

Vol. 622

28 April
April 2017

No. 40815

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:

Weekly Index

No.	Page No.	Gazette No.
GOVERNMENT NOTICE		
Higher Education and Training, Department of		
373 National Qualification Framework Act (67/2008) :National Policy for an integrated Career Development System for South Africa	4	40795
374 Higher Education Act (101/1997) :Extension of the period of submission of public comment on the Report of the Ministerial Task Team to develop a support and funding model for poor and missing middle students.....	4	40796
Labour, Department of		
375 Basic Conditions of Employment Act (75/1997) :Investigation into the Contract Cleaning Sector KwaZulu-Natal, South Africa with a view to extend a Contract Cleaning Sectoral Determination prescribing minimum wages and conditions of employment.....	4	40797
The Presidency		
357 National Order :Awards of the Order	4	40789
GENERAL NOTICE		
Transport, Department of		
302 Road Accident Benefit Scheme Bill, 2017 :Notice of intention to introduce the Act into Parliament in terms of the Rule 241 (1) (b) of the National Assembly	4	40788

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

Weeklikse Indeks

No.	Bladsy No.	Koerant No.
GOEWERMENTSKENNISGEWINGS		
Hoër Onderwys en Opleiding, Departement van		
373 National Qualification Framework Act (67/2008) :National Policy for an integrated Career Development System for South Africa	4	40795
374 Higher Education Act (101/1997) :Extension of the period of submission of public comment on the Report of the Ministerial Task Team to develop a support and funding model for poor and missing middle students.....	4	40796
Arbeid, Departement van		
375 Basic Conditions of Employment Act (75/1997) :Investigation into the Contract Cleaning Sector KwaZulu-Natal, South Africa with a view to extend a Contract Cleaning Sectoral Determination prescribing minimum wages and conditions of employment.....	4	40797
Die Presidensie		
357 National Order :Awards of the Order	4	40789
ALGEMENE KENNISGEWINGS		
Vervoer, Departement van		
302 Road Accident Benefit Scheme Bill, 2017 :Notice of intention to introduce the Act into Parliament in terms of the Rule 241 (1) (b) of the National Assembly	4	40788

Contents

<i>No.</i>		<i>Gazette No.</i>	<i>Page No.</i>
GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS			
Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van			
385	National Forests Act (84/1998), as amended: Declaration of De-hoop as a protected woodland.....	40815	13
Basic Education, Department of/ Basiese Onderwys, Departement van			
386	Employment of Educators Act, 1998: Improvement in conditions of service: Annual Cost-of-living adjustment for educators employed in terms of the Act, with effect from 1 April 2017	40815	16
Defence, Department of/ Verdediging, Departement van			
387	Defence Amendment Bill, 2017: Publication of explanatory summary of the Bill.....	40815	22
Economic Development, Department of/ Ekonomiese Ontwikkeling, Departement van			
388	Competition Act (89/1998): Final Report for Market Inquiry into the LPG Sector.....	40815	24
Higher Education and Training, Department of/ Hoër Onderwys en Opleiding, Departement van			
389	Draft Policy Framework for the Internationalisation of Higher Education in South Africa (2017): Call for public comments on the Draft Policy Framework for the Internationalisation of Higher Education in South Africa	40815	244
Human Settlements, Department of/ Menslike Nedersettings, Departement van			
390	Social Housing Act (16/2008): Restructuring Zones	40815	245
Justice and Constitutional Development, Department of/ Justisie en Staatskundige Ontwikkeling, Departement van			
391	Promotion of Access to Information Act (2/2000): Description in terms of section 15(1): South African Police Services.....	40815	252
391	Wet op Bevordering van Toegang tot Inligting (2/2000): Beskrywing ingevolge artikel 15(1): Suid-Afrikaanse Polisieagents.....	40815	264
GENERAL NOTICES • ALGEMENE KENNISGEWINGS			
Agriculture, Forestry and Fisheries, Department of/ Landbou, Bosbou en Visserye, Departement van			
314	Agricultural Products Standards Act (119/1990): Proposed amendments to the regulations relating to the Grading, Packing and Marking of Peaches and Nectarines intended for sale in the Republic of South Africa: Invitation for public comments	40815	274
Environmental Affairs, Department of/ Omgewingsake, Departement van			
315	National Environmental Management: Biodiversity Act (10/2004): Biodiversity Management Plan for Eleven Critically Endangered and Four Endangered Encephalartos Cycad Species	40815	275
Independent Communications Authority of South Africa/ Onafhanklike Kommunikasie-owerheid van Suid-Afrika			
316	Electronic Communications Act: Notice of intention to extend the due date for the submission of comments: Community Broadcasting	40815	348
317	Electronic Communications Act: Standard operating procedures regarding the use of radio frequency spectrum in the E band (71 – 76 GHz)	40815	350
318	Electronic Communications Act (36/2005): Draft Regulations on the use of Television White Spaces for public consultation.....	40815	358
Public Works, Department of/ Openbare Werke, Departement van			
319	Property Valuers Profession Act, 2000: Nomination Rules for the Property Valuers Profession, 2017	40815	374
South African Reserve Bank/ Suid-Afrikaanse Reserwebank			
320	The Banks Act (94/1990): Withdrawal of consent to maintain a representative office of a foreign institution in the Republic of South Africa, in terms of section 34 of the Banks Act: Vnesheconombank.....	40815	378
321	The Banks Act (94/1990): Withdrawal of consent to maintain a representative office of a foreign institution in the Republic of South Africa, in terms of section 34 of the Banks Act: First Bank of Nigeria Limited.....	40815	378
322	The Banks Act (94/1990): Withdrawal of consent to maintain a representative office of a foreign institution in the Republic of South Africa in terms of section 34 of the Act: African Banking Corporation of Botswana Limited (trading as Bancab Botswana)	40815	378
323	The Banks Act (94/1990): Withdrawal of consent to maintain a representative office of a foreign institution in the Republic of South Africa: Bank Leumi Le-Israel BM	40815	378

324	The Banks Act (94/1990): Withdrawal of consent to maintain a representative office of a foreign institution in the Republic of South Africa: Union Bank of Nigeria PLC.....	40815	379
-----	---	-------	-----

BOARD NOTICES • RAADSKENNISGEWINGS

56	Road Accident Fund Act (56/1996): Adjustment of Statutory Limit in respect of claims for loss of income and loss of support.....	40815	379
56	Padongelukfondswet (56/1996): Aanpassing van Statutêre Limiet ten opsigte van eise vir verlies aan inkomste en onderhoude.....	40815	379
57	Financial Markets Act (19/2012): A2X (Proprietary) Limited: Exchange Rules	40815	380
58	Financial Markets Act, 2012: Amendments to the JSE Conflicts of Interest Arrangements in respect of the following rule books: JSE Derivatives Rules; JSE Equities Rules; and JSE Interest Rate and Currency Derivatives Rules...	40815	381

GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. 385

28 APRIL 2017

DECLARATION OF PHASE 2A OF THE OLIFANTS RIVER WATER RESOURCES DEVELOPMENT PROJECT (ORWRDP) OFFSITE MITIGATION AREA AS A TEMPORARY PROTECTED WOODLAND UNDER SECTION 14 OF THE NATIONAL FORESTS ACT (No. 84 of 1998) AS AMENDED

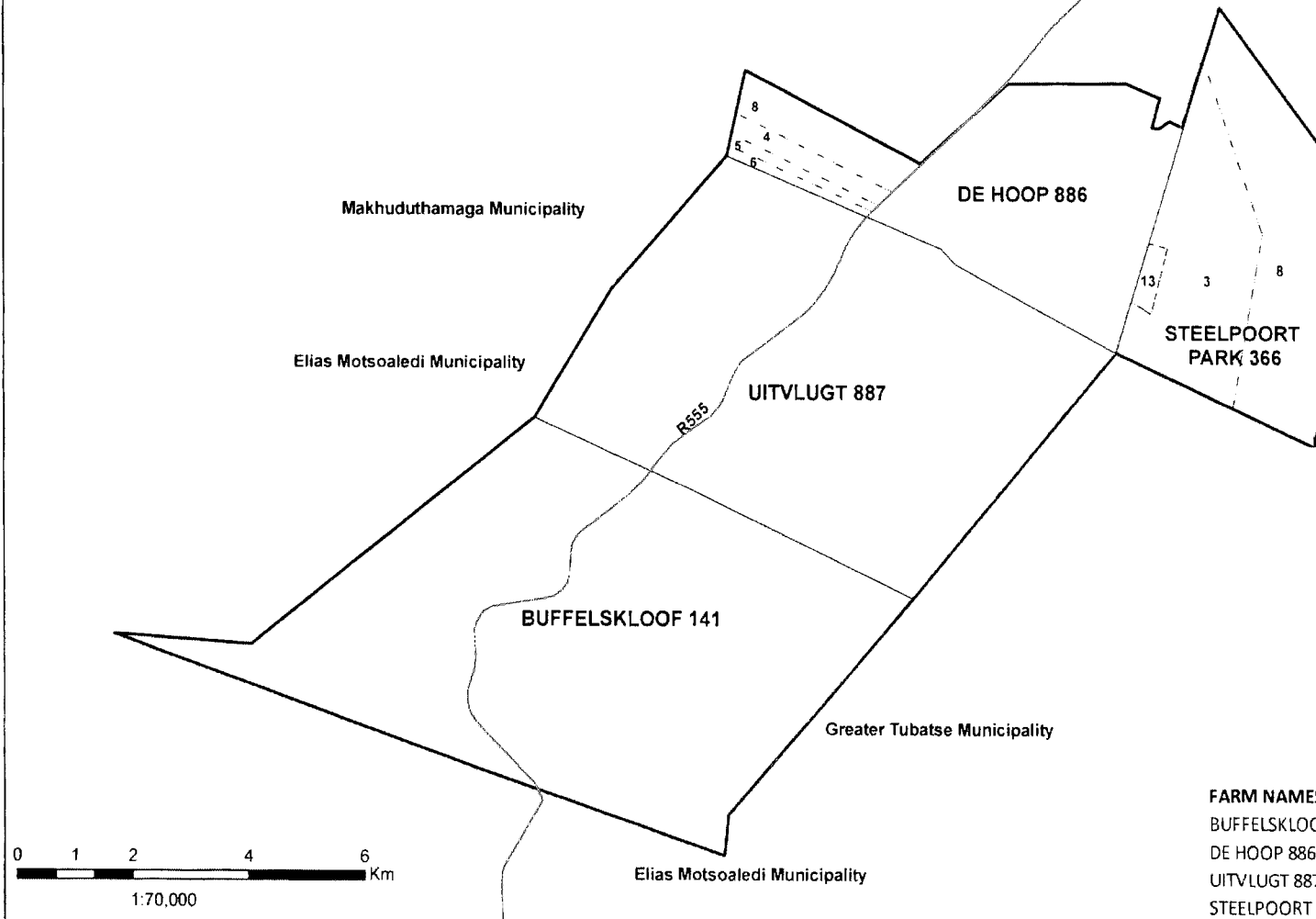
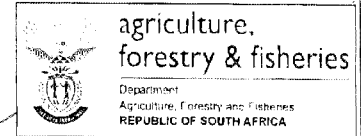
By virtue of powers vested in the Minister of Agriculture, Forestry and Fisheries under Section 14 of the National Forests Act, 1998, (Act No. 84 of 1998 - hereinafter referred to as "the Act") I, Avhashoni Renny Madula, Director: Forestry Regulation and Oversight, by delegated authority; hereby declare the Olifants River Water Resources Development Project Offsite Mitigation Area and associated land described hereunder as temporary protected woodland. Having noted the uncontrolled harvesting and destruction of woodland trees and noting the conservation value of the area in question; I am of the opinion that urgent temporary protection is necessary to preserve the conservation value of this area pending the preparations for its permanent protection.

Description: The area consists of mixed modified and unmodified woodland belonging mainly to the Sekhukhune Plains Bushveld (SVcb27) and Sekhukhune Mountain Bushveld (SVcb 28) woodland types. It incorporates land adjacent to the De Hoop dam, including land set aside as part of the ORWRDP off-site mitigation requirement as well as all land bought out by the State for the construction of the dam and private land falling within the general boundary of the farms mentioned below.

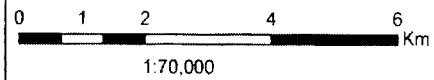
Background: The locality forms part of an area distinguished by high concentration of endemic plant species, the Sekhukhuneland Centre of Plant Endemism (SCPE) that incorporates approximately 2200 plant taxa. Within the Steelpoort Sub-centre of the SCPE, where this area is located, several new plant species have been discovered in recent years. The locality is designated a category one Critical Biodiversity Area (CBA-1); important, among other, for plant conservation to prevent the loss of unknown and unique genetic resources.

Location:	Limpopo Province, between Steelpoort and Roossenekal
Properties:	<p>The area protected includes the following:</p> <ul style="list-style-type: none">• All portions of the farm Buffelskloof 141 JS• All portions of the farm Uitvlugt 887 KS• Portions 4, 5, 6, 8 and 21 of the farm De Hoop 886 KS• Portions 3, 8 and 13 of the farm Steelpoortpark 366 KT
Landownership:	State and Private
Magistrate District:	Lydenburg (1996)
District Municipality:	Sekhukhune – DC47 (2012)
Local Municipality:	Greater Elias Motsoaledi and Greater Tubatse (2012)
Period of Protection:	Section 14(5) of the National Forests Act determines that the temporary protection in terms of this declaration will lapse automatically after 12 months effective from the date of publication of this notice in the Government Gazette or if the area becomes permanently protected during this time.
Prohibitions:	<p>As determined in Sections 14(4) and 15(1) of the Act, read together with Section 2(1)(xxxvi) no person may:</p> <p>(a) cut, disturb, damage, destroy or remove any tree, including juvenile trees</p> <p>(b) collect, remove, transport, purchase, sell or donate any tree (including branches and other parts of trees)</p>
Penalties:	Any contravention of the above restrictions constitutes a first category offence in terms of Section 62(2)(c) of the Act. Offenders may be liable to a fine and /or up to five years prison sentence.

Temporary Protected Woodland - De Hoop Dam



Legend	
	Road
	Farm Portion
	Municipal Boundaries
	Temporary Protected Woodland



FARM NAMES	HECTARES
BUFFELSKLOOF 141	4072.70
DE HOOP 886	1629.33
UITVLUGT 887	3569.01
STEELPOORT (ptn 3, 8,13)	1430.23

DEPARTMENT OF BASIC EDUCATION

NO. 386

28 APRIL 2017

IMPROVEMENT IN CONDITIONS OF SERVICE: ANNUAL COST-OF-LIVING ADJUSTMENT FOR EDUCATORS EMPLOYED IN TERMS OF THE EMPLOYMENT OF EDUCATORS ACT, 1998 WITH EFFECT FROM 1 APRIL 2017


Public Service Co-ordinating Bargaining Council (PSCBC) Resolution 8 of 2015 provides for the following cost-of-living adjustments for employees on salary levels 1 to 12 and those employees covered by Occupation Specific Dispensations (OSDs) who are appointed in terms of the Public Service Act, 1994, the Correctional Services Act, 1998, the Police Act, 1995, and the Employment of Educators Act, for the period 1 April 2015 to 31 March 2018.

- Salary adjustment for the period 1 April 2017 to 31 March 2018, effective from 1 April 2017, will be based on the average projected CPI plus 1%.
- The forecasts of National Treasury shall be used to determine the average projected CPI.
- National Treasury projects the CPI for the 2017/18 financial year at 6.3%.

Based on this projection, I, **Angelina Matsie Motshekga, Minister of Basic Education**, hereby determine for educators employed in terms of the Employment of Educators Act, 1998 an adjustment in salary scale with a cost-of-living adjustment of 7.3% for the financial year 2017/18 as contained in PSCBC Resolution 8 of 2015.

