARTNERSHIP POLICING</b>	
<b>SECTOR POLICING</b>	
<p>Records relating to (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) -</p> <p>(1) Partnership Policing</p> <ul style="list-style-type: none"> <li>• Police Community Projects</li> <li>• Policy Framework and Guidelines on Community Policing</li> </ul> <p>(2) Sector Policing</p> <ul style="list-style-type: none"> <li>• Pilot Projects</li> </ul>	<p>The records may be obtained from the office of Visible Policing on request in writing addressed to the Divisional Commissioner: Visible Policing, Private Bag X 540, PRETORIA, 0001.</p>
<b>SOCIAL CRIME PREVENTION</b>	
<p>(1) Making South Africa Safe Manual</p> <p>(2) Environmental Design Manual</p> <p>(3) Communication Materials on Domestic Violence</p> <p>(4) Communication Materials on Victim Empowerment</p>	<p>The records may be obtained from the office of Visible Policing on request in writing addressed to the Divisional Commissioner: Visible Policing, Private Bag X 540, PRETORIA, 0001.</p>

<p>(5) Communication Materials on rape and Sexual offences</p> <p>(6) Promising Crime Prevention Practices in South Africa</p> <p>(7) National Rural Victims of Crime Survey</p> <p>(8) Guidelines: Drug and Substance Abuse</p>	
<b>VISIBLE POLICING</b>	
<p>Certain records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to General Correspondence with regard to:</p> <p>(1) Police Emergency Services</p> <ul style="list-style-type: none"> <li>• Flying Squad or Highway Patrol</li> <li>• 10111 Centres</li> </ul> <p>(2) Community Services</p> <p>(3) Accident Combating</p> <p>(4) Specialised Uniform Support</p> <ul style="list-style-type: none"> <li>• Hostage Negotiation</li> <li>• Divers</li> <li>• Water Wing</li> <li>• Disaster Management</li> </ul>	<p>The records may be obtained from the office of Visible Policing on request in writing addressed to the Divisional Commissioner: Visible Policing, Private Bag X 540, PRETORIA, 0001.</p>
<b>7.4 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FREE OF CHARGE IN TERMS OF SECTION 15(1)(a)(iii)</b>	
<b>All DIVISIONS</b>	
<p>(1) A copy of a —</p> <p>(a) <i>suspect's own statement contained in an open docket; or</i></p> <p>(b) <i>victim's or complainant's own statement contained in an open docket.</i></p>	<p>The request by the suspect / victim / complainant for a copy of his or her own statement, must be in writing and addressed to the relevant investigating officer.</p> <p><i>Take note: such a copy will only be automatically available to the relevant suspect / victim / complainant or his or her representative (such representative must attach documentary proof of capacity to act on behalf of such person).</i></p>
<p>(2) The information or topics as available on the Web site of the Service</p>	<p>(2) Available on the Web page of the Service at <a href="http://www.saps.gov.za">www.saps.gov.za</a></p>

## KATEGORIEË VAN REKORDS WAT OUTOMATIES BESKIKBAAR IS

<b>BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1) VAN DIE WET OP DIE BEVORDERING VAN TOEGANG TOT INLIGTING, 2000 OUTOMATIES BESKIKBAAR IS</b>	<b>WYSE WAAROP TOEGANG TOT REKORDS VERKRY KAN WORD</b>
<b>7.1 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1)(a)(i) OUTOMATIES VIR INSPEKSIE BESKIKBAAR IS</b>	
<b>ALLE AFDELINGS EN KOMPONENTE</b>	
<p>Nasionale Instruksies (Die volgende rekords is uitgesluit:</p> <ul style="list-style-type: none"> <li>• opleidingsmateriaal;</li> <li>• opleidingsriglyne;</li> <li>• opleidingshandleidings; of</li> <li>• rekords ten opsigte waarvan daar redelikerwys verwag kan word dat die openbaarmaking van die rekord die doeltreffendheid van 'n toets-, ondersoek- of ouditeringsprosedure of -metode wat deur die Diens gebruik word, in gevaar sal stel.</li> </ul> <p>Die normale versoek prosedure ingevolge die Wet is van toepassing wanneer toegang tot sodanige rekords versoek word.)</p>	Die rekords by die betrokke subseksiehoof geïnspekteer word deur skriftelik by die betrokke afdelingskommissaris daarvoor aansoek te doen.
<b>KOMPONENT: KORPORATIEWE KOMMUNIKASIE: ERFENISDIENSTE</b>	
<p>(1) Alle uitstallings by Erfenisdienste: SAPD</p> <p>(2) Argiefrekords by Erfenisdienste: SAPD (behalwe rekords wat in dossiere vervat is en persoonlike inligting van persone of inligting wat nie verstrekkend mag word nie, op grond van die feit dat toegang tot sekere inligting ingevolge die gronde van weiering ingevolge die Wet geweier mag word)</p>	Die rekords kan op versoek by die kantoor van die Kurator, Erfenisdienste: SAPD, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Kurator: Erfenisdienste, Posbus 4866, PRÉTORIA, 0001.
<b>ALLE AFDELINGS EN KOMPONENTE</b>	
<b>DOKUMENT SENTRUM BESTUUR:</b>	
Meesterkopie van die Lêerstelsel	Die rekords kan by die relevante afdeling, geïnspekteer word.

<b>FINANSIËLE DIENSTE: BEGROTINGS</b>	
Begrotings van Nasionale Uitgawes — Departement van Polisie	Die rekords kan by die kantoor van die Bestuurder: Begrotings geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Sektiehoof: Begrotings, Finansiële en Administrasiedienste, Privaatsak X 94, PRETORIA, 0001.
<b>AFDELING: MENSLIKE HULPBRON BENUTTING</b>	
<b>GELYKHEIDSBESTUUR</b>	
Diensbillikheid: Nasionale en Afdelingsvlak (Planne ingevolge artikel 20 en verslae ingevolge artikel 21)  Die Afdelings-, Provinsiale en Komponentvlak Implementeringsplanne en Artikel 21 Kwartaalverslae	Die rekords kan by die betrokke Afdelingskommissaris se kantoor en Bestuurders: Gelykheidsbestuur geïnspekteer word deur skriftelik daarvoor by die Afdelingskommissaris: Menslike Hulpbron Benutting: Privaatsak X 94, PRETORIA, 0001, aansoek te doen.
<b>PRESTASIEBESTUUR</b>	
Prestasiebestuurstelsels vir die Diens (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering ten opsigte waarvan daar in die Wet voorsiening gemaak word)	Die rekords kan by die kantoor van die Komponentshoof: Prestasiebestuur geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Menslike Hulpbron Benutting, Privaatsak X 94, PRETORIA, 0001.
<b>AFDELING: OPERASIONELE REAKSIEDIENSTE</b>	
Rekords bestaande uit algemene korrespondensie (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering ten opsigte waarvan daar in die Wet voorsiening gemaak word) van: Vredeshandhawing	Die rekords kan van 07:30 tot 16:00 by die kantoor van Operasionele Reaksiedienste geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Operasionele Reaksiedienste, Privaatsak X 30, SUNNYSIDE, 0132.
<b>ADJUNK NASIONALE KOMMISSARIS: ORGANISATORIESE ONTWIKKELING</b>	
Posevaluering (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering ten opsigte waarvan daar in die Wet voorsiening gemaak word): • Posevalueringsverslae • Paneelbeslissings	Die rekords kan by die kantoor van die Sektiehoof: Organisasie Korporatief en Ontwerp, Organisasie Ontwikkeling geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Die Hoof: Organisasie Ontwikkeling, Privaatsak X94, PRETORIA, 0001.
<b>AFDELING: PERSONEELBESTUUR</b>	
<b>BEVORDERINGSDIENSTE EN VERGOEDINGSSISTEME</b>	
Rekords ten opsigte van die Aansporings- en Beloningskema (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering ten opsigte waarvan daar in die Wet voorsiening gemaak word)	Die rekords kan by die kantoor van die Sektiehoof: Bevorderingsdienste en Vergoedingssisteme, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Personeelbestuur, Privaatsak X 94, PRETORIA, 0001.

<b>AFDELING: VOORSIENINGSLYNBESTUUR</b>	
Algemene voorwaardes en prosedures	Die rekords kan by Voorsieningslynbestuur geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Voorsieningslynbestuur, Privaatsak X 254, PRETORIA, 0001.
<b>AFDELING: SIGBARE POLISIËRING</b>	
<b>VUURWAPENS, DRANK EN TWEEDEHANDSE GOEDERE KONTROLE</b>	
Beleid oor die oorweging van aansoeke om vuurwapenlisensies, 1994	Die rekords kan by die kantoor van die Hoof: Vuurwapens, Drank en Tweedehandse Goedere Kontrole, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Hoof: Sentrale Vuurwapenbeheerregister, Privaatsak X 811, PRETORIA, 0001.
<b>VENNOOTSKAPSPOLISIËRING SEKTORPOLISIËRING</b>	
Rekords ten opsigte van — (1) Vennootskapspolisiëring <ul style="list-style-type: none"> <li>• Die Polisie se Gemeenskapsprojekte</li> <li>• Beleidsraamwerk en riglyne vir gemeenskaps-polisiëring</li> </ul> (2) Sektorpolisiëring <ul style="list-style-type: none"> <li>• Loodsprojekte</li> </ul>	Die rekords kan by die kantoor van die Hoof: Sigbare Polisiëring, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Sigbare Polisiëring, Privaatsak X 540, PRETORIA, 0001.
<b>BLITSPATROLLIE</b>	
Rekords bestaande uit algemene korrespondensie (behalwe persoonlike inligting van persone en inligting wat geweer kan word op grond van die weiering ten opsigte waarvan daar in die Wet voorsiening gemaak word) van: <ul style="list-style-type: none"> <li>(1) Die Polisie se Nooddienste               <ul style="list-style-type: none"> <li>• Blitspatrollie of Hoofwegpatrollie</li> <li>• 1 0111-sentrums</li> </ul> </li> <li>(2) Gemeenskapsdienste</li> <li>(3) Ongelukvoorkoming</li> <li>(4) Gespesialiseerde Uniform-ondersteuning               <ul style="list-style-type: none"> <li>• Gyselaaronderhandelaars</li> <li>• Duikers</li> <li>• Die Watervleuel</li> <li>• Rampbestuur</li> </ul> </li> <li>(5) Berede eenheid</li> <li>(6) Honde-eenheid</li> </ul>	Die rekords kan van 07:30 tot 16:00 by die kantoor van Sigbare Polisiëring geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Sigbare Polisiëring, Privaatsak X 540, PRETORIA, 0001.