The salary adjustment (**Schedule 1 and Schedule 2**) takes effect from 1 April 2017.

The Personnel Administrative Measures (PAM) will be amended in order to include these scales as outlined in **Schedule 1 and Schedule 2** respectively and other aspects of the above mentioned resolutions.


MRS AM MOTSHEKGA, MP
MINISTER OF BASIC EDUCATION
DATE: 04.04.2017

Schedule 1

OSD SALARY NOTCHES WITH EFFECT FROM 1 APRIL 2017 FOR FULL-TIME EMPLOYEES: EDUCATORS

Notch Code	Notches			Notch Code	Notches			Notch Code	Notches			Notch Code	INCLUSIVE PACKAGE		
	1/4/2015	1/4/2016	1/4/2017		1/4/2015	1/4/2016	1/4/2017		1/4/2015	1/4/2016	1/4/2017		1/4/2015	1/4/2016	1/4/2017
001	93,933	101,073	108,450	082	206,547	222,246	238,470	163	458,223	493,047	529,038	001	600,363	645,990	693,147
002	94,875	102,087	109,539	083	208,620	224,475	240,861	164	462,819	497,994	534,348	002	606,357	652,440	700,068
003	95,832	103,116	110,643	084	210,705	226,719	243,270	165	467,448	502,974	539,691	003	612,420	658,965	707,070
004	96,771	104,127	111,729	085	212,811	228,984	245,700	166	472,128	508,011	545,097	004	618,552	665,562	714,147
005	97,749	105,177	112,854	086	214,929	231,264	248,145	167	476,835	513,075	550,530	005	624,732	672,213	721,284
006	98,712	106,215	113,970	087	217,074	233,571	250,623	168	481,602	518,205	556,035	006	630,963	678,915	728,475
007	99,708	107,286	115,119	088	219,258	235,923	253,146	169	486,432	523,401	561,609	007	637,284	685,719	735,777
008	100,686	108,339	116,247	089	221,445	238,275	255,669	170	491,301	528,639	567,231	008	643,653	692,571	743,130
009	101,712	109,443	117,432	090	223,674	240,672	258,240	171	496,206	533,919	572,895	009	650,085	699,492	750,555
010	102,729	110,535	118,605	091	225,897	243,066	260,811	172	501,168	539,256	578,622	010	656,583	706,482	758,055
011	103,770	111,657	119,808	092	228,165	245,505	263,427	173	506,178	544,647	584,406	011	663,150	713,550	765,639
012	104,790	112,755	120,987	093	230,445	247,959	266,061	174	511,245	550,101	590,259	012	669,774	720,678	773,286
013	105,837	113,880	122,193	094	232,752	250,440	268,722	175	516,348	555,591	596,148	013	676,476	727,887	781,023
014	106,893	115,017	123,414	095	235,077	252,942	271,407	176	521,517	561,153	602,118	014	683,229	735,153	788,820
015	107,955	116,160	124,641	096	237,420	255,465	274,113	177	526,743	566,775	608,151	015	690,066	742,512	796,716
016	109,035	117,321	125,886	097	239,790	258,015	276,849	178	531,999	572,430	614,217	016	696,972	749,943	804,690
017	110,139	118,509	127,161	098	242,169	260,574	279,597	179	537,324	578,160	620,367	017	703,932	757,431	812,724
018	111,216	119,667	128,403	099	244,617	263,208	282,423	180	542,688	583,932	626,559	018	710,967	765,000	820,845
019	112,362	120,903	129,729	100	247,062	265,839	285,246	181	548,112	589,770	632,823	019	718,071	772,644	829,047
020	113,484	122,109	131,022	101	249,528	268,491	288,090	182	553,614	595,689	639,174	020	725,244	780,363	837,330
021	114,606	123,315	132,318	102	252,012	271,164	290,958	183	559,134	601,629	645,549	021	732,501	788,172	845,709
022	115,746	124,542	133,635	103	254,541	273,885	293,880	184	564,738	607,659	652,017	022	739,824	796,050	854,163
023	116,919	125,805	134,988	104	257,082	276,621	296,814	185	570,378	613,728	658,530	023	747,216	804,003	862,695
024	118,080	127,053	136,329	105	259,650	279,384	299,778	186	576,078	619,860	665,109	024	754,689	812,046	871,326
025	119,262	128,325	137,694	106	262,254	282,186	302,787	187	581,838	626,058	671,760	025	762,237	820,167	880,038
026	120,441	129,594	139,053	107	264,885	285,015	305,820	188	587,646	632,307	678,465	026	769,860	828,369	888,840
027	122,597	129,762	139,236	108	267,531	287,862	308,877	189	593,541	638,649	685,269	027	777,555	836,649	897,723
028	121,788	131,043	140,610	109	270,195	290,730	311,952	190	599,460	645,018	692,103	028	785,337	845,022	906,708
029	123,000	132,348	142,008	110	272,904	293,646	315,081	191	605,460	651,474	699,033	029	793,179	853,461	915,765
030	124,236	133,677	143,436	111	275,622	296,568	318,216	192	611,517	657,993	706,026	030	801,108	861,993	924,918
031	125,490	135,027	144,885	112	278,397	299,556	321,423	193	617,637	664,578	713,091	031	809,118	870,612	934,167
032	126,738	136,371	146,325	113	281,157	302,526	324,609	194	623,793	671,202	720,201	032	817,203	879,309	943,500
033	127,992	137,718	147,771	114	283,986	305,568	327,873	195	630,033	677,916	727,404	033	825,381	888,111	952,944
034	129,285	139,110	149,265	115	286,815	308,613	331,143	196	636,330	684,690	734,673	034	833,634	896,991	962,472
035	130,560	140,484	150,738	116	289,698	311,715	334,470	197	642,702	691,548	742,032	035	841,965	905,955	972,090
036	131,877	141,900	152,259	117	292,581	314,817	337,800	198	649,149	698,484	749,472	036	850,380	915,009	981,804
037	133,194	143,316	153,777	118	294,177	316,533	339,639	199	655,635	705,462	756,960	037	858,876	924,150	991,614
038	134,505	144,726	155,292	119	297,114	319,695	343,032	200	662,178	712,503	764,517	038	867,468	933,396	1,001,535
039	135,882	146,208	156,882	120	300,087	322,893	346,464	201	668,814	719,643	772,176	039	876,147	942,735	1,011,555
040	137,217	147,645	158,424	121	303,105	326,142	349,950	202	675,501	726,840	779,898	040	884,901	952,152	1,021,659
041	138,609	149,142	160,029	122	306,111	329,376	353,421	203	682,236	734,085	787,674	041	893,754	961,680	1,031,883
042	139,992	150,630	161,625	123	309,189	332,688	356,973	204	689,076	741,447	795,573	042	902,691	971,295	1,042,200
043	141,384	152,130	163,236	124	312,267	336,000	360,528	205	695,967	748,860	803,526	043	911,715	981,006	1,052,619
044	142,797	153,651	164,868	125	315,396	339,366	364,140	206	702,918	756,339	811,551	044	920,817	990,798	1,063,125
045	144,234	155,196	166,524	126	318,543	342,753	367,773	207	709,932	763,887	819,651	045	930,018	1,000,698	1,073,748
046	145,671	156,741	168,183	127	321,723	346,173	371,445	208	717,039	771,534	827,856	046	939,327	1,010,715	1,084,497
047	147,126	158,307	169,863	128	324,957	349,653	375,177	209	724,212	779,253	836,139	047	948,720	1,020,822	1,095,342
048	148,605	159,900	171,573	129	328,203	353,145	378,924	210	731,439	787,029	844,482	048	958,194	1,031,016	1,106,280
049	150,102	161,511	173,301	130	331,494	356,688	382,725	211	738,768	794,913	852,942	049	967,785	1,041,336	1,117,353
050	151,602	163,125	175,032	131	334,809	360,255	386,553	212	746,160	802,869	861,477	050	977,463	1,051,749	1,128,528
051	153,117	164,754	176,781	132	338,163	363,864	390,426	213	753,612	810,888	870,084	051	987,243	1,062,273	1,139,820
052	154,632	166,383	178,530	133	341,538	367,494	394,320	214	761,142	818,988	878,775	052	997,104	1,072,884	1,151,205
053	156,174	168,042	180,309	134	344,946	371,163	398,259	215	768,762	827,187	887,571	053	1,007,064	1,083,600	1,162,704
054	157,734	169,722	182,112	135	348,384	374,862	402,228	216	776,454	835,464	896,454	054	1,017,144	1,094,448	1,174,344
055	159,321	171,429	183,942	136	351,870	378,612	406,251	217	784,224	843,825	905,424	055	1,027,305	1,105,380	1,186,074
056	160,902	173,130	185,769	137	355,410	382,422	410,340	218	792,045	852,240	914,454	056	1,037,571	1,116,426	1,197,924
057	162,516	174,867	187,632	138	358,956	386,238	414,432								

Schedule 2

OSD SALARY NOTCHES WITH EFFECT FROM 1 APRIL 2017 FOR FULL-TIME EMPLOYEES: THERAPISTS, COUNSELLORS AND PSYCHOLOGISTS

Job title	Code	01/04/2016	01/04/2017
Education Therapist Grade 1	1	262 020	281 148
	2	265 956	285 372
	3	269 946	289 653
	4	273 996	293 997
	5	278 112	298 413
	6	282 279	302 886
	7	286 518	307 434
	8	290 811	312 039
	9	295 173	316 722
	10	299 592	321 462
Education Therapist Grade 2	1	308 649	331 179
	2	313 284	336 153
	3	317 982	341 196
	4	322 761	346 323
	5	327 600	351 516
	6	332 517	356 790
	7	337 506	362 145
	8	342 567	367 575
	9	347 700	373 083
	10	352 923	378 687
Education Therapist Grade 3	1	363 582	390 123
	2	369 039	395 979
	3	374 577	401 922
	4	380 193	407 946
	5	385 899	414 069
	6	391 686	420 279
	7	397 566	426 588
	8	403 530	432 987
	9	409 584	439 485
	10	415 725	446 073
	11	421 968	452 772
	12	428 292	459 558
	13	434 721	466 455
	14	441 234	473 445
Chief Education Therapist Grade 1	1	385 899	414 069
	2	391 686	420 279
	3	397 566	426 588
	4	403 530	432 987
	5	409 584	439 485
	6	415 725	446 073
	7	421 968	452 772
	8	428 292	459 558
Chief Education Therapist Grade 2	1	441 234	473 445
	2	447 852	480 546
	3	454 569	487 752
	4	461 391	495 072
	5	468 312	502 500
	6	475 341	510 042
	7	482 472	517 692

INCLUSIVE PACKAGE			
Job title	Code	01/04/2016	01/04/2017
Education Counsellor/ Psychometrist Grade 3	1	626 835	672 594
	2	636 237	682 683
	3	645 780	692 922
	4	655 464	703 314
	5	665 292	713 859
	6	675 279	724 575
	7	685 404	735 438
	8	695 682	746 466
Chief Education Counsellor/ Psychometrist Grade 1	1	626 835	672 594
	2	636 237	682 683
	3	645 780	692 922
	4	655 464	703 314
	5	665 292	713 859
	6	675 279	724 575
	7	685 404	735 438
	8	695 682	746 466
Chief Education Counsellor/ Psychometrist Grade 2	1	716 706	769 026
	2	727 461	780 567
	3	738 378	792 279
	4	749 457	804 168
	5	760 695	816 225
	6	772 110	828 474
	7	783 684	840 894
	8	795 441	853 509
Senior Education Counsellor/ Psychometrist Specialist Grade 1	9	807 372	866 310
	1	772 110	828 474
	2	783 684	840 894
	3	795 441	853 509
	4	807 372	866 310
	5	819 477	879 300
	6	831 774	892 494
	7	844 245	905 874
Senior Education Counsellor/ Psychometrist Specialist Grade 2	8	856 911	919 467
	1	882 810	947 256
	2	896 055	961 467
	3	909 495	975 888
	4	923 133	990 522
	5	936 981	1 005 381
	6	951 036	1 020 462
	7	965 301	1 035 768
Education Psychologist Grade 1	1	590 589	633 702
	2	599 448	643 209
	3	608 445	652 860
	4	617 571	662 655
	5	626 835	672 594
	6	636 237	682 683
	7	645 780	692 922
	8	655 464	703 314

	8	489 708	525 456
INCLUSIVE PACKAGE			
Job title	Code	01/04/2016	01/04/2017
Education Therapist Specialist Grade 1	1	428 292	459 558
	2	434 721	466 455
	3	441 234	473 445
	4	447 852	480 546
	5	454 569	487 752
	6	461 391	495 072
	7	468 312	502 500
	8	475 341	510 042
Education Therapist Specialist Grade 2	1	489 708	525 456
	2	497 046	533 331
	3	504 498	541 326
	4	512 073	549 453
	5	519 750	557 691
	6	527 550	566 061
	7	535 464	574 554
	8	543 489	583 164
INCLUSIVE PACKAGE			
Job title	Code	01/04/2016	01/04/2017
Senior Education Therapist Specialist Grade 1	1	716 706	769 026
	2	727 461	780 567
	3	738 378	792 279
	4	749 457	804 168
	5	760 695	816 225
	6	772 110	828 474
	7	783 684	840 894
	8	795 441	853 509
Senior Education Therapist Specialist Grade 2	1	819 477	879 300
	2	831 774	892 494
	3	844 245	905 874
	4	856 911	919 467
	5	869 760	933 252
	6	882 810	947 256
	7	896 055	961 467
	8	909 495	975 888
	9	923 133	990 522
	10	936 981	1 005 381
Education Counsellor/ Psychometrist Grade 1	1	479 475	514 476
	2	486 666	522 192
	3	493 965	530 025
	4	501 378	537 978
	5	508 902	546 051
	6	516 528	554 235
	7	524 265	562 536
	8	532 143	570 990
Education Counsellor/ Psychometrist Grade 2	1	548 226	588 246
	2	556 443	597 063
	3	564 792	606 021
	4	573 264	615 111
	5	581 862	624 339
	6	590 589	633 702
	7	599 448	643 209
	8	608 445	652 860

INCLUSIVE PACKAGE			
Job title	Code	01/04/2016	01/04/2017
Education Psychologist Grade 2	1	695 682	746 466
	2	706 122	757 668
	3	716 706	769 026
	4	727 461	780 567
	5	738 378	792 279
	6	749 457	804 168
	7	760 695	816 225
	8	772 110	828 474
Education Psychologist Grade 3	1	807 372	866 310
	2	819 477	879 300
	3	831 774	892 494
	4	844 245	905 874
	5	856 911	919 467
	6	869 760	933 252
	7	882 810	947 256
	8	896 055	961 467
	9	909 495	975 888
	10	923 133	990 522
	11	936 981	1 005 381
	12	951 036	1 020 462
Senior Education Psychologist Grade 1	1	856 911	919 467
	2	869 760	933 252
	3	882 810	947 256
	4	896 055	961 467
	5	909 495	975 888
	6	923 133	990 522
	7	936 981	1 005 381
	8	951 036	1 020 462
Senior Education Psychologist Grade 2	1	979 782	1 051 305
	2	994 476	1 067 073
	3	1 009 392	1 083 078
	4	1 024 536	1 099 326
	5	1 039 896	1 115 808
	6	1 055 502	1 132 554
	7	1 071 327	1 149 534
	8	1 087 401	1 166 781
	9	1 103 706	1 184 277
	10	1 120 275	1 202 055

DEPARTMENT OF DEFENCE

NO. 387

28 APRIL 2017

**PUBLICATION OF EXPLANATORY SUMMARY OF THE DEFENCE AMENDMENT
BILL, 2017**

The Minister of Defence and Military Veterans intends introducing the Defence Amendment Bill, 2017, in the National Assembly. The explanatory summary of the Amendment Bill is hereby published in accordance with Rule 276 of the Rules of the National Assembly.

The Amendment Bill seeks to amend the Defence Act, 2002 (Act No. 42 of 2002), so as to—

- (a) include the Chief of Staff in the Military Command of the Defence Force;
- (b) clarify the process regarding the implementation by the Chief of the Defence Force of the delegation of powers and assignment of duties to members by the Secretary for Defence as head and accounting officer of the Department;
- (c) provide for the employment of the Defence Force outside the Republic;
- (d) simplify matters regarding identification cards issued to military police officials;
- (e) make a technical correction to the reference to the Armaments Corporation of South Africa, Limited in section 18;
- (f) provide for the security vetting of contractors and service providers of the Department;
- (g) regulate the minutes of meetings of the Council of Defence;
- (h) clarify that a person does not need the consent of an employer in order to enrol as or to remain a member of the Reserve Force;
- (i) regulate anew the termination of service of members of the Regular Force;
- (j) amend the requirements for legal representation for members;
- (k) regulate the display of military decorations, medals and insignia;
- (l) regulate the use of military uniforms, distinctive marks and crests;
- (m) amend certain powers of the Minister to make regulations;
- (n) provide for the prohibition of access to military property or areas; and
- (o) provide for matters incidental thereto.

Once the Amendment Bill has been tabled in Parliament, a copy can be obtained from:

1. the Government Printers – Cape Town and Pretoria;
2. the Director Legal Advice: Defence Legal Services, Department of Defence, Armscor Building C/O Nossob and Delmas Ave, Erasmuskloof, Pretoria, Tel: 012 355 6236/7.

DEPARTMENT OF ECONOMIC DEVELOPMENT

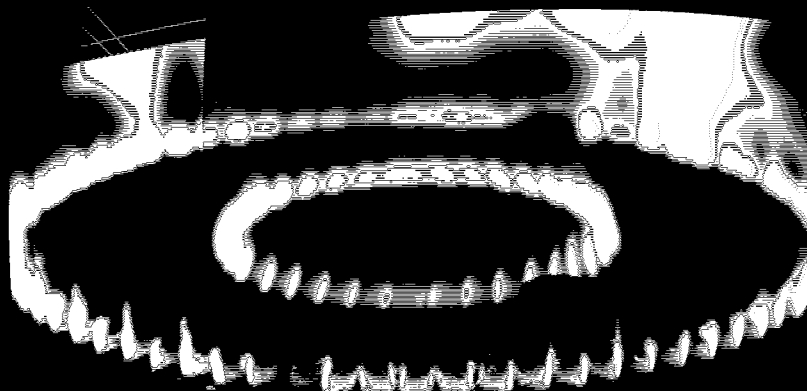
NO. 388

28 APRIL 2017

MARKET INQUIRY INTO THE LPG SECTOR

FINAL REPORT
(NON-CONFIDENTIAL)

MARCH 2017



competition regulation for a growing and inclusive economy


competition commission
south africa

Table of Contents

1. Executive summary.....	1
2. Market inquiry process.....	15
3. Background to the LPG sector in South Africa.....	19
4. Dynamics of the LPG market in South Africa.....	34
5. Industry associations.....	56
6. Recent developments in the LPG sector.....	61
7. Non-Pricing Regulation.....	64
8. Pricing Regulation.....	83
9. Addressing the limited domestic supply of LPG.....	98
10. LPG supply agreements with refineries.....	112
11. Co-ordinated behaviour.....	123
12. The sale of LPG through cylinders.....	128
13. The high cost of switching.....	158
14. Conclusion and recommendations.....	181
15. Appendices.....	190
Annexure A: Market inquiry process – stakeholders contacted.....	190
Annexure B: LPG consumption dynamics in South African Households.....	194
Annexure C: World Bank review of 20 countries.....	201

Tables

Table 1:	Key milestones during the inquiry.....	18
Table 2:	Contribution of LPG to SAPREF's total revenue (FY2010/11–FY2013/14).....	25
Table 3:	Wholesaler market shares over time (including imports).....	43
Table 4:	Estimated wholesaler market shares over time in the bulk segment (including imports).....	43
Table 5:	Estimated wholesaler market shares over time in the cylinder segment (including imports).....	44
Table 6:	Aggregate LPG export volumes (tonnes), 2010–2014.....	45
Table 7:	Comparison of energy sources for cooking in low income households.....	52
Table 8:	Price and efficiency comparison of energy sources in low income households (2014).....	52
Table 9:	Overview of regulators operating in the domestic LPG sector.....	64
Table 10:	Example of MRGP determination (August 2016).....	84
Table 11:	Example of MRP determination (September 2016).....	87
Table 12:	The relative cost of LPG imports for different parcel sizes.....	101
Table 13:	LPG loading facilities licensed for operation in South Africa.....	103
Table 14:	LPG storage facilities licensed for construction.....	105
Table 15:	Contracted supply allocations to major and non-major wholesalers in FY13/14..	117
Table 16:	Discount offered to major wholesalers.....	119
Table 17:	Percentage of LPG sold through cylinders by selected wholesalers (2014).....	128
Table 18:	LPG cylinders in circulation, 2015.....	129
Table 19:	Proxy of market shares based on the number of cylinders in circulation (2015)...	130
Table 20:	Comparison of cylinder deposits to prices of imported cylinders.....	137
Table 21:	Evidence of switching by end-users.....	161
Table 22:	Evidence of end-users not switching.....	162
Table 23:	Evidence of switching as provided by LPG suppliers.....	163
Table 24:	Cost of installation.....	166
Table 25:	Implementation plan for LPG market inquiry recommendations.....	187
Table 26:	List of stakeholders contacted.....	190
Table 27:	Stakeholders contacted for meetings.....	191
Table 28:	Site visits conducted.....	192
Table 29:	Stakeholders contacted for teleconference calls.....	193
Table 30:	Households reporting use of energy source, by geographic location and province, 2012.....	196
Table 31:	Main energy used for cooking, by electrification status.....	196
Table 32:	Main energy source for cooking, by geographic location.....	197

Table 33:	Energy choice for cooking, by electrification status and living standard.....	197
Table 34:	Main energy source used for heating rooms and keeping warm, by electrification status, living standard and location.....	199
Table 35:	Households' primary energy source used for heating.....	200
Table 36:	Households' primary energy source used for cooking.....	200
Table 37:	Regulatory Framework of World Bank LPG Study.....	202

Figures

Figure 1:	Illustrative diagram of coal-to-liquid production process.....	20
Figure 2:	Total number of employees at the refinery level.....	23
Figure 3:	Direct LPG labour employed by wholesalers.....	24
Figure 4:	Wholesalers' gross profit for FY12/13 and FY13/14.....	26
Figure 5:	Operating profit margins for wholesalers for FY12/13 and FY13/14.....	27
Figure 6:	Selected countries – LPG production over time (2010 – 2013, thousand tons)...	29
Figure 7:	Top African LPG producers and South Africa (2010 – 2013, thousand tons).....	30
Figure 8:	Consumption of LPG in South Africa relative to selected countries (2010-2013, thousands tons).....	31
Figure 9:	Consumption of LPG in Africa (2010-2013, thousands tons).....	32
Figure 10:	LPG consumption by sector across the top ten African consumers of LPG (2013).....	33
Figure 11:	LPG supply chain.....	34
Figure 12:	Location of LPG producers.....	35
Figure 13:	Domestic LPG Production (FY2010/11-FY2013/14).....	36
Figure 14:	LPG supplied into the market.....	37
Figure 15:	Relative distribution of sales to customer groups for the period 2011–2014.....	44
Figure 16:	Wholesalers' exports as a percentage of their total LPG supply.....	46
Figure 17:	LPGSASA sub-committee representation by selected stakeholders.....	56
Figure 18:	Main regulatory steps to acquire a manufacturing licence.....	71
Figure 19:	Main regulatory steps to acquire a licence and permit for LPG wholesalers.....	72
Figure 20:	Main regulatory steps to acquire a licence and permits for LPG retailers.....	73
Figure 21:	TNPA section 56 process.....	76
Figure 22:	Price differential between BFP and MRGP.....	85
Figure 23:	Changes in MRP over time (Gauteng Zone).....	89
Figure 24:	MRGP and MRP relationship (2010 – 2014).....	89
Figure 25:	Quarterly total local production and consumption.....	98
Figure 26:	Monthly landed price (R/kg) of LPG vs MRGP (R/kg) for 2010–2014.....	100
Figure 27:	Fabrication of moulded LPG bullets (vessels) on Sunrise site.....	106
Figure 28:	Sunrise's LPG bullets.....	107
Figure 29:	Use of energy sources by electrification status, 2012.....	195
Figure 30:	Use of energy sources for any purpose, by living standard (% using), 2012.....	195

List of Abbreviations

Afrox	African Oxygen Ltd
BPSA	British Petroleum Southern Africa
Chevron	Chevron South Africa (Pty) Ltd
DoE	Department of Energy
DoL	Department of Labour
Easigas	Easigas (Pty) Ltd
ENREF	Engen Petroleum Ltd refinery
KayaGas	KayaGas (Pty) Ltd
LPG	Liquefied Petroleum Gas
LPGSASA	LPG Safety Association of South Africa
MRGP	Maximum Refinery Gate Price
MRP	Maximum Retail Price
NERSA	National Energy Regulator of South Africa
Oryx	Oryx Oil South Africa
PetroSA	Petroleum, Oil and Gas Corporation of South Africa SOC Ltd
PPA	Petroleum Products Act
PPL	Petroleum Pipelines Act
Reatile	Reatile Gaz (Pty) Ltd
SAPREF	Joint venture between Shell SA Energy and BP Southern Africa (refinery)
Sasol	Sasol Oil (Pty) Ltd
TNPA	Transnet National Ports Authority
Totalgaz	Totalgaz Southern Africa (Pty) Ltd
WLPGA	World LPG Association

Statement by the Commissioner

Chapter 4A of the Competition Amendment Act 1 of 2009 ("Competition Amendment Act") became effective on 1 April 2013 and provides the Competition Commission ("Commission") with formal powers to conduct market inquiries. It gives me great pleasure to present the first market inquiry report of the Commission following the promulgation of formal powers to conduct market inquiries.

A market inquiry is recognised globally as an important tool for competition authorities to understand the market dynamics of complex sectors and assess market distortions impeding competition. A market inquiry is a formal inquiry regarding the general state of competition in a market for particular goods and services, without necessarily referring to the conduct or activities of any particular named firm. The Commission is empowered to initiate a market inquiry if it has reason to believe that any feature or combination of features of a market for any goods or services prevents, distorts or restricts competition within that market.

As provided in the Competition Act, the outcomes of a market inquiry may include recommendations to the Minister for new or amended policy, legislation or regulations; or recommendations to other regulatory authorities regarding competition matters. The Commission may also initiate a complaint based on information obtained during the market inquiry that may be settled or referred to the Competition Tribunal without further investigation, or may be investigated further. The Commission may also choose to take no action.

The market inquiry into the Liquefied Petroleum Gas ("LPG") sector is the first market inquiry to be finalised under the new provisions outlined in the Competition Amendment Act. The Commission initiated a market inquiry into the LPG sector as it believed certain features of the sector prevented, distorted or restricted competition. The following features of the market were identified as a cause for concern: (i) Structural features of the market; (ii) High switching costs; (iii) The regulatory environment and its impact on competition; and (iv) The limited usage of LPG at the household level.

I am pleased to note that a great level of participation was received from the industry with over 90 market participants participating in the market inquiry processes. Importantly, I wish to commend the participation of regulatory bodies and government entities. I appreciate the support and participation from all market participants as without it, this inquiry would not have been complete.

After careful investigation and deliberation – including targeted meetings and detailed submissions from market participants, trade associations, regulatory bodies and government bodies – the Commission has concluded the following features prevent, restrict and distort competition, among others:

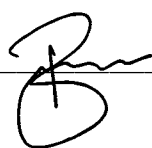
- a) The overlapping and misaligned regulatory environment that (1) hinders the ability of competitors to enter and/or expand in the market; and (2) the speedy investment into import, loading and storage facilities.
- b) The dialogue between market participants on setting uniform deposit fees.
- c) The widespread practice of long-term contracts and agreements favouring incumbent LPG wholesalers over LPG wholesalers with short-term contracts, or LPG wholesalers who rely on the spot market to receive their supply of LPG from refineries.
- d) The restrictions on bulk customers' ability to switch seamlessly due to barriers incumbent LPG wholesalers put in place.

As a result, it has become necessary for the Commission to recommend the introduction of new measures with a view to improving competition in the LPG sector. The successful implementation of these measures, should they become law or regulations, makes a collaborative approach indispensable.

I hope this market inquiry will raise further awareness of the state of competition in the LPG sector, stimulate debate on how to address the challenges identified, and reinforce the case for effective regulatory mechanisms to be in place to allow for an inclusive energy sector in which effective competitors are able to seamlessly enter and expand.

I am hopeful that the identified stakeholders will implement all the recommendations, and the Commission will periodically review the progress of the implementation of the remedies proposed.

Finally, I would also like to extend my appreciation to the Commission staff that conducted this inquiry.



Mr Tembinkosi Bonakele
Commissioner

Mr Tembinkosi Bonakele, Commissioner
Mr Hardin Ratshisusu, Deputy Commissioner

1. Executive summary

- 1.1. The Competition Commission ("the Commission") conducted a market inquiry into the supply and distribution of liquefied petroleum gas ("LPG") in South Africa. The inquiry was conducted in terms of Chapter 4A¹ of the Competition Act, Act No. 89 of 1998 (as amended) ("the Act"). This was in keeping with the purpose and functions of the Commission as set out in Section 2 and Section 21 of the Act, respectively.² For the Commission to fulfil these functions, and in line with the purpose of the Act, Chapter 4A of the Act enables the Commission to conduct market inquiries into the "*general state of competition in a market for particular goods or services, without necessarily referring to the conduct or activities of any particular named firm*".³ A market inquiry is a general investigation into the state, nature and form of competition in a market, rather than a narrow investigation of specific conduct by any particular firm.
- 1.2. Section 43C of the Act directs that upon completion of the market inquiry, the Commission must publish a report in the *Gazette* and submit the report to the relevant *Minister*, with or without recommendations. The report may include recommendations for new or amended policies, legislation or regulations; and recommendations to other regulatory authorities on competition matters. The information obtained during a market inquiry may cause the Commission to:
(a) Initiate a complaint and enter into a consent order with any respondent, in accordance with section 49D, with or without conducting any further investigation;
(b) Initiate a complaint against any *firm* for further investigation, in accordance with Part C of Chapter 5; (c) Initiate and refer a complaint directly to the Competition Tribunal without further investigation; (d) Take any other action that is recommended in the report on the market inquiry, within its powers in terms of this Act; or (e) Take no further action.
- 1.3. In fulfilment of the above obligations, the Commission is making recommendations that it believes will address features of the market that prevent or distort competition. The Commission acknowledges the participation of all stakeholders during the inquiry. The stakeholders assisted the Commission in formulating recommendations that, if implemented, would prevent distortions in the market.
- 1.4. "LPG" is the abbreviation used to describe liquefied petroleum gas, a group of hydrocarbon gases that typically comprises propane, propylene, butane and

¹ Chapter 4A of the Act, which introduces the powers to conduct market inquiries, came into effect on 01 April 2013.

² Section 21 of the Act calls on the Commission to, inter alia, "independently" measures to increase market transparency" and "advise, and receive advice from, any regulatory authority".

³ According to Section 403 (1)(i) of the Act, the Commission may initiate a market inquiry if it has reason to believe that any feature or combination of features of a market for any goods and services prevents, distorts or restricts competition within the market.

butylenes.⁴ LPG is used mainly as a thermal fuel for industrial, commercial and residential purposes. LPG is a hazardous product, and safety is a key concern in this market for suppliers and users. South African households tend to rely on multiple energy sources and the key determining factor is whether one has access to an electrical connection. LPG is an important clean energy source particularly for non-electrified households. The ease of portability (through cylinders) makes LPG access by poor households particularly important. On average, wholesalers distribute between 20% to 50% of LPG through cylinders and the remainder through bulk.