<b>7.2 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT OUTOMATIES INGEVOLGE ARTIKEL 15(i)(a)(ii) TE KOOP BESKIKBAAR IS</b>	
<b>ALLE AFDELINGS</b>	
Wetgewing (wetsontwerpe, wette, regulasies, proklamasies en Goewermentskennisgewings)	Afskrifte van wetgewing is by die Staatsdrukker verkrygbaar teen die prys wat deur die Staatsdrukker bepaal word.
<b>AFDELING: VOORSIENINGSLYNBESTUUR</b>	
<b>VERKRYGINGSBESTUUR</b>	
Staatstenderbulletins	Word weekliks deur die Staatstenderraad gepubliseer en is by die Staatstenderraad verkrygbaar teen die prys wat deur die Staatstenderraad bepaal word.
<b>7.3 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1)(a)(ii) OUTOMATIES VIR FOTOKOPIËRING BESKIKBAAR IS</b> (teen betaling van die voorgeskrewe gelde wat in Deel II van Bylaag A van die Regulasies betreffende die Wet op die Bevordering van die Toegang tot Inligting, 15 Februarie 2002, vervat is)	
<b>ALLE AFDELINGS</b>	
(1) Dokumente rakende beleid en Nasionale Instruksies (Die volgende rekords is uitgesluit: • opleidingsmateriaal; • opleidingsriglyne; • opleidingshandleidings; of • rekords ten opsigte waarvan daar redelikerwys verwag kan word dat die openbaarmaking van die rekord die doeltreffendheid van 'n toets-, ondersoek- of ouditeringsprosedure of -metode wat deur die Diens gebruik word, in gevaar sal stel. Die normale versoek prosedure ingevolge die Wet is van toepassing wanneer toegang tot sodanige rekords versoek word.)	(1) Die rekords kan verkry word deur skriftelik aansoek te rig aan die betrokke seksiehoof of afdelingskommissaris.
(2) Kollektiewe ooreenkomste	(2) Die rekords kan verkry word deur skriftelik aansoek te rig aan die Seksiehoof: Arbeidsverhoudinge, Menslike Hulpbronnbenutting, Privaatsak X 94, PRETORIA, 0001, gerig word.

**CONTINUES ON PAGE 258 - PART 3**





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Vol. 649

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**PART 3 OF 3**

<p>(3) <b>VERSLAE OOR ONGELUKKE (NUWE OF OU VERSLAE): KOPIEË OF FOTOKOPIEË</b></p> <p><i>Let wel — met die term “afskrif” word bedoel dat die reproduksie met die hand gedoen word; ’n kopie van ’n voltooide verslag oor ’n ongeluk sal slegs aan die gemagtigde persoon verskaf word; dat wanneer ’n skriftelike versoek ontvang word van die Padongelukkefonds, provinsiale hospitale of ambulansdienste van provinsiale hospitale, hul geag word openbare liggame of instellings te wees wat geregtig is om onmiddellik gratis afskrifte van ’n botsingsverslag te kry.</i></p>	<p>(3) Indien die rekord nog in besit van of onder beheer van die Diens is, die rekords kan deur die <b>gemagtigde</b> persoon verkry word deur skriftelik aansoek te rig op die voorgeskrewe aansoekvorm of SAPD 512(n) aan die betrokke kantoor van die polisiestasie.</p> <p>Let wel — Die volgende persone word geag gemagtigde persone te wees:</p> <p>(a) ’n betrokke party in die botsing (bv bestuurder, passasier, voetganger, fietsryer, eienaar van die voertuig, eienaar van die dier wat in die botsing betrokke was, ens) indien hy of sy kan bewys dat hy of sy ’n betrokke party is;</p> <p>(b) enige private ambulansdiens, mediese diensverskaffer, nooddiens of wegsleepdiens wat ’n ambulansdiens, mediese diens, nooddiens of wegsleepdiens aan ’n party betrokke by ’n botsing gelewer het, indien sodanige private diens skriftelike bewys kan lewer dat so ’n diens gelewer is; of</p> <p>(c) ’n persoon wat nie ’n betrokke party of ’n private ambulansdiens, mediese diensverskaffer, nooddiens of wegsleepdiens waarna hierbo verwys is, is nie, slegs indien hy of sy die skriftelike toestemming of goedkeuring van ’n betrokke party het (bv ’n prokureur wat die betrokke volmagsbrief om namens die persoon op te tree, voorsien).</p>
<p><b>KORPORATIEWE KOMMUNIKASIE: ERFENISDIENSTE</b></p>	
<p>Argiefrekords en fotós by Erfenisdienste (behalwe rekords wat in dossiere vervat is en persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word).</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Kurator: Erfenisdienste, SAPD, Posbus 4866, Pretoria, 0001.</p>
<p><b>KOMPONENT: STRATEGIESE BESTUUR</b></p>	
<p>Alhoewel die volgende rekords gratis op die Diens se webtuiste verkrygbaar is, kan daar op versoek fotostate van sodanige rekords gemaak word:</p> <p>(1) Jaarverslag vir die Suid-Afrikaanse Polisiediens</p> <p>(2) Strategiese Plan vir die Suid-Afrikaanse Polisiediens</p> <p>(3) Jaarlikse Prestasie Plan vir die Suid-Afrikaanse Polisiediens</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Hoof: Strategiese Bestuur, Privaatsak X 94, PRETORIA, 0001.</p>