- 1.5. LPG and natural gas are both energy sources used to generate power for use by domestic and industrial customers. Natural gas occurs naturally underground and is transmitted through pipelines or in the form of Liquefied Natural Gas (LNG). LPG, on the other hand, is produced during the refining of crude oil or the processing of natural gas. A comparison of LPG and natural gas reveals that in terms of functionality, they perform the same functions. However, the distribution of natural gas, unlike LPG, requires reticulation infrastructure such as pipelines to be in place and this infrastructure is only available in a few areas in South Africa. This shows that there is limited competition between LPG and LNG in South Africa given the existing supply-side substitutability constraints.

Findings and conclusions on LPG

- 1.6. The Commission performed an in-depth analysis of the submissions made by market participants (refineries, wholesalers, retailers, relevant government bodies and regulators, and technical consultants) and from stakeholder engagements, meetings and field investigations. Some of the general findings are highlighted below:

Concentration and Ownership

- 1.7. There are only five refineries that are currently producing LPG in South Africa (SAPREF, ENREF, Sasol, PetroSA, and CHEVREF). At a wholesale level, the market is highly concentrated with four large wholesalers accounting for significant market share. The recent mergers between Easigas/Reatile and Totalgaz/KayaGas have resulted in increased concentration in supply of LPG to bulk and cylinder markets. The increase in market concentration amongst the wholesalers is fostering an environment which is conducive for coordination.

⁴ World LP Gas Association website

- 1.8. The major wholesalers are Afrox, Easigas, Totalgaz and Oryx. These major wholesalers collectively account for more than 90 percent of the wholesale market. In addition to the high levels of concentration, new entrants and small existing firms must overcome high barriers to entry in the wholesale markets. These entry barriers include, amongst others (i) extensive capital investment, (ii) regulatory hurdles, and (iii) security of supply of LPG.
- 1.9. Some of the wholesalers were vertically integrated with refineries in the past and have maintained these relationships. The four major wholesalers are all foreign-owned companies with limited black ownership.
- 1.10. In addition to the general findings, the Commission concluded that the following features prevent, restrict or distort competition in the LPG sector:

The regulatory environment

- 1.11. The Commission's investigation identified a clear need for implementing measures aimed at improving the regulatory environment in which the LPG sector operates. The Commission found significant hindrances in the regulatory environment which may encumber the ability of potential competitors to enter and/or expand within the LPG sector.

Price regulation

- 1.12. The pricing regulations applied to the LPG industry most commonly constitutes the maximum refinery gate price ("MRGP") and the maximum retail price ("MRP") which are determined by the Department of Energy ("DoE"). While the DoE made a commitment in 2012 to review the adopted price methodology for MRGP and MRP, the Commission found that this has not materialised.
- 1.13. The current MRGP framework does not give refineries adequate incentive to prioritise LPG production as compared to other petroleum products. The lack of incentives by refineries impact negatively on the security of supply for LPG. The Commission's comparative assessment indicated that, for smaller volumes of LPG, the MRGP is lower than its landed import price. The Commission learnt that the driving factor behind the high cost of imported products relates to logistics. As South Africa has limited import and storage facilities for LPG, import efficiency and optimisation is key to sourcing LPG at a lower cost.
- 1.14. The Commission found that importing larger parcels of LPG would result in the landed import price being lower than the MRGP. The Commission is of the view that

to encourage the sustainable supply of LPG throughout the year, the focus of this sector should be on constructing larger import and storage facilities. This finding does not absolve the DoE from its responsibility to review the pricing methodology.

- 1.15. Regarding price monitoring, the Commission found limited evidence of the effective monitoring and enforcement of regulated prices (the MRGP and the MRP) by the DoE. The Commission found the DoE does not monitor the MRGP and has limited resources with which to monitor the regulated retail price of LPG (the MRP). The DoE has only nine inspectors across the country responsible for monitoring all petroleum products, including LPG. These nine inspectors monitor an estimated 5 112 fuel retail service stations or sites in the country and DoE indicated that the inspectors cover just under 2 000 service stations annually. This implies that it might take over two years before another inspection takes place at the same service station. This lack of monitoring results in pricing abuse by the market participants. The sanctions of violating maximum pricing are ineffective as the DoE does not have prosecutorial powers and have to refer such cases to law enforcement entities for prosecution.
- 1.16. The Commission recommends the following:
 - 1.16.1. NERSA must undertake pricing and the monitoring of MRGP and MRP.
 - 1.16.2. Price deregulation after supply constraints have been resolved. The reason for this is that the immediate deregulation of pricing may cause price increases above the current MRGP and consequently MRP, given the significant regulatory bottlenecks identified as well as the supply constraints faced by the sector. To circumvent this concern, the Commission is of the view that import efficiency and optimisation should be prioritised. This would result in an increase in import storage capacity and make it possible to accommodate larger LPG parcels, allowing for an increase in LPG supply domestically.
 - 1.16.3. To give effect to the recommendation in 1.16.2. above, the DoE must undertake a study on how price deregulation in the LPG industry can be achieved.
- 1.17. The Commission is of the view that the deregulation of prices in the sector must be regarded as a long-term solution and should only be considered after the existing supply bottlenecks have been resolved. The priority in the short-term must be to improve import efficiency, increase import storage capacity and accommodate larger LPG parcels in order to allow for an increase in LPG supply domestically.

Non-price regulation

- 1.18. The Commission found the overlap in mandates and misaligned regulatory incentives create uncertainty amongst market participants. This overlap causes barriers to entry by delaying much-needed investment (import, loading and storage facilities) into this sector.
- 1.19. On infrastructure related licensing, the Commission found that several regulators are involved in infrastructure licensing and have overlapping jurisdictions that could lead to projects being stalled. For example, the Commission found it can take almost four years for a refinery to obtain regulatory clearance and over three years for a wholesaler to commence operations, due to the heavy administrative requirements and regulatory review process. This entails processes which include obtaining a wholesale licence, environmental authorisation, construction licence and an operation licence, amongst others.
- 1.20. Regarding regulatory overlaps, the Commission found that significant bottlenecks are caused by overlapping and complementary jurisdictions of the National Energy Regulator of South Africa ("NERSA") and Transnet National Ports Authority ("TNPA") regarding approvals for the construction of import and storage facilities at the ports. The Commission found that, in terms of the National Ports Act, the TNPA is permitted to grant concessions to infrastructure developers within port boundaries. At the same time, such infrastructure requires licensing under the Petroleum Pipelines Act, administered by NERSA, leading to an overlap in jurisdictions as well as inconsistent policy outcomes.
- 1.21. The Commission also found a mismatch between the TNPA's 20-year concession agreements and the Petroleum Pipelines Act regulations. The former incentivises recoupment in 20 years, whereas the Petroleum Pipelines Act regulations allow depreciation over the useful life of the asset. In most cases, the assets concerned ensure useful life of longer than 20 years. NERSA licences are valid for 25 years in terms of the Petroleum Pipelines Act as opposed to TNPA concessions. This misalignment can then become an issue in relation to the appropriate tariff to be charged since the period over which to recover the investment differs. This might lead to projects being stalled if the investor is not satisfied with the NERSA-approved tariff. Regulatory certainty is required in order to attract investment in this sector and this is not guaranteed by the current system due to the observed misalignment.
- 1.22. Policy harmonisation and regulatory clarity across the various bodies are required to allow for better decision-making, taking cognisance of any outstanding processes required by other regulators. This might also call for improved sequencing of these processes (where possible).

- Limited domestic supply**

- 1.25. The Commission's analysis found that the production of LPG in South Africa is limited and that imports are used to fill in the gaps in the supply of same. The Commission also found that the current import infrastructure is inadequate and has stifled the uptake of LPG. The Commission notes that a number of import facility licences have been granted and if all these facilities are constructed the supply bottlenecks will be addressed. In addition, the Commission found that significant obstacles are caused by the overlapping jurisdictions of NERSA and the TNPA in relation to approvals for the construction of import and storage facilities at the ports.
- 1.26. The Commission recommends the following:
 - 1.26.1. A review of the regulatory frameworks applicable to the construction of LPG import and storage facilities at ports, as outlined in the applicable legislation including the National Ports Act and the Petroleum Pipelines Act.

Long-term supply agreements

- 1.27. The Commission found refineries prefer long-term supply agreements. This may be ascribed to, *inter alia*, commercial considerations like the reliability of volume upliftment due to storage limitations at refineries for LPG, established credit and payment histories, and the existence of historical relationships. Problems in securing supplies of LPG from refineries pose a significant barrier to entry for wholesalers. Wholesalers with long-term contracts have a competitive advantage over those relying on short-term contracts or the spot market. The ability of competitors to enter and/or expand at the wholesale level may be affected negatively due to foreclosure of supply. In a sector where price is regulated and where there are supply constraints, securing a reliable supply of LPG is crucial for competition.
- 1.28. The Commission also found that the allocation of LPG by the majority of refineries takes place in the following order: (i) Internal consumption to satisfy the refineries' own operational needs – this ranged from 30% to 70% of total LPG production for some refineries for the period 2010 to 2014; (ii) Contractual obligations which accounted for an average of 82% of the LPG available to the market between 2010 and 2014; and (iii) Spot sales which accounted for the remaining 18% of the total sales in the market.
- 1.29. Upon further analysis, the Commission found the following with regard to a number of long-term supply agreements in place between the refineries and wholesalers:
- 1.29.1. In terms of the duration of the contracts, some agreements were renewed with the same wholesaler for over 25 years. Contracts exist with some of the large wholesalers including unlimited renewal clauses. These clauses have the effect of creating “evergreen contracts”, thus entrenching incumbency advantages for the parties involved.
- 1.29.2. Some long-term supply agreements contained provisions for discounts on the MRGP up to a maximum of 10%. Small wholesalers, whether in a supply agreement or not, do not benefit from any significant price discounts. Whilst the Commission takes cognisance of the principle of volume discounts afforded to large wholesalers, it noted that smaller wholesalers found themselves having to price competitively against the more established larger wholesalers despite the declining volumes available on the spot market and without benefiting from any discount on MRGP.
- 1.30. The Commission found the long-term supply agreements offered by the refineries to large wholesalers have resulted in some degree of competitive advantage. These long-term supply agreements are offered on a preferential basis, allowing large wholesalers to maintain their positions in the market, regardless of new

entries. Further, the Commission's analysis revealed the perpetuation of historical relationships that Shell and BPSA had with SAPREF regarding the allocation of LPG. The perpetuation of these historical relationships, through Shell and BPSA to Easigas and Oryx, is likely to afford these wholesalers a competitive edge in a market marred by insufficient and on occasion inconsistent supply.

- 1.31. The competitive position of a wholesaler (large or small) is dependent on being able to obtain a sufficient and consistent supply of LPG. The Commission is of the view that the market is likely to be more competitive if smaller wholesalers are able to secure sufficient volumes of LPG on a consistent basis. The price competitiveness of the smaller wholesalers that were able to secure LPG volumes clearly demonstrated this.
- 1.32. The Commission recommends the following:
 - 1.32.1. Existing evergreen agreements or agreements with more than a ten-year duration must be capped to a maximum of ten years. The ten-year duration will provide sufficient opportunity for wholesalers to recoup the cost of investment in bulk storage equipment required to store the large volumes of LPG as negotiated in the supply agreements. This contract duration will provide refineries with predictability of demand for LPG, so they can mitigate against situations of under- or over-supply. The ten-year duration was determined using the typical recoupment period required by wholesalers for the various investments they need to make prior to operating in the market.
 - 1.32.2. All automatic renewal clauses must be removed from all supply agreements.
 - 1.32.3. To improve LPG access to small wholesalers, refineries must allocate a minimum of ten percent LPG production (excluding internal consumption) to small wholesalers on at least two-year supply agreements. The Commission believes that the ten percent allocation must not be made available to small wholesalers on a take-or-pay basis, as this would increase the barriers created by financial limitations. In the event that small wholesalers are unable to purchase the entire ten percent, the remaining LPG can be sold in the spot market to any buyer.
- 1.33. These recommendations are a short-term solution to the supply constraints in the LPG sector, as it is envisaged that within five years South Africa's LPG import infrastructure and the storage facilities at its ports will support increased LPG imports, averting the domestic supply shortage.

Sale of LPG through cylinders

- 1.34. The Commission analysed: (i) The effects of the cylinder exchange practice; (ii) Allegations received regarding cross-filling cylinders; and (iii) Allegations received regarding hoarding cylinders and the effect this has on competition.

Cylinder exchange practice

- 1.35. Cylinder exchange practice functions as follows: when one supplier or distributor receives cylinders belonging to another supplier, the supplier that received the cylinders returns the cylinders to the other supplier and in turn receives any of its own cylinders which the first-mentioned supplier may have in its possession.
- 1.36. The Commission found distortions to competition derived from using the cylinder exchange practice. The cylinder exchange practice acts as a potential barrier to entry into the cylinder market as it is governed through bilateral agreements and these agreements have made participation by new entrants difficult.

Cylinder deposits

- 1.37. To gain access to a cylinder, end-users may choose to either purchase the cylinder outright or pay a deposit fee on it. In the latter instance, the end-user becomes entitled to use the cylinder, whilst the wholesaler retains ownership thereof. According to the DoE, the deposits were put in place to help lower the cost of acquiring a cylinder for domestic end-users. The DoE's MRP Working Rules (2010) state that "*deposits on cylinders will be limited to a maximum amount of 45% of the cost of a cylinder and will be adjusted annually*".
- 1.38. The Commission found evidence indicating that the uniform deposit fee applied until 2015 was not equivalent to the 45% maximum cylinder deposit fee prescribed by the DoE. In addition, the DoE has not reviewed the deposit fees annually since 2010, as stipulated in the working rules.
- 1.39. The Commission has found evidence suggesting collusion among wholesalers to increase cylinder deposit fees. The Commission received information from an anonymous distributor indicating possible collusion by the four main wholesalers, Afrox, Totalgaz, Oryx and Easigas, through co-ordinated increases in their deposit fees for the various gas cylinder sizes. These wholesalers all notified their distributors of a pending increase in the cylinder deposit fee, while at the same time introducing a non-refundable rental fee for using their cylinders. Following these allegations, the Commission has thus initiated an investigation.

- 1.40. The Commission found that using a uniform deposit fee across all cylinder sizes is not justified, as domestic end-users (using the smaller-sized cylinders below nine kg) are paying the same deposit as commercial customers using larger cylinders (19 kg and above).

Cylinder cross-filling practices

- 1.41. The Commission found that cross-filling is prevalent in the sector and occurs through either legal⁵ or illegal means. Safety was noted as a key concern related to the filling of cylinders illegally. Filling and distributing another wholesaler's cylinders in the absence of an agreement (or some form of consent) is unlawful.⁶
- 1.42. The Commission is of the view that both safety and competition considerations are important to the long-term sustainability of and investment in the LPG sector. To foster an environment where competition amongst wholesalers may thrive, a customer's ability to fill their cylinder(s) at any accredited filling site is important. Accreditation of the sites and training of fillers is crucial.
- 1.43. The Commission recommends the following:

Cylinder deposit fee

- 1.43.1. NERSA must be responsible for the determination of the cylinder deposit fees and must review same on an annual basis, so that they are aligned with changes in market conditions.
- 1.43.2. The deposit fee for each cylinder size must be linked to the cost of the cylinder.
- 1.43.3. The Commission will continue with its ongoing cartel investigations separate from the market inquiry process.

Cylinder exchange

- 1.43.4. The cylinder exchange practice must be more inclusive. No wholesaler should unreasonably deny another party the opportunity to enter a bilateral agreement to facilitate the exchange of cylinders. Any wholesaler who has

⁵ Cross-filling, within the current legislative framework, is legal if permission is granted (in writing) by another wholesaler to fill its cylinders. The Commission has noted instances where cross filling is done for a fee. Most of these instances have occurred amongst established players.

⁶ The courts have relied on the SANS 100019:2001 regulation in establishing this. This means that South African wholesalers and distributors are unable to engage in cross-filling without the consent of their competitors. The courts found that wholesalers derive an unfair advantage in refilling competitors' cylinders mainly related to the loss in revenue (as the wholesaler would then lose the opportunity to use their own cylinder to sell LPG).

invested in cylinders and complies with all relevant regulations, including those relating to safety, should not be barred from participating in cylinder exchange.

1.43.5. The current hybrid cylinder ownership model must continue to enhance customer choice. More specifically:

1.43.5.1. For 9 kg cylinders and below, customers must have the choice to either lease a cylinder from a wholesaler or purchase a cylinder directly from a wholesaler or retailer.

1.43.5.2. If a customer chooses to lease the cylinder, they may only fill their cylinder at the respective wholesaler or its designated distributor or they may exchange the cylinder at any accredited cylinder exchange site.

1.43.5.3. If a customer chooses to purchase a cylinder, they may fill their cylinder at any accredited filling site.

Cylinder cross-filling

1.43.6. Cross-filling of LPG cylinders should occur within the confines of the law, which under section 10(4) of the OHSA requires written consent prior to a wholesaler filling the LPG cylinders of another wholesaler. The Commission is of the view that this practice must continue and the responsible enforcement authorities must impose the necessary sanctions to curtail any violation.

1.43.7. The responsible enforcement agencies must impose sanctions against illegal cross-filling. The Commission recommends cross-filling LPG cylinders must continue to the extent that it is practised legally. Where it occurs illegally, the relevant enforcement agencies must step in and curtail the illegal behaviour.

The high cost of switching

1.44. The Commission found that switching takes place within the bulk LPG segment of the market, but it does not occur seamlessly. The ease of switching depends on the costs likely to be incurred by the end-user. These costs relate to the possible disruption in supply because of protracted negotiations between the incumbent and new suppliers on commercial terms for the sale of the equipment, or delays experienced in removing LPG equipment when no agreement can be reached on commercial terms. Customary reasons cited for not switching included: (i) The end-

user's ability to renegotiate their supply contract to get more favorable terms (like lower pricing); or (ii) Circumstances where the cost to switch suppliers outweighed any savings that the end-user might derive from switching.

- 1.45. The Commission found bulk end-users took the following into account when considering switching: (i) The substantial capital investment required to install LPG bulk tanks and cylinder manifolds; (ii) The ownership of equipment usually remaining with the party providing the capital outlay (typically the LPG supplier and not the end-user); (iii) Safety considerations and regulations; and (iv) The existence of highly restrictive supply contracts between LPG wholesalers and end-users.
- 1.46. The Commission analysed the terms and conditions of supply agreements between LPG suppliers and end-users. The Commission found bulk LPG supply agreements are structured in a vague manner regarding equipment ownership⁷ during and after the expiration of the initial supply agreement. In particular, the Commission found that there is limited disclosure of when the costs of the installed LPG equipment will be fully amortised and whether the end-user will ever own the installed equipment. An examination of the supply agreements revealed that in the majority of cases, equipment ownership lies with the wholesale supplier. Ownership is not transferred to the bulk end-user at the end of the contract term.
- 1.47. Supply agreements entered into by tenants and proprietors or property developers at shopping centres are structured in an equally vague manner that does not facilitate switching. The same applies for residential estates where a body corporate and a supplier enter into a supply agreement. The following salient features were of particular concern to the Commission:
 - 1.47.1. Ownership of the installed reticulation system rests with the supplier even where the property owner fully amortised the cost of the installation.
 - 1.47.2. The LPG supplier signs an initial contract with the proprietor to install and operate the equipment at a shopping centre. Subsequent to this, the LPG supplier enters another contract with each of the tenants at the shopping centre for the supply of LPG. Given that the contracts between the supplier and the proprietor and those between the supplier and the tenants are entered at different times, the duration of the contracts is staggered. This means that if the tenants' termination period is not aligned with that of the proprietor, neither the proprietor nor the tenants can switch suppliers.
 - 1.47.3 The Commission found evidence of some supply agreements that included clauses under which wholesalers pay the proprietors a monthly rental fee

7 The equipment referred to above includes bulk tank and the reticulation system.

or commission commensurate with the volume of LPG consumed by the tenants or based on a percentage of the invoiced amount. The argument provided by market participants was that the payment is for rental space (the space where the bulk tanks are installed). The Commission found this might be construed to provide perverse incentives to proprietors to ensure the continued use of a certain wholesaler's LPG, thus inhibiting the ability of the shopping centre (or residential estate) to switch LPG suppliers even if the tenants were to identify a supplier with a competitive price. A separate rental agreement between mall owners and LPG wholesalers for the space in which the bulk tank or equipment is installed should be considered.

- 1.48. The Commission found the limited disclosure of these salient features of supply agreements creates an environment wherein end-users are unable to seamlessly switch at the end of a contractual period as the installed equipment is either not fully amortised or ownership of the equipment remains with the supplier (regardless of the full amortisation of the equipment).
- 1.49. The Commission recommends the following:
 - 1.49.1. *Separating the LPG supply agreement from the LPG equipment agreement.*

The parties to any supply agreement must separate the agreement in relation to the supply of LPG from that pertaining to the use of LPG equipment. The LPG equipment agreement must reflect the cost and usage of the installed LPG equipment, while the LPG supply agreement should reflect the cost of the supply of LPG. The agreement pertaining to the cost and usage of LPG equipment must provide for the end-user to own the installed equipment after the costs have been fully amortised; or, alternatively, it must be clear that the equipment is subject to a rental agreement. The contracts contemplated in this recommendation should, at a minimum, include the following terms:

 - 1.49.1.1. By default, contracts between customers and wholesalers must contain provisions for transferring tanks, with a clear methodology for valuing the equipment.
 - 1.49.1.2. Incoming suppliers must have a right, subject to a commercially agreeable arrangement, to buy the existing tank and piping equipment from the outgoing supplier. The incoming supplier must have two options: first, to negotiate with the incumbent for the transfer of the equipment; or, take

1.49.1.3. Customers must be provided with information on how to switch in their contracts. This information must be clearly explained before they sign the contract, and both parties must sign a legal declaration to prove that this discussion took place. All future supply agreements must contain this legal declaration and that it must be added as an addendum to supply agreements already in existence.

1.49.3. The mandate of NERSA must be expanded to include the resolution of disputes relating to the interpretation and application of the *valuation methodology of LPG equipment*. In the event of a dispute in the interpretation and application of the valuation methodology for the transfer of LPG equipment, such disputes should be referred to NERSA.

2. Market inquiry process

2.1. The Commission initiated an inquiry into the LPG sector in terms of Chapter 4A of the Act. The Commission had reason to believe certain features of the sector prevented, distorted or restricted competition. The terms of reference ("ToR") identified the following broad themes as the rationale for initiating the market inquiry:

- 2.1.1. Structural features of the market;
- 2.1.2. High switching costs;
- 2.1.3. The regulatory environment and its impact on competition; and
- 2.1.4. The limited usage of LPG at the household level.

2.2. The discussion sets out a summary of the process followed in conducting the market inquiry.

Launch of the inquiry process

2.3. On 15 August 2014, the Commission officially announced the initiation of the market inquiry into the LPG sector and the ToR were published in the Government Gazette as mandated by the Act. The ToR provided for key phases and for the main activities that would take place during each phase. These included:

- 2.3.1. Phase 1: Evidence gathering/investigation.
- 2.3.2. Phase 2: Competition assessment.
- 2.3.3. Phase 3: Reporting.

2.4. Following the publication of the ToR, the Commission published the Stakeholder Participation Guidelines ("the Guidelines") on 2 September 2014. The Guidelines contained the rules of participation applicable to all stakeholders. The Guidelines essentially provided a fair opportunity and a transparent process for all stakeholders to participate effectively. They outlined (i) who could participate in the market inquiry and how they could submit information; (ii) the treatment of confidential information; (iii) the activities of the market inquiry; and (iv) the powers available to the Commission, amongst other issues. On 15 September 2014, the LPG market inquiry officially commenced.

Phase 1: Information gathering

- 2.5. In collecting information for the market inquiry, the Commission contacted at least 90 market participants operating across the industry value chain. Interactions with stakeholders occurred in different forms, namely (i) Meetings; (ii) Site visits; (iii) Teleconferences; (iv) Responses to calls for submissions with a further call for submissions; and (v) Information requests. Details of each type of interaction, and a list of the respondents, follow:
- 2.6. **Calls for submissions:** The Commission published two submissions inviting all interested stakeholders to make formal submissions. The initial call for submissions, published on 16 September 2014, provided a list of questions related to the issues identified in the ToR as the rationale for the market inquiry. Stakeholders were advised that their responses need not be limited to those issues, but could extend to other matters that might be relevant to the inquiry, including the impact of the identified issues on the state of competition in the LPG sector.
- 2.7. Based on the information received by way of the responses to the initial call for submissions, the Commission identified specific factors that could have an impact on competition. Accordingly, the Commission published a call for further submissions on 27 August 2015 requesting that market participants provide further submissions and information regarding these identified factors. Interested stakeholders were encouraged to provide any additional information on any other issue identified as being relevant to the promotion of healthy competition in the LPG market.
- 2.8. **Introductory meetings, teleconferences and site visits:** The Commission engaged in face-to-face meetings and teleconferences with various stakeholders to obtain more details particular to features of the LPG sector and/or the stakeholders' activities within the market. These engagements also served to encourage stakeholder participation across the value chain. In addition, the Commission was afforded the opportunity to visit the facilities of producers, wholesalers, distributors and large industrial consumers of LPG. These site visits contributed to the Commission's improved understanding of the LPG value chain. Tables detailing the stakeholders contacted are included in **Annexure A1**.

- 2.9. **Information requests:** In March 2015, the Commission issued a first round of information requests to selected market participants. The purpose of the information requests was to obtain detailed information from the various market participants within each level of the value chain in the LPG sector relating to their respective businesses. The information submitted by stakeholders assisted the Commission in understanding the pertinent issues in the LPG value chain, the interactions between market participants across the value chain, and the regulatory environment.
- 2.10. In August 2015, the Commission issued a second round of information requests to a narrower selection of market players. These information requests focused on key issues identified by the Commission which warranted further examination. Refineries were probed on issues relating, *inter alia*, to their relation with wholesalers, supply allocation decisions, long-term supply agreements, switching and pricing, import facilities, storage capacity and licensing. Wholesalers were requested to provide further pricing information, details about the procurement of cylinders and the number of cylinders in circulation, cylinder exchange practice and cylinder deposit prices, amongst other things. Industrial users were also requested to submit information about their arrangements or relationships with LPG suppliers and their ability to switch between LPG suppliers, and they were asked to comment on the ownership of LPG equipment. Regulators were questioned about the regulatory requirements in place and the rationale for implementing various regulations.

2.4. *Phase 2: Assessment of the state of competition*

- 2.11. Phase 2 of the market inquiry involved an assessment of the state of competition in the LPG sector based on the information received from market participants. A range of analytical techniques, both qualitative and quantitative, was applied to understand and draw conclusions on the nature of competition in the sector, and the impact of any particular feature or conduct observed within the sector.
- 2.12. The Commission's activities in this phase included: (i) Describing the relevant product and geographic markets; (ii) Assessing competitive dynamics in the defined markets; (iii) Assessing whether any features of the market lessened, prevented or distorted competition; and (iv) Drawing conclusions regarding the state of competition in the LPG market. Following the assessment referred to above, the Commission published its preliminary findings and proposed remedies and invited interested stakeholders to provide input on the recommended solutions and/or actions. The input received from stakeholders was assessed and incorporated into the analysis to enhance the outcomes of the market inquiry process.

Phase 4: Reporting

- 2.13. The final phase of the market inquiry involved the drafting of the final report on the state of competition in the LPG sector and publishing the report in the *Gazette*, under Section 43B of the Act.

Table 1: Key milestones during the inquiry

Key milestones	Date
Gazetted terms of reference	15 August 2014
Stakeholder participation guidelines	02 September 2014
Inquiry commenced	15 September 2014
Published call for submissions	16 September 2014
Received responses to call for submissions	31 October 2014
Introductory stakeholder engagements and site visits	05 January 2015 to 27 February 2015
Issued first round of information requests	02 March 2015 to 31 March 2015
Analysis of responses to first round of information requests	01 June 2015 to July 2015
Issued second round of information requests	04 August 2015
Further call for submissions on specific factors	27 August 2015
Consultation with market participants	01 February to 29 February 2016
Gazetted amended terms of reference	23 March 2016
Publication of the draft recommendations for public comment	10 May 2016
Comments on proposed recommendations	11 May 2016 to 29 July 2016
Engagements with stakeholders	01 July 2016 to 31 August 2016
Gazetted amended terms of reference	28 September 2016
Further consultation with key stakeholders	01 November 2016 to 28 February 2017
Finalisation of the market inquiry	31 March 2017

- 2.14. During the market inquiry, the Commission placed several documents on its website. These included the ToR, participation guidelines, a statement of issues and draft recommendations for public comment.

3. Background to the LPG sector in South Africa

- 3.1. This section provides a product description and an overview of the characteristics and uses of LPG, and compares pricing for different sources of energy. It also provides a summary of the government policy documents pertaining to LPG.

Introduction to LPG

- 3.2. LPG is the abbreviation used to describe liquefied petroleum gas, a group of hydrocarbon gases typically containing three or four carbon atoms per molecule and often referred to as C_3 or C_4 . The normal constituents of LPG are propane (chemical formula C_3H_8), propylene (C_3H_6), butane (C_4H_{10}) and butylenes (C_4H_8).⁸
- 3.3. Although there are many variations of LPG, it is primarily made up of propane (60%) and butane (40%) and it is compressed into liquid form for ease of transport, storage and handling.⁹ LPG is either produced as a by-product of the oil and gas refinery process or it is extracted "from oil or 'wet' natural gas streams as they emerge from the ground".¹⁰ It is normally stored in liquid form in pressurised tanks and transported by road in tanker trucks or in cylinders. LPG is a homogenous good, as the physical features and the quality of the product supplied by each supplier are the same.
- 3.4. In South Africa, quality specifications for LPG are defined by South African National Standards ("SANS") 1774:2007, outlining the requirements for LPG mixtures intended for use as fuel. LPG, as a liquid, is colourless, and as a vapour, cannot be seen. Pure LPG has no distinctive smell, but for safety reasons, a stenching agent is added prior to distribution to aid detection by the human nose at very low levels.

How is LPG produced?