<b>AFDELING: FINANSIËLE BESTUUR EN ADMINISTRASIE</b>	
<b>DOKUMENT SENTRUM BESTUUR : ARGIEWE REGISTRASIE EN REKORDS</b>	
Voorsieningslynbestuur	Die rekords kan verkry word by die relevante afdeling.
<b>FINANSIËLE BESTUUR: BEGROTINGS</b>	
Begroting van Nasionale Uitgawes — Departement van Polisie	Die rekords kan verkry word deur skriftelik aansoek te rig aan die Seksiehoof: Begrotings, Finansiële Bestuur, Privaatsak X 94, PRETORIA, 0001.
<b>AFDELING: FORENSIESE DIENSTE</b>	
Slegs foto's en Identikits wat deur die Polisie diens vrygestel en deur die media gepubliseer word	Die rekords kan verkry word by Forensiese dienste deur skriftelik aansoek te rig aan die Hoof: Forensiesedienste, Hoofkantoor, SAPD, Privaatsak X 322, PRETORIA, 0001.
<b>AFDELING: MENSLIKE HULPBRONBENUTTING</b>	
<b>DIENSBILLIKHEID</b>	
Diensbillikheid: Nasionaal en Afdelings: Planne ingevolge artikel 20 en verslag ingevolge artikel 21	Die rekords kan verkry word deur skriftelik aansoek te rig aan die Afdelingskommissaris: Menslike Hulpbronbenutting, Diensbillikheid, Privaatsak X 94, PRETORIA, 0001.
<b>VERGOEDINGSBESTUUR</b>	
Projeksentrum: Menslike Hulpbron Benutting Projekverslae	Inligting oor projekte wat deur die regering gefinansier word, kan deur die publiek verkry word deur skriftelik aansoek te rig aan die Afdelingskommissaris: Menslike Hulpbron Benutting, Vergoedingsbestuur, Privaatsak X 94, PRETORIA, 0001.
<b>PRESTASIEBESTUUR</b>	
Sekere rekords (behalwe rekords met persone se persoonlike inligting en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word) oor Prestasiebestuurstelsels: <ul style="list-style-type: none"> <li>• Projekte</li> <li>• Die name van projekte</li> </ul>	Die rekords kan verkry word by die kantoor van die Komponentshoof: Prestasiebestuur deur skriftelik aansoek te rig aan die Afdelingskommissaris: Menslike Hulpbron Benutting, Hoofkantoor, SAPD, Privaatsak X 94, PRETORIA