- 3.5. Three main approaches are followed in producing LPG in South Africa, namely: (i) Crude oil refining; (ii) Gas to liquid ("GTL"); and (iii) Coal to liquid ("CTL"). The crude oil refining process is the most customary approach to producing LPG in South Africa. Shell and BP South African Petroleum Refineries (Pty) Ltd ("SAPREF"), Engen Petroleum Ltd ("ENREF"), and Chevron South Africa (Pty) Ltd ("Chevron")¹¹ utilises crude oil refining to produce LPG. The Petroleum, Oil and Gas Corporation of South Africa SOC Ltd ("PetroSA") and Sasol Ltd ("Sasol") are the only refineries making

⁸ World LP Gas Association website

⁹ See World LP Gas Association (WLPGA) website at: <http://www.worldlpgas.com/>

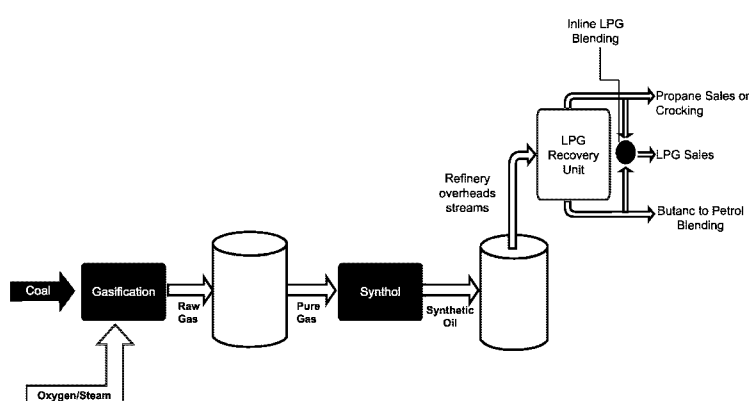
¹⁰ Discussion document on the Review of the Maximum Refinery Gate Price of Liquid Petroleum Gas, Government Gazette, Notice 686 of 2012, Dated 24 October 2012.

¹¹ Although Natref does not produce LPG, it also uses the crude oil refining process to produce other liquid fuels.

use of the GTL and CTL processes in LPG production. Each of these approaches is briefly discussed:

- 3.6. **Crude oil refining.** LPG is produced as a derivative of the crude oil refining process through the absorption of the gas streams emanating from the several stages of the process. The components of LPG are released at various stages of the refining of crude oil (like the atmospheric distillation stage, the reforming stage and the cracking stage). Approximately 3% of a barrel of crude oil may be refined into LPG. This estimation is dependent on the type of crude oil, the sophistication of the oil refinery, and the market value of propane- and butane-derived products as opposed to that of other petroleum products.
- 3.7. **Gas to liquid.** PetroSA uses the GTL approach where LPG is produced via cryogenic separation of the primary feed (natural gas) to the GTL refinery. More specifically, the propane and heavier hydrocarbons are separated from the natural gas received from the offshore plant. The resultant lean natural gas is then fed to the gas-reforming unit at PetroSA. The propane, butane and heavier hydrocarbons are fractionated further, after which the LPG is routed to storage and the heavier products are routed to various units for processing.
- 3.8. **Coal to liquid.** The CTL approach used by Sasol is a bit more complex and is illustrated in figure 1.

Figure 1: Alternative approach to produce synthetic crude oil



Source: Sasol submission, March 2015

- 3.9. According to Sasol,
"Coal is gasified into raw gas in the gasification section using steam and oxygen. The raw gas is then treated in the rectisol unit into pure gas. The pure gas is then converted into synthetic oil in the synthol process. The synthetic oil is distilled and processed in the refining units. Propane and Butane are then recovered from the refinery process unit's overhead streams and blended into LPG. Propane can also be routed to the propane cracker to produce ethylene or for sale to propane customers. Butane can also be routed and blended into the petrol pool."
- 3.10. Sasol further states the CTL process does not compromise the quality of the LPG produced, but merely results in it having more molecules that are olefinic.¹² The difference in the number of olefinic molecules, it says, does not compromise the quality of the LPG produced as, regardless of the production process used, LPG must comply with the SANS 1774 requirements, as indicated above. Instead, the higher olefinic content from the CTL process produces butane, said to be more suitable for transport fuel blending. This explains why producers maximise butane in petrol blending rather than in LPG blending.
- 3.11. While the ingredients of LPG may be marketed on their own (or independently), they may also, depending on the configuration of the particular production plant, be used to produce other products. In particular, the propane and butane used to produce LPG can also be used to produce alternate products either consumed by the refinery or sold to generate revenue. The Commission has learned that the decision-making process in selecting which products to produce is driven by economic considerations like price and demand factors.
- 3.12. LPG is unlikely to feature as a product upon which a refinery will base its commercial and long-term investment decisions, given that it is produced as a by-product of the crude oil refining process and refineries derive negligible revenue from the production thereof. It is unlikely that a decision to construct a refinery or increase the capacity of a refinery will be driven by the expected return to be obtained when producing LPG. Instead, it will be driven by the expected return obtained when producing a range of petroleum products.

12

Olefin molecules are in a class of hydrocarbons with a single double bond. The highly reactive double bond makes the olefin molecule ideal for conversion to many useful end products. The two most important olefins are ethylene and propylene (refer to <http://www.kbr.com/Technology/Olefins/>, accessed 18 June 2015).

Use of LPG

- 3.13. LPG is primarily used as a thermal fuel in numerous applications. It burns cleanly, releasing few sulphur emissions and posing no ground or water pollution hazards.
- 3.14. LPG is also used by refineries in their internal production processes. For example, Engen uses LPG to produce a range of products consumed internally by the refinery, like refinery fuel, gasoline blending feedstock, alkylate and polymerate. Chevron produces polygasoline, also being consumed internally. According to Sasol, the alternative use of propane is cracking it to produce ethylene in the chemical stream, while butane is blended into petrol in the fuel stream.
- 3.15. LPG is used by the following categories of end-users:
 - 3.15.1. **Industrial users:** These customers use LPG for heating where a readily controlled temperature is needed (motor vehicle paint shops, or as fuel for fork lift trucks) within warehouses.
 - 3.15.2. **Commercial users:** These include, for example, a shopping centre with several restaurants that may have one bulk tank of LPG, reticulated to individual restaurants or stores.
 - 3.15.3. **Autogas users:** LPG can also be used to power motor vehicles. Vehicles that use autogas are fitted with two fuel tanks, one for autogas and another for petrol or diesel. The vehicle can switch between autogas and petrol or diesel at any time.¹³
 - 3.15.4. **Residential users:** Household consumers use LPG for cooking, space heating and water heating.

Direct employment in the LPG sector in South Africa

- 3.16. The LPG industry is known to be a labour-intensive industry as compared to other energy industries.¹⁴ The sub-section below assesses the extent to which the South African LPG sector may be described as being labour intensive.

¹³
¹⁴

See <http://www.autogas.co.za/>
European LPG Association: 'The LPG sector Roadmap, 2009'

- 3.17. Refineries like Chevron have indicated that none of their employees are designated to the LPG section of the business. This is likely due to the integrated nature of the crude oil refining process. Rather, Chevron uses employees from across various departments (operations, maintenance and planning) to account for the LPG business in their everyday activities. Chevron is not unique in its approach, as Sasol Oil submitted that it does not employ full-time employees dedicated to LPG. As shown, Sasol Oil uses the equivalent of [REDACTED] shift employees and one manager or clerk to run its LPG sections, tankage and loading systems. [REDACTED] Similarly, SAPREF has approximately [REDACTED] people out of a company staff of approximately [REDACTED] dealing with LPG. It is noted that these employees form part of the broader refinery operating team and are not specifically designated to work on LPG only. [REDACTED]
- 3.18. Figure 2 provides a summary of the employees involved in the LPG business of each refinery.

Figure 2: Total number of employees involved in the LPG business of each refinery

Source: SAPREF, Chevron, Engen and Sasol Oil submissions (March 2015 and August 2015)

- 3.19. The Commission found where a refinery has employed dedicated LPG staff, the number of employees is minimal when compared to the total refinery staff complement. In particular, Engen submits that [REDACTED] staff members are employed at the refinery (2010–2014) to deal with LPG; they account for just over 1% of the total number of staff at the refinery.¹⁵

¹⁵ Engen submission, response to Q13.1 dated 15 April 2015

- 3.20. Table 2 provides further evidence that LPG accounts for a small portion of refinery activities; hence the insignificant allocation of human resources to the area. The integrated nature of these facilities makes it unsurprising that staff overlap across different products.
- 3.21. Conversely, wholesalers designate a relatively larger number of employees to LPG supply activities, as displayed in Figure 3 in relation to a few selected wholesalers.¹⁶

Figure 3: Wholesalers' Employment in LPG



Source: [REDACTED]

- 3.22. Wholesalers employ personnel designated to work on LPG. The number of people employed by each wholesaler is significantly greater than those observed at the refinery level. As displayed in Figure 3, Afrox employs the largest number of people, namely [between 200-300], while Easigas employs [between 100-200]. KayaGas, at the time of its existence, employed [between 20-60] people. Both Afrox and KayaGas indicated some workers in their operations are outsourced elsewhere. KayaGas outsourced [between 50-100] employees, [REDACTED]. [REDACTED] indicated that most of their outsourced labour goes to the bulk distribution services.

¹⁶ These wholesalers were the only ones to provide the Commission with the requested employment information.

- 3.23. The figures provided by wholesalers and refineries highlight what priority LPG operations enjoy in their day-to-day business. Refineries designate only a small portion of their labour force to LPG, as it is a by-product for them, whereas wholesalers designate large numbers to LPG, given that it is their main sales product.

Revenue contribution of the LPG sector to total refinery profits

- 3.24. The financial performance of the LPG sector is assessed. Of particular interest is:
- 3.24.1. The revenue contribution of the LPG sector to total refinery profits; and
- 3.24.2. The profitability of the LPG sector in relation to wholesalers' activities.
- 3.25. The sub-section elaborates on these factors.

Revenue contribution of LPG to total refinery profits

- 3.26. As already mentioned, a refinery is not constructed to manufacture only one type of product; costs are spread across the refinery business as a whole. More specifically, an optimal basket of products is produced, and given the insignificant or limited contribution of LPG to the overall refinery business, companies do not record the specific return on capital arising from LPG activities.
- 3.27. Although SAPREF is the third largest producer of LPG domestically, the product's contribution to turnover is minimal. All the molecules used to produce LPG contribute a very small proportion of the revenue generated by SAPREF. This is reflected in Table 2.

Table 2: Contribution of molecules used to produce LPG to total refinery revenue (Rm) (2015/16, 2016/17 and 2017/18)

- 3.28. LPG similarly appears to contribute little to the overall revenue at [REDACTED]. The contribution of LPG to total revenue has consistently remained below 1%; by way of illustration, it fell from [REDACTED] in FY10/11 to [REDACTED] in FY13/14.¹⁷ As with [REDACTED] and [REDACTED], the contribution of LPG to [REDACTED] revenue is minimal, accounting for around 2% of its total revenue.¹⁸

Profitability of LPG business for wholesale activities

- 3.29. LPG appears to be a profitable business venture for wholesalers. The profitability analysis is based on the four large wholesalers along with Reatile and KayaGas.¹⁷ In the 2012/13 financial year, [REDACTED] recorded the highest total profit compared to the other wholesalers (Figure 4). In the 2013/14 financial year, [REDACTED] profit contracted by [between 50-70%] while [REDACTED] experienced a growth of [between 50-70%]. The profits of other wholesalers like [REDACTED] and [REDACTED] remained low. [REDACTED] had not been profitable for either of the two consecutive years. [REDACTED] recorded a loss in 2012/13 but recovered to make a profit in 2013/14.

Figure 4: Wholesale LPG business – Profitability analysis (2012/13 and 2013/14)

Source: Kayagas, Afrox, Totalgaz, Oryx, Easigas and Reatile Gaz submissions (2015) and financial statements (2014).

¹⁷ The information for the profitability analysis was obtained from wholesalers' financial statements (2014) and submissions dated March 2015.

- 3.30. Figure 5 illustrates the operating profit margin of each wholesaler for FY12/13 and FY13/14. [REDACTED] experienced a negative operating profit margin of [REDACTED] and [REDACTED] respectively for the two financial years, indicating that costs for [REDACTED] were increasing faster than its sales of LPG. [REDACTED] and [REDACTED] both experienced operating profit margins of [between 10-20%] in the financial year of FY13/14. [REDACTED] and [REDACTED] operating profit margins remained lower than those of [REDACTED], [REDACTED] and [REDACTED]. [REDACTED] operating profit margin was [between 5-10%] for FY12/13 and [between 5-10%] for FY13/14 – lower than those of both [REDACTED] and [REDACTED]. [REDACTED] primarily sells LPG to bulk end-users (characterised by high volumes at relatively lower prices) whilst wholesalers like [REDACTED], [REDACTED] and [REDACTED] have focused the majority of their business on sales to cylinder end-users (having lower volumes at a slightly higher price).

Figure 5: Operating profit margin of LPG wholesalers for FY12/13 and FY13/14



Source: KayaGas, Afrox, Totalgaz, Oryx, Easigas and Reatile Gaz submissions (2015) and financial statements (2014).

Government policy on LPG

- 3.31. Several policy documents emphasise the strategic importance of LPG in an economy struggling with rising energy prices and electricity supply pressures.¹⁸ These policy documents are discussed briefly.

- 3.31.1. The key document underlying South Africa's energy policy is the *White Paper on the Energy Policy of South Africa* of 1998 ("the White Paper"), identifying LPG as a viable alternative energy source. It further acknowledges that energy consumption is partly based

¹⁸ Department of Energy, (2013), *Transformation of the Gas Sector: Presentation by Chief Director Hydrocarbons Policy* dated 10 August 2013.

on the availability of LPG and of possible LPG substitutes with a heterogeneous energy use across households with different incomes.¹⁹ The document recognises the lack of competitiveness at the time in the gas sector, and that regulation is required to ensure equitable access for consumers and to avoid the abuse of monopoly power.²⁰ This report not only highlights LPG as an important element in addressing South Africa's energy mix; it also recognises this fact in the context of competition and industrial policy.

3.31.2. A priority of the *New Growth Path* ("NGP") is to strengthen regional integration as regards energy, in particular the scope of energy sources and their ability to deliver energy reliably. The NGP is aimed at improving existing energy sources while at the same time exploring other opportunities like gas.²¹

3.31.3. LPG also forms part of the DoE's *2011/2012 – 2015/2016 Strategic Plan*. One of the planned policy initiatives is to provide access to safe, cleaner, more efficient and portable fuels. Another initiative is to switch low-income households from using coal, paraffin and biomass.^{22,23} This is significant in the sense that 15 years after the White Paper, affordable access to energy for low-income households remains a priority for Government, and this concern can be addressed through departmental and national strategies.

3.32. Through various interactions with the DoE, the Commission is aware that the DoE is considering a switching strategy²⁴ that will outline how industrial, commercial and domestic end-users will be incentivised to use LPG.

19 White Paper on the Energy Policy of South Africa, 1998, p36.

20 *Ibid.* p34.

21 New Growth Path: Framework, p56. Available at: <http://www.economic.gov.za/communications/publications/new-growth-path-series>. Accessed on 3 February 2014.

22 DoE Strategic Plan 2011/2012 – 2015/2016, p13. Available at <http://www.energy.gov.za/files/aboutus/>

DoE's 20 Strategic Plan 2011 – 12 to 2015 – 16.pdf. Accessed on 3 February 2015.

23 The DoE committed to several targets as part of an LPG pricing and licensing framework. This included developing an LPG strategy and passing the MNC and M32 DoE Strategic Plan 2011/2012 – 2015/2016, p38.

24 Commission received a draft switching strategy document from DoE.

- 3.33. It is within this policy context that the LPG market inquiry investigated those features of the market with the potential to lessen, prevent or distort competition. These features included the limited domestic production and supply of LPG, the incentives provided by the regulatory environment, and the existence of barriers to entry and expansion.

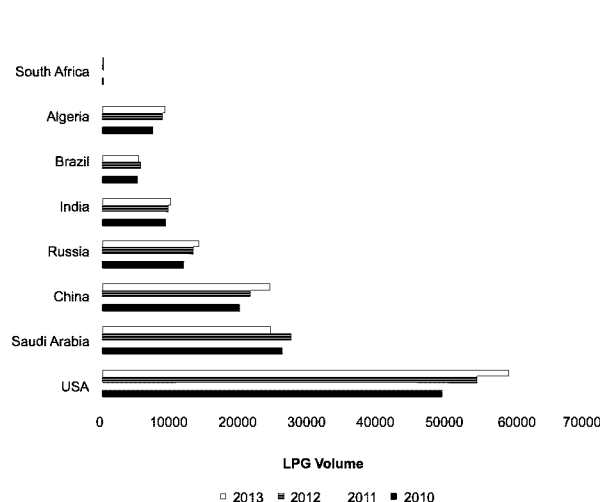
3.34. Global production and consumption of LPG

- 3.34. This section provides a detailed overview of the dynamics of the international and domestic LPG markets. The trends in LPG production are interrogated, followed by a description of the domestic LPG production processes in South Africa.