<ul style="list-style-type: none"> <li>• Projekplanne</li> <li>• Die begrotings van projekte</li> <li>• Verslae oor die stand van projekte</li> <li>• Operasionele handleidings oor projekte en programme</li> <li>• Projek- en programfunksies en -aktiwiteite</li> <li>• Aktiwiteite van die Programbestuursraad</li> <li>• Geregistreerde gebruikers van projekte en programme</li> <li>• Die getal geregistreerde projeksentrus</li> </ul>	
<b>AFDELING: OPERASIONELE REAKSIEDIENSTE</b>	
<b>SEKSIEHOOF: OPERASIONELE INLIGTINGSBESTUUR</b>	
<p>Rekords (behalwe persoonlike inligting van persone en toegang tot inligting wat ingevolge die Wet geweier kan word) ten opsigte van sekere dele van die —</p> <p>(1) Beleid oor:</p> <ul style="list-style-type: none"> <li>• Skarebestuur</li> <li>• Nasionale Intervensie-eenheid</li> <li>• Grenslyn</li> <li>• Lugvleuel</li> <li>• Gespesialiseerde Vaardigheidsontwikkeling</li> <li>• Spesiale Taakmag</li> </ul> <p>(2) Skarebestuursinsidente</p> <p>(3) Suksesse behaal:</p> <ul style="list-style-type: none"> <li>• Skarebestuur</li> <li>• Nasionale Intervensie-eenheid</li> <li>• Grenslyn</li> <li>• Lugvleuel</li> <li>• Gespesialiseerde Vaardigheidsontwikkeling</li> <li>• Spesiale Taakmag</li> </ul> <p>(4) Vredeshandhawing</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Adjunk-inligtingsbeampte: Operasionele Inligtingsbestuur, Privaatsak X 30, SUNNYSIDE 0132</p>
<b>KOMPONENT: ORGANISATORIESE ONTWIKKELING</b>	
<p>Posevaluering (behalwe rekords met persone se persoonlike inligting en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word):</p> <ul style="list-style-type: none"> <li>• Voorafonderhoudvraelys</li> <li>• Resultate van die posevaluering</li> <li>• Die paneel se beslissing</li> </ul>	<p>Die rekords kan verkry word by die kantoor van die Sektiehoof: Organisasoriese Korporatiewe en Ontwerp, Organisasoriese Ontwikkeling deur skriftelik aansoek te rig aan die Hoof: Organisasoriese Ontwikkeling, Privaatsak X 94, PRETORIA, 0001</p>

<b>WERWING EN PERSONEELVOORSIENING</b>	
Rekords (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word) rakende aanstellingsvereistes vir personeel op salaris vlak 1-12 en/of salaris bande A - "MMS"	Die rekords kan verkry word deur skriftelik aansoek te rig aan die Seksiehoof, Werwing en Personeelvoorsiening, Privaatsak X 94, PRETORIA, 0001.
<b>SENIOR BESTUURSAANSTELLINGS</b>	
Rekords (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word) rakende aanstellingsvereistes vir personeel op salaris vlak 13 en op en/of salaris bande op "SMS"	Die rekords kan verkry word deur skriftelik aansoek te rig aan die Sub-seksiehoof, Senior Bestuur Aanstellings, Privaatsak X 986, PRETORIA, 0001.
<b>AFDELING: VOORSIENINGSLYNBESTUUR</b>	
Algemene voorwaardes en prosedures	Die rekords kan verkry word by Voorsieningslynbestuur deur skriftelik aansoek te rig aan die Afdelingskommissaris: Voorsieningslynbestuur, Privaatsak X 254, PRETORIA, 0001.
<b>AFDELING: SIGBARE POLISIËRING</b>	
<b>VENNOOTSKAPSPOLISIËRING SEKTORPOLISIËRING</b>	
Rekords rakende (behalwe persoonlike inligting van persone en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word) - (1) Vennootskapspolisiëring <ul style="list-style-type: none"> <li>• Die Polisie se Gemeenskapsprojekte</li> <li>• Beleidsraamwerk en riglyne vir Gemeenskaps-polisiëring</li> </ul> (2) Sektorpolisiëring <ul style="list-style-type: none"> <li>• Loodsprojekte</li> </ul>	Die rekords kan verkry word by die Kantoor: Sigbare Polisiëring verkrygbaar deur skriftelik aansoek te rig aan die Afdelingskommissaris: Sigbare Polisiëring, Privaatsak X 540, PRETORIA, 0001.
<b>SOSIALE MISDAADVOORKOMING</b>	
(1) "Maak Suid-Afrika Veilig"-handleiding (2) Handleiding oor Omgewingsontwerp (3) Kommunikasie materiaal oor Gesinsgeweld (4) Kommunikasie materiaal oor Slagofferbemagtiging (5) Kommunikasie materiaal oor verkragting en seksuele oortredings. (6) Belowende Misdaadvoorkoming Praktike in Suid-Afrika (7) Nasionale landelike slagoffers van Misdaad opnames (8) Riglyne: Misbruik van dwelms	Die rekords kan verkry word by die Kantoor: Sigbare Polisiëring deur skriftelik aansoek te rig aan die Afdelingskommissaris: Sigbare Polisiëring, Privaatsak X 540, PRETORIA, 0001.