LPG global production trends

- 3.35. The top three LPG producers based on average production volumes for 2010 to 2013 were the United States of America ("USA"), Saudi Arabia and China, with Algeria representing the only African country to rank among the top ten LPG producers in the world (Figure 6). In recent years, a global surge was observed in LPG production, with volumes reaching over 282million tonnes per year in 2013. This sudden increase can be attributed to the development of US shale gas and the increase in demand from Asia-specific markets.

Figure 6: Subcontinent of Africa and other international jurisdictions, average annual LPG production (1000000 tonnes)

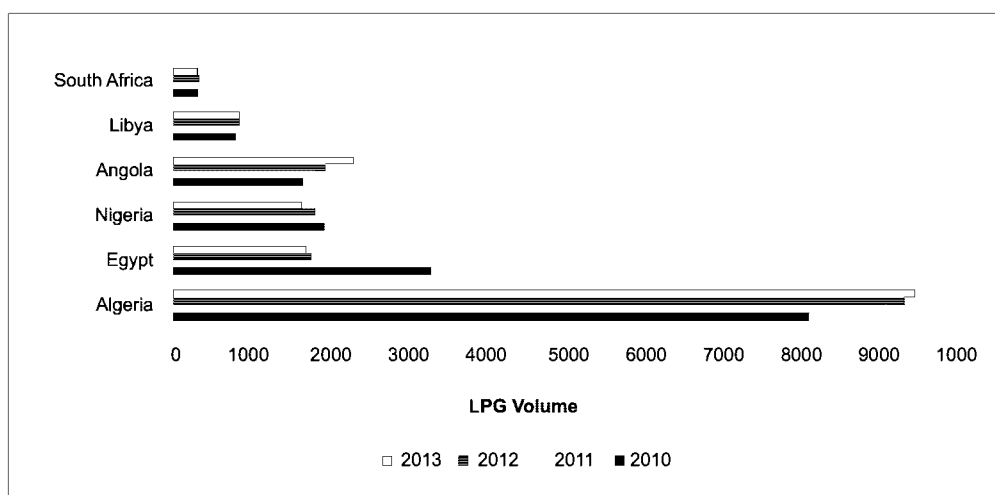


Source: Argus Statistical Review of Global LP Gas 2014

25 This section compares the market dynamics in South Africa to other international jurisdictions. The basis for the selected comparator countries is mainly the socio-economic structure of each country. A detailed profile of each country is provided in appendix B.

- 3.36. Due to the surge in USA shale gas production, and following the completion of USA midstream operator Enterprise Products Partners' export terminal expansion, the USA's exports began to rise in the first quarter of 2013. This expansion essentially resulted in the USA overtaking Qatar as the world's top exporter. This put pressure on the global market, with exporters fearing that the USA will become a dominant player and that pressure will be placed on the price, given this increase in competition.
- 3.37. As Asian markets strive to make LPG a primary fuel source, China has emerged as the second largest producer and consumer of LPG. Chinese, South Korean and Japanese importers continue to tie up contracts with major USA LNG exporters. While Asian markets have taken advantage of the increase in the USA LPG production, northwest Europe was given access to another LPG source in the form of Russia's Ust-Luga export terminal that opened in the summer of 2013.
- 3.38. In Africa, LPG represented 6.16% of total global production in 2013. South Africa's production of an estimated 352 000 tonnes in 2013 is relatively low compared to that of Algeria and Angola, as shown in Figure 7.

Figure 7: Top African LPG Producers (in 1000 tonnes) 2010-2013



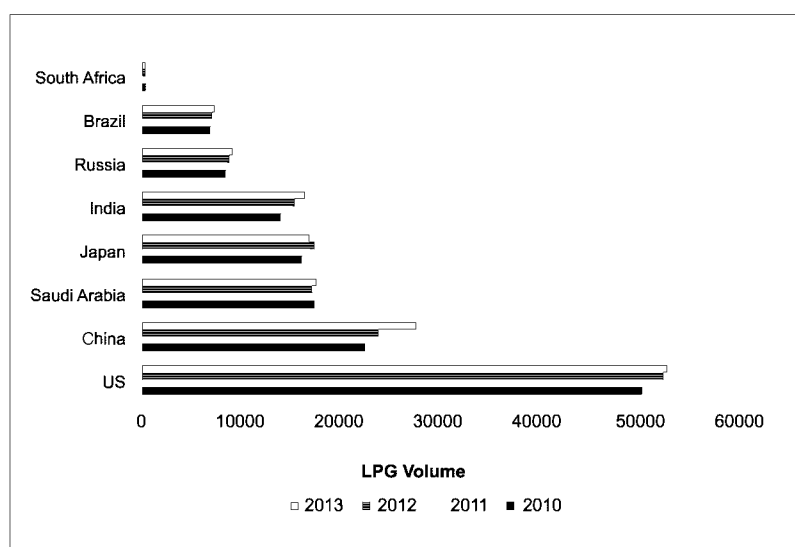
Source: Argus Statistical Review of Global LP Gas 2014

- 3.39. South Africa also lags behind other African countries. As illustrated in Figure 7, Algeria accounts for 54.65% of all LPG production in Africa, followed by Angola and Egypt at 13.39% and 9.96% respectively. Much of Algeria's success in the market is largely due to its infrastructural investments and possibly the decision to commit to this investment early in the 1990s.

Global LPG consumption trends

- 3.40. Global LPG consumption reached just under 267million tonnes per year (t/yr²⁶) in 2013. Although North America is an important LPG consumption centre, collectively the Asian countries also account for a considerable portion of LPG consumption. In the international context, South Africa consumes very small amounts of LPG, ranking 61 in global consumption.²⁷ Figure 8 demonstrates how minimal LPG consumption is in South Africa relative to the top global consuming countries.

Figure 8: Consumption of LPG in the top global consuming countries (2010-2013, Volume in 1000 tonnes)



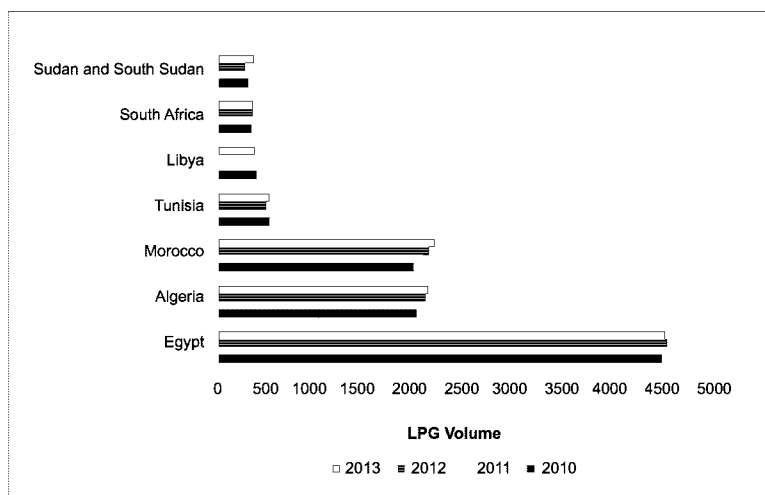
Source: Argus Statistical Review of Global LP Gas 2014

- 3.41. LPG consumption in Africa remains low compared to other countries, representing a latent potential demand.

²⁶ Argus Statistical Review of Global LP Gas 2014
²⁷ *Ibid.*

- 3.42. Many of the challenges faced by African countries relate to both infrastructure and funding. Figure 9 illustrates the consumption of LPG by South Africa and other African countries. Relative to its African counterparts, South Africa ranks sixth on the continent. Egypt's consumption is more than 12 times that of South Africa.

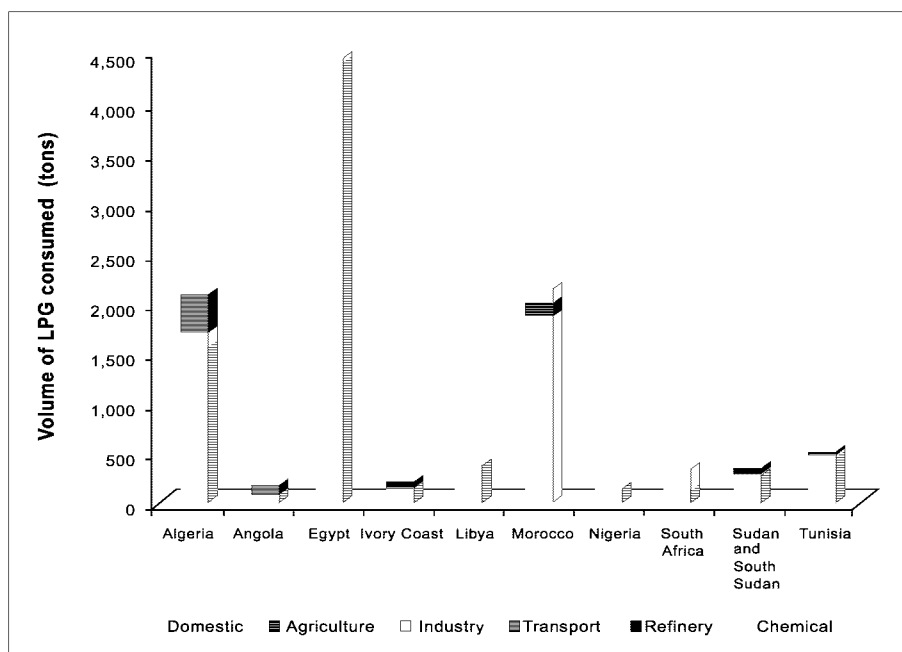
Figure 9: Consumption of LPG in Africa, 2010-2013



Source: Argus Statistical Review of Global LP Gas 2014

- 3.43. An analysis of the pattern of consumption across various sectors in African countries also reveals the lack of diversification in using LPG in South Africa. Figure 10 indicates that LPG consumption across sectors is not as diversified in South Africa as it is in Algeria or Morocco. Sectors like transport (autogas) and agriculture are not using LPG in South Africa.

Figure 16: LPG consumed by country and by sector – Total consumption of LPG (2013)



Source: Argus Statistical Review of Global LP Gas 2014

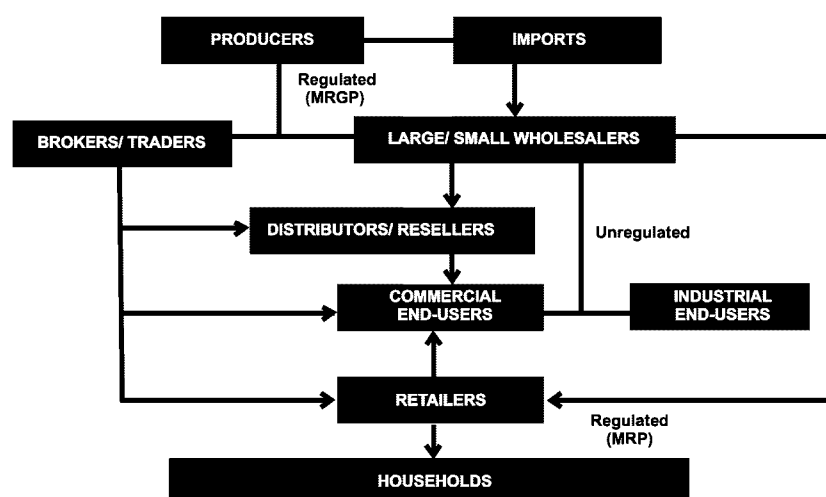
- 3.44. Concerning the split between the industrial sector and domestic sector LPG consumption, data sources reveal conflicting results. Data from the Argus Statistical Review of Global LP Gas 2014 reveals South Africa consumes the bulk of its LPG in the domestic sector relative to the industrial sector,²⁸ while other sources like the DoE estimate domestic consumption to be 17% of total consumption. Market players like [X] maintain that commercial users account for approximately 85% of LPG consumption, with households consuming the remaining 15%. [X] These mixed results reveal a lack of reliable data available on this sector.

²⁸ Specifically, the split between industry and household consumption is weighted towards domestic use; in 2013, households accounted for 52% of South Africa's total LPG consumption while industry consumed the remaining 48% (source: Argus Statistical Review of Global LP Gas 2014).

4. Dynamics of the LPG market in South Africa

- 4.1. The production and supply of LPG involves many players in the value chain, including the refineries/producers, wholesalers, distributors, dealers, retailers and end-users. Refineries or producers are typically involved at all levels of the supply value chain, from the acquisition of crude oil up to the cylinder or bottle retailing level. Some major wholesalers or distributors also participate in the downstream transportation, bottling, storage and distribution of LPG. Retailers or dealers may also be involved in filling LPG cylinders to sell to small industrial/commercial or household end-users. Figure 11 depicts the Commission's illustration of the LPG value chain.

Figure 11: LPG value chain



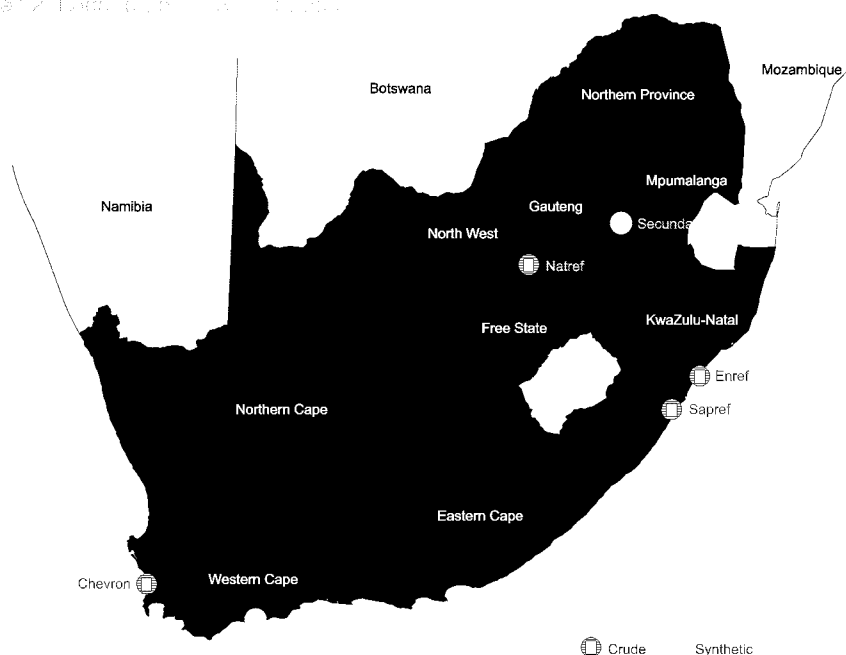
Source: Commission's classification

LPG producers

- 4.2. As discussed, in South Africa LPG is produced primarily as a derivative of the crude oil refining process. The manufacturers of liquid fuels involved at this level of the value chain include international oil firms Chevron, Engen, Shell and BP and local firms Sasol and the state-owned PetroSA.
- 4.3. There are six refineries located around South Africa, of which five produce LPG. These five refineries account for producing over 80% of LPG consumed in South Africa annually, while the remainder is imported to compensate for the shortfall. The Commission has identified the LPG-producing refineries in South Africa:

- 4.3.1. Shell and BP South African Petroleum Refineries (Pty) Ltd ("SAPREF");
 - 4.3.2. Engen Petroleum Ltd ("ENREF");
 - 4.3.3. Sasol Synfuels (Pty) Ltd;
 - 4.3.4. The Petroleum Oil and Gas Corporation of South Africa (Pty) Ltd ("PetroSA");
and
 - 4.3.5. Chevron South Africa (Pty) Ltd ("CHEVREF").
- 4.4. The National Petroleum Refiners of South Africa (Pty) Ltd ("NATREF"), being a joint venture between Sasol Oil and Total SA, does not produce LPG. This is due to the manner in which the refinery was configured and is unlikely to change.²⁹
- 4.5. Figure 12 shows the geographic locations of each of the different liquid fuel manufacturing plants (including NATREF). Sasol Synfuels is the only inland LPG producer. SAPREF and ENREF are both located in Durban, while Chevron is located in Cape Town and PetroSA is located in Mossel Bay.