<b>SIGBARE POLISIËRING</b>	
<p>Sekere rekords (behalwe rekords met persone se persoonlike inligting en inligting wat geweier kan word op grond van die weiering waarvoor daar in die Wet voorsiening gemaak word) rakende algemene korrespondensie oor:</p> <p>(1) Die Polisie se Nooddienste</p> <ul style="list-style-type: none"> <li>• Blitspatrolie of Hoofwegpatrolie</li> <li>• 1 0111-sentrums</li> </ul> <p>(2) Gemeenskapsdienste</p> <p>(3) Ongelukvoorkoming</p> <p>(4) Gespesialiseerdeuniformtakke</p> <ul style="list-style-type: none"> <li>• Gyselaaronderhandelaars</li> <li>• Duikers</li> <li>• Die Watervleuel</li> <li>• Rampbestuur</li> </ul>	<p>Die rekords kan verkry word by die Kantoor: Sigbare Polisiëring deur skriftelik aansoek te rig aan die Afdelingskommissaris: Sigbare Polisiëring, Privaatsak X 540, PRETORIA, 0001.</p>
<b>7.4 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT AUTOMATIES GRATIS INGEVOLGE ARTIKEL 15(1)(a)(iii) BESKIKBAAR IS</b>	
<b>ALLE AFDELINGS</b>	
<p>(1) 'n Afskrif van die —</p> <p>(a) <i>verdagte se eie verklaring wat in 'n oop dossier vervat is;</i></p> <p>of</p> <p>(b) <i>slagoffer of klaer se eie verklaring wat in 'n oop dossier vervat is.</i></p>	<p>(1) Die versoek deur die verdagte / slagoffer / klaer om 'n afskrif van sy of haar eie verklaring, moet skriftelik geskied en aan die betrokke ondersoekbeampte gerig word.</p> <p><b><i>Let wel: sodanige afskrif sal slegs outomaties beskikbaar wees aan die betrokke verdagte / slagoffer / klaer of sy of haar verteenwoordiger (sodanige verteenwoordiger moet dokumentêre bewys van hoedanigheid om namens sodanige persoon aansoek te doen, voorlê).</i></b></p>
<p>(2) Die onderwerpe of inligting soos beskikbaar op die Diens se webtuiste</p>	<p>(2) Op die Diens se webtuiste by <a href="http://www.saps.gov.za">www.saps.gov.za</a> beskikbaar.</p>

DEPARTMENT OF JUSTICE AND CONSTITUTIONAL DEVELOPMENT  
NOTICE 388 OF 2019

**PROMOTION OF ACCESS TO INFORMATION ACT, 2000**

**DESCRIPTION SUBMITTED IN TERMS OF SECTION 15(1)**

I, Ronald Lamola, Minister of Justice and Correctional Services, hereby publish under section 15(2) of the Promotion of Access to Information Act, 2000 (Act No. 2 of 2000), the descriptions submitted to me in terms of section 15(1) of the said Act by the –

**DEPARTMENT OF INTERNATIONAL RELATIONS AND COOPERATION**

As set out in the Schedule



**MR R LAMOLA, MP**

**MINISTER FOR JUSTICE AND CORRECTIONAL SERVICES**



REPUBLIC OF SOUTH AFRICA  
FORM D

**AUTOMATICALLY AVAILABLE RECORDS AND ACCESS TO SUCH RECORDS:**  
(Section 15 of the Promotion of Access to Information Act 2000 (Act no. 2 of 2000))  
[Regulation 5A]

DESCRIPTION OF CATEGORY OF RECORDS AUTOMATICALLY AVAILABLE IN TERMS OF SECTION 15(1)(a) OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000	MANNER OF ACCESS TO RECORDS (e.g. website)(SECTION 15(1)(a))
<b>FOR INSPECTION IN TERMS OF SECTION 15(1)(a)(i):</b>	
<p><b>Department of International Relations and Cooperation (DIRCO):</b></p> <p><b>Home Page</b></p> <ul style="list-style-type: none"> <li>• Current events/Monthly programme of events/What's new</li> </ul> <p><b>About the Department</b></p> <ul style="list-style-type: none"> <li>• Minister/Deputy Ministers/Director-General profiles and speeches</li> <li>• Vision, Mission, Strategic priorities and Values</li> <li>• Strategic plans/Annual reports/Annual Performance Plans/Budget Votes</li> <li>• African Renaissance and International Cooperation Fund (ARF) Strategic Plans and annual performance plans</li> <li>• Technical Indicator Descriptors for the Annual Performance Plans</li> <li>• Technical Indicator Descriptors for the Strategic Plans</li> <li>• Contact information- Who's who in the Department/After hours-helpline</li> <li>• Section 14 Manual</li> </ul> <p><b>Diplomatic Immunities &amp; Privileges (DIAP):</b></p> <ul style="list-style-type: none"> <li>○ Diplomatic Accreditation and Vehicle Application forms</li> <li>○ Customs Clearance Certificate for Duty Free Import</li> <li>○ Diplomatic Property Audit Form</li> <li>○ Locally Recruited Personnel Personal Details Form</li> <li>○ Signature Audit</li> <li>○ Policy on the Management of Diplomatic Immunities and Privileges</li> <li>○ DIAP Service Delivery Charter</li> <li>○ Temporary Residence Visa Circular Note</li> <li>○ Diplomatic Vehicles Audit Form</li> <li>○ Mission Contact Detail Audit</li> </ul> <p><b>Promotion of Access to Information</b></p> <ul style="list-style-type: none"> <li>• Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)</li> <li>• Section 14: Manual on the Promotion of Access to Information Act No 2 of 2000</li> <li>• Imanuali Ngokuqhutshekiselwa phambili Komthetho wokufinyeleleka kolwazi Wesi-2 wonyaka we-2000</li> <li>• Bukanatataiso Ya ntshetsopele Ya molao wa ho fihlella Ditsebisano No 2 wa 2000</li> <li>• Section 15: Automatic available records and access to such records</li> </ul>	<p><b>Website</b></p> <p><b>Home Page</b> <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p> <p><b>Website</b></p> <p><b>About the Department</b> <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p>