Figure 12: Liquid fuel manufacturing plants



29

The Commission does, however, note that NATREF is a producer of propane and butane molecules. The Commission understands that the NATREF refinery does not combine the two molecules to produce LPG, though. (NATREF submission response to question 3.1 dated 9 April 2015)

Refinery production volumes

- 4.6. Figure 13 shows the volumes of LPG produced by each refinery in South Africa. As observed, **ENREF** is the largest producer of LPG in South Africa.
- 4.7. **SAPREF** is the second largest LPG-producing refinery. SAPREF is a joint venture between Shell and BPSA. The arrangement between the parties is one of toll manufacturing, where SAPREF manufactures the product on behalf of its shareholders [REDACTED]. The products are owned by Shell and BPSA and are delivered to their respective customers. Thus, the LPG produced at this refinery is divided between Shell and BPSA, subject to the conditions agreed upon in the joint venture agreement.
- 4.8. **Sasol Synfuels** refinery in Secunda is the only inland refinery. The smallest LPG-producing refinery in the country is **PetroSA** and is based in Mossel Bay, Western Cape.

Figure 13: Domestic LPG production in South Africa

Source: [REDACTED]

Volume of LPG supplied into the SA market by domestic refineries

- 4.9. LPG produced in South Africa is made available to third parties, with a portion of the LPG manufactured being consumed internally by some producers. For instance, in the 2013/14 financial year, [REDACTED] consumed over [between 50-100%] of the LPG produced by its refinery, while [REDACTED] and [REDACTED] consumed [between 30-50%] and [between 20-50%] respectively of the LPG produced at their facilities in the same financial year. [REDACTED] sold all of its LPG production to third parties, whereas [REDACTED] did not record the internal consumption of any LPG.
- 4.10. The balance of LPG produced (excluding the LPG is consumed internally) is made available to the South African market, either through sales to shareholders (as is the case with SAPREF) or directly to customers. Figure 14 shows the volumes of LPG actually available for supply into the South African market by the LPG producers. This is after refineries have accounted for their own internal consumption of LPG. It is clear that Sasol Oil is the largest supplier of LPG to third parties in South Africa, followed by SAPREF and Engen.

Figure 14: LPG available for supply

Source: [REDACTED]

- 4.15. LPG is normally imported from international traders like Petredec and Geogas. These traders supply imported LPG to wholesalers, who in turn on-sell to end-user customers. These international traders do not appear to supply end-user customers directly in competition with domestic wholesalers. In addition to these traders, there are several countries from where LPG can be imported to South Africa. These countries include Angola, Equatorial Guinea, Congo Brazzaville, Nigeria and Mozambique.

Brokers/Traders

- 4.16. Afrox defines brokers or traders as those entities that obtain allocations from the refineries but do not invest in any distribution or infrastructure and do not have a contracted customer base. Brokers or traders obtain an allocation from a refinery and on-sell it to the highest bidder, using a third-party distributor to deliver the product.

Major resellers/Wholesalers

- 4.17. The wholesale level of the value chain comprises those players that channel the LPG from producers or refineries towards end-users. Wholesalers procure and/or import LPG, after which they direct it in either bulk or cylinder form to: (i) Their own storage and other facilities; (ii) Industrial or commercial end-users; (iii) Distributors and/or resellers; and/or (iv) Households.
- 4.18. Factors determining which supply method is used to supply LPG to a customer include, inter alia, the type of application for which it will be used and the quantity of gas required for the application. Most small to medium-sized customers are supplied with LPG in cylinder form (for either single- or multi-user points).
- 4.19. Customers requiring significant amounts of gas, like industrial or commercial end-users, prefer a bulk storage or supply facility. Wholesalers will install a bulk storage tank in the form of a pressure vessel designed and manufactured under international standards, with a reticulation system connected to the end-users, be it at an industrial site or a shopping mall.
- 4.20. The wholesaling of LPG is relatively capital-intensive. Primary investment required comprises bulk transportation tankers, bulk storage facilities, cylinders, filling plants, delivery vehicles and installation equipment at customers' premises.
- 4.21. In summary, wholesalers' primary role and activities in the LPG value chain can be understood as: (i) The bulk purchasing of LPG from refineries or through imports;

(ii) Owning and operating bulk LPG storage facilities; (iii) Owning and operating LPG filling sites and equipment; and (iv) Distributing LPG in branded bulk and/or cylinder form.

4.22. The relative size of a wholesaler depends on its regional dominance, capital investment, infrastructure and associated logistics. The largest players in the wholesale market comprise companies like Afrox, Easigas, Reatile, Totalgaz and Oryx, some of which were previously vertically integrated with LPG producers.³⁴ These wholesalers' activities are briefly outlined:

4.22.1. African Oxygen Ltd ("Afrox") is a subsidiary of The Linde Group, a global company with headquarters based in Munich, Germany.³⁵ In 2015, Afrox had a level 3 B-BBEE rating³⁶ with 29.60% black ownership. Afrox is a major wholesaler and distributor of LPG in South Africa with operations in eight provinces (with the exception of the Northern Cape). Afrox is also present in South Africa's neighbouring countries like Namibia, Botswana, Zambia, Zimbabwe, Lesotho and Swaziland. Afrox procures LPG from several domestic refineries (through fixed contracts) including Sasol, Chevron, Engen and Petro SA and imports LPG through the Richard's Bay facility.

4.22.2. Afrox is the largest wholesaler and distributor of LPG in South Africa. It has cylinder-filling plants in 15 major cities throughout South Africa and actively distributes LPG between bulk sales and cylinder sales. The biggest Afrox customers are in the and sectors.

4.22.3. Easigas Proprietary Limited ("Easigas") was a 100% owned subsidiary of Rubis Energie based in France, supplying LPG to customers in Southern Africa. On 8 December 2015, the Commission approved Easigas's acquisition of Reatile Gaz (Pty) Ltd ("Reatile Gaz")³⁷ altering the ownership structure. Easigas is now 60% and 40% owned by Rubis Energie (France) and Reatile Gaz (South Africa) respectively.³⁸ Easigas operates as a supplier and distributor of LPG (in both bulk and cylinder form) to distributors, retailers and end-user customers throughout Southern Africa. In 2016, Easigas was certified with a level 5 B-BBEE rating³⁹ with 28.34% black ownership.

³⁴ For example, Oryx entered the domestic LPG sector through the acquisition of BPSA's LPG business while Easigas was previously linked to Shell.

³⁵ The Linde Group owns 50.47% of Afrox. Refer to Afrox Integrated Report 2015, p 6.

³⁶ Refer to Afrox Integrated Report 2015, p 46.

³⁷ 2015Sop0525. Reatile Gaz was a wholesaler and distributor of LPG located in the Gauteng region founded in 2006 as a division of Reatile Energy, a subsidiary of Reatile Group (Pty) Limited. Reatile Group (Pty) Limited is a black economic empowerment investment company founded by Simphiwe Mchiseni and Sizwe Hlope with investments in the energy, mining and chemical sectors in South Africa.

³⁸ Available at <http://www.easigas.com/about-us/easigas-certification/certificate>. Accessed on 2016.10.27.

³⁹ Available at <http://www.easigas.com/assets/certificate--easigas-ufyf-7d4-ba9443-s1-020816.pdf>.

- 4.22.4. Easigas is the second biggest wholesaler in the industry by means of its ownership of 24 cylinder-filling plants situated throughout the Southern African region. The company's LPG activity is split between bulk sales [REDACTED] and cylinder sales [REDACTED].⁴⁰
- 4.22.5. Oryx Oil South Africa ("Oryx") is ultimately controlled by The Addex and Oryx Group based in Malta [REDACTED] and is the third largest wholesaler in the LPG sector. In 2014, Oryx was a level 2 B-BBEE contributor⁴¹ with [REDACTED] black ownership. Oryx acquired BP SA's LPG business in 2013.⁴² The company also acquired Masana's LPG business, which marketed a variety of BP SA's LPG fuels to the business sector, including the supply of LPG to large commercial clients.
- 4.22.6. Oryx has three cylinder-filling plants, one in Gauteng, one in the Eastern Cape and the other in the Western Cape. Oryx supplies LPG in bulk to [REDACTED] distributors nationally that operate Oryx owned cylinder-filling plants. [REDACTED]
- 4.22.7. Totalgaz Southern Africa (Pty) Ltd ("Totalgaz") is 100% owned by Total Outre-Mer based in France.⁴³ In 2015, Totalgaz was a level 3 B-BBEE contributor⁴⁴ with [REDACTED] black ownership. Totalgaz operates through a network of 13 depots and over [REDACTED] independent distributor-run sites. Totalgaz is also active in Botswana and Lesotho.⁴⁵ Totalgaz participates in the wholesale, distribution and retail levels of the LPG value chain and supplies LPG to the market mainly through cylinders [REDACTED] and the rest through bulk sales [REDACTED]. [REDACTED] Totalgaz acquired KayaGas (Pty) Ltd⁴⁶ on 11 February 2016.⁴⁷

40 Who owns Whom report, "Manufacture and distribution of gases via pipelines", May 2014

41 Oryx submission dated 31 October 2014, para 1.1.3, p 2

42 2013May0185

43 Totalgaz submission dated 30 April 2015, p 1

44 <http://www.total.co.za/pro/about-b2b/total-southern-africa/totalgaz-south-africa.html>, Accessed on 2016.10.27

45 Totalgaz submission dated 16 April 2016, p 2 - 3

46 Case number 2015Nov0629

47 KayaGas was primarily based in the Cape Town region with branches in Pretoria, Johannesburg and Durban. It had a market share of approximately 1% before being acquired by Totalgaz.

- 4.23. There are several smaller players operating in the wholesale segment of the market. Some of the players include Top Gas, Wasaa and Camel Fuels amongst others:
- 4.23.1. Top Gas (Pty) Ltd ("Top Gas") entered the LPG sector in 2008 and supplies LPG in cylinders to customers in the domestic, [REDACTED] and [REDACTED] sectors.⁴⁸ Top Gas is a regional player in Gauteng and parts of North West.
- 4.23.2. Wasaa Gasses (Pty) Ltd ("Wasaa") is a level 1 B-BBEE company that entered the South African LPG sector in 2008 and established an LPG filling plant in KyaSands in 2010.⁴⁸ Wasaa invested in its own LPG tankers, logistic fleet, cylinders, storage tanks and gas cylinder-filling facility to service the domestic, [REDACTED] and [REDACTED] customer segments.
- 4.23.3. Camel Fuels (Pty) Ltd is a level 3 B-BBEE company that supplies and distributes bulk LPG and aviation spirit (avgas) throughout the SADC region.⁴⁹
- 4.24. Table 3 shows an assessment of wholesaler market shares over time. Afrox is estimated to be the largest wholesaler, closely followed by Easigas. The volumes of Afrox and Easigas have declined during 2013 and 2014 financial years against the 2012 base numbers. On the contrary, volumes of other competitors such Totalgaz, Wasaa have been increasing during the same period. The market shares of KayaGas and Reatile increased prior to their acquisitions by incumbent wholesalers.

48 Wasaa is active in the broader petrochemicals sector and supplies gas, chemicals, crude oil and fuels within the petroleum and commodities sectors.

49 <http://www.camelfuels.co.za/about/#1465613116208-2C9cc8c3-ca13>

Table 3: Wholesaler market shares (excluding imports)

Wholesaler	2012		2013		2014	
	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%
Afrox	☒	30-45	☒	35-50	☒	30-45
Easigas	☒	20-35	☒	20-35	☒	20-35
Totalgaz	☒	10-25	☒	10-25	☒	10-25
Oryx	-	-	☒	0-15	☒	10-25
Reatile	☒	0-15	☒	0-15	☒	0-15
Wasaa	☒	0-15	☒	0-15	☒	0-15
KayaGas	☒	0-15	☒	0-15	☒	0-15
Other	☒	10-20	☒	-	☒	-
TOTAL	394,752	100	328,658	100	360,307	100

Source: Volume figures from wholesaler

4.25. Further segmentation of the wholesaler market shares into bulk and cylinder LPG sales indicates similar trends as observed in Tables 4 and 5. It is also apparent that:

4.25.1. Afrox is the leading wholesaler, regardless of the segment considered; and

4.25.2. Market shares are relatively stable.

Table 4: Imported and domestic LPG sales by wholesaler by volume segment (including imports)

Wholesaler	2012		2013		2014	
	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%
Afrox	☒	30-45	☒	30-45	☒	30-45
Easigas	☒	30-45	☒	30-45	☒	20-35
Oryx	☒	-	☒	0-15	☒	0-15
Reatile	☒	0-15	☒	0-15	☒	0-15
Totalgaz	☒	0-15	☒	0-15	☒	0-15
Wasaa	☒	0-15	☒	0-15	☒	0-15
KayaGas	☒	0-15	☒	0-15	☒	0-15
Other	☒	10-20	☒		☒	-
TOTAL	266,131	100	216,254	100	241,414	100

Source: Volume figures from wholesalers

Table 6. Estimated volume of gas sold to end-users by major resellers (including imported)

Wholesaler	2012		2013		2014	
	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%
Afrox	[REDACTED]	35-50	[REDACTED]	40-60	[REDACTED]	35-45
Totalgaz	[REDACTED]	15-25	[REDACTED]	15-25	[REDACTED]	15-25
Easigas	[REDACTED]	15-25	[REDACTED]	15-25	[REDACTED]	15-25
Oryx	[REDACTED]	-	[REDACTED]	0-15	[REDACTED]	0-15
KayaGas	[REDACTED]	0-15	[REDACTED]	0-15	[REDACTED]	0-15
Reatile	[REDACTED]	0-15	[REDACTED]	0-15	[REDACTED]	0-15
Wasaa	[REDACTED]	0-15	[REDACTED]	0-15	[REDACTED]	0-15
Other	[REDACTED]	10-20	[REDACTED]	-	[REDACTED]	-
TOTAL	128,621	100	112,404	100	118,893	100

Source: Volume figures from wholesalers

- 4.26. An analysis of the distribution of sales to customer groups by the major resellers reveals [REDACTED] and [REDACTED] achieve the majority of their LPG revenue through direct sales to end-users. [REDACTED].

Figure 10: Volume of gas sold to end-users by major resellers (2011-2014)



Source: [REDACTED]

- 4.27. In addition to supplying domestic customers, wholesalers also export LPG procured from domestic refineries. Most wholesalers export LPG into the Southern African Development Community ("SADC") region, to countries like Zimbabwe, Namibia, Botswana, Zambia, Mozambique, Lesotho and Swaziland. Wholesalers wishing to export to these countries are faced with several regulatory hurdles. Wholesalers indicated that factors like the availability of LPG in South Africa, access to appropriate long-distance logistics, and export permits required by the International Trade Administration Commission ("ITAC") and the DoE impede the ability of wholesalers to penetrate external markets. In addition to naming these structural barriers to exporting, wholesalers also referred to loss of investment due to theft of cylinders as a factor that curbs exports. Table 6 shows the volumes of LPG exported by various wholesalers.

Table 6: Aggregates of LPG exports by various wholesalers, 2010-2014

Years	Annual LPG exported (tonnes