<p><b><u>News and Events</u></b></p> <ul style="list-style-type: none"> <li>• Media statements and Speeches/ Events calendar/ Parliament questions and replies</li> </ul> <p><b><u>Foreign Relations</u></b></p> <ul style="list-style-type: none"> <li>• Bilateral relations</li> <li>○ SA-EU strategic partnership</li> <li>• Multilateral relations</li> <li>• Diplomatic representation</li> <li>○ SA representation abroad/Foreign representation in SA</li> </ul> <p><b>Websites of South African Missions</b></p> <p><b><u>Consular Information</u></b></p> <ul style="list-style-type: none"> <li>• What are consular services and Contact details</li> <li>• Travelling abroad/Deaths abroad/Arrested abroad</li> <li>• Consular Notarial Services (Legislation of Official (Public) documents)</li> <li>• End User Certificates</li> <li>• Service Delivery Charter</li> <li>• SA representation abroad/Foreign representation in SA</li> <li>• South African Missions: Commissioner of Oaths</li> </ul> <p><b><u>State Protocol</u></b></p> <ul style="list-style-type: none"> <li>• General Protocol information: <ul style="list-style-type: none"> <li>○ Circular Note Verbales</li> <li>○ Service Delivery Charter</li> <li>○ Fact sheet and advice for travelers</li> <li>○ Executive Database</li> <li>○ Instructions regarding the flying of the South African flag</li> </ul> </li> <li>• Diplomatic representation <ul style="list-style-type: none"> <li>○ South African Representation Abroad</li> <li>○ Foreign Representation in SA</li> </ul> </li> </ul>	<p><b><u>Website</u></b>  <b><u>News and events</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a>  <b><u>Website</u></b>  <b><u>Foreign relations</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p> <p><b><u>Website</u></b>  <b><u>Websites of SA Missions</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a>  <b><u>Website</u></b>  <b><u>Consular information</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p> <p><b><u>Website</u></b>  <b><u>State Protocol</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p>
<b>FOR PURCHASING IN TERMS OF SECTION 15(1)(a)(ii):</b>	
No records	
<b>FOR COPYING IN TERMS OF SECTION 15(1)(a)(ii)</b>	
<p><b><u>Procurement</u></b></p> <ul style="list-style-type: none"> <li>○ National Treasury Central Supplier Database Registration</li> <li>○ Supplier Leaflet</li> <li>○ Treasury Central Supplier Database for Government</li> <li>○ Database Registration form</li> <li>○ Awarded bids</li> <li>○ Received bid proposals</li> <li>○ Terms of Reference (advertised tenders)</li> </ul> <p><b><u>Office of the Chief State Law Advisor</u></b></p> <ul style="list-style-type: none"> <li>○ International law and treaties</li> </ul>	<p><b><u>Website</u></b>  <b><u>Home</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a> or  <b><u>Collection at</u></b>  <b><u>Supply Chain Management</u></b>  OR Tambo Building, 460 Soutpansberg Road, Rietondale, Pretoria, 0084</p> <p><b><u>Website</u></b>  <b><u>Foreign Relations</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a>  International law and treaties</p>
<b>AVAILABLE FREE OF CHARGE IN TERMS OF SECTION 15(1)(a)(iii)</b>	
<p><b><u>Publications</u></b></p> <ul style="list-style-type: none"> <li>○ Annual reports/Strategic plans/Annual Performance Plans (APP)</li> <li>○ African Renaissance Fund/African Renaissance Fund (ARF) Strategic plan</li> <li>○ Ubuntu magazine/ It's your voice Ubuntu Diplomat</li> <li>○ Measures and guidelines for the enhanced coordination of South Africa's International engagement</li> </ul> <p><b><u>Employment Information</u></b></p> <ul style="list-style-type: none"> <li>• Employment Opportunities</li> <li>○ Z.83 Form</li> </ul>	<p><b><u>Website</u></b>  <b><u>Home</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a>  or  <b><u>Collection at</u></b>  <b><u>Main Library/Public Diplomacy</u></b>  OR Tambo Building, 460 Soutpansberg Road, Rietondale, Pretoria, 0084</p> <p><b><u>Website</u></b>  <b><u>Employment Information</u></b>  <a href="http://www.dirco.gov.za">www.dirco.gov.za</a></p>

## NON-GOVERNMENTAL ORGANIZATION

## NOTICE 389 OF 2019

VETERINARY AND PARA-VETERINARY PROFESSIONS  
ACT, 1982 (ACT NO. 19 OF 1982)REGULATIONS RELATING TO VETERINARY AND  
PARA-VETERINARY PROFESSIONS: AMENDMENT

## SCHEDULE

Definition

1.

In this Schedule "the Regulations" means the regulations published by Government Notice No. R.2085 of 1 October 1982, as amended by the regulations published by Government Notices Nos. R.1994 of 11 September 1987 (as corrected by Government Notice No. R.2199 of 2 October 1987), R.397 of 4 March 1988, R.1067 of 17 May 1991, R.11 of 3 January 1992, R.976 of 27 March 1992, R.1477 of 23 September 1994, R.47 of 20 January 1995, R.701 of 12 May 1995, R.1401 of 15 September 1995, R.561 of 1 April 1996, R.256 of 14 February 1997, R.257 of 14 February 1997, R.96 of 16 January 1998, R.501 of 1 April 1998, R.751 of 5 June 1998, R.374 of 26 March 1999, R.422 of 1 April 1999, R.618 of 23 June 2000, R.734 of 17 August 2001, R.324 of 22 March 2002, R.562 of 2 May 2003, R.275 of 5 March 2004 (as amended by Government Notice No R.568 of 7 May 2004), R.343 of 15 April 2005, R.249 of 24 March 2006, R.322 of 20 April 2007, R.487 of 30 April 2008, R.655 of 12 June 2009, R.659 of 30 July 2010 and R.810 of 12 October 2012, R.30 of 30 August 2014, R.638, R.305 of 25 April 2014, R.389 of 15 May 2015, Notice 408 of 2016, 15 July 2016, Notice 564 of 4 August 2017, Notice 642 of 19 October 2018.

Substitution of Table 1 of the Regulations

2.

The following Table is hereby substituted for Table 1 of the Regulations.

**TABLE 1**  
**FEES PAYABLE**

PURPOSE	AMOUNT
1. Registration of - a student [R.22]	*R 150.00
2.1 Registration of a natural person -	
(a) to practice a veterinary profession	*R 2382.00 for the first registration and *R 7624.00 for registration of a person whose registration was previously terminated
(b) to practice a veterinary specialist profession	*R 2382.00 for the first registration and *R 7624.00 for a person whose registration was previously terminated.
(c) to practice a para-veterinary profession	*R 780.00 for the first registration and *R3050.00 for the registration of a person whose registration was previously terminated.
2.2 Registration of a juristic person- [R.23]	*R 2382.00
3. Maintenance of registration of- a student [R.24.1]	*R 150.00
4. Maintenance of registration of-	

(a) a person practising a veterinary profession	*R 4234.00
(b) a person practising a para-veterinary profession	*R 1296.00
(c) a person practising as a pensloner [R.24.2]	*R 382.00
5. Alteration of-	
(a) registration of a person practising a veterinary profession	*R 91.00
(b) speciality of a veterinary specialist	*R 91.00
(c) registration of a person practising a para-veterinary profession [R.25]	*R 91.00
6. Entry of-particulars of a degree, diploma or certificate in a register [R.26]	*R 230.00
7.	
7.1 Examination determined by the Council for registration purposes as a Veterinarian-	
(a) Non-refundable application fee	*R 443.00
(b) Examination Fee Including Application Fee	*R 29 364.00
7.2 Examination determined by the Council for registration purposes as a Para Veterinarian-	
(a)Non-refundable application fee	*R 443.00
(b)Examination Fee Including Application Fee	*R 14 656.00
[Section 20 (5) (c)]	
8. Deferment (Continuing Professional Development)	*R1099.00
9. Routine Inspections	*R 4 460.00

\* VAT included

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**BOARD NOTICES • RAADSKENNISGEWINGS**

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**BOARD NOTICE 112 OF 2019****INVITATION TO COMMENT ON EXPOSURE DRAFT ISSUED BY THE ACCOUNTING STANDARDS BOARD****Issued: 19 July 2019**

The Accounting Standards Board (the Board) invites comment on the following Exposure Drafts:

- ED 176 *Proposed Improvements to the Standards of GRAP (2019)*. Comment due by 31 October 2019.
- ED 177 *Proposed Transitional Provisions for the Standard of GRAP on Financial Instruments (Revised in 2019)*. Comment due by 29 November 2019.

Input received on the proposals in ED 176 and ED 177 will be used in finalising the pronouncements before being issued.

All those affected by, or who are interested in the Exposure Drafts, are encouraged to provide a written response to the Board.

Responses to the Exposure Drafts should be received by the comment deadlines as indicated above.

*Copies of the document*

The document is available electronically on the Board's website – <http://www.asb.co.za>, or can be obtained by contacting the Board's offices on 011 697 0660 (telephone), or 011 697 0666 (fax).

Comment can be emailed to [info@asb.co.za](mailto:info@asb.co.za) or can be submitted in writing to:

Accounting Standards Board

PO Box 7001

Halfway House

1685

We look forward to receiving your responses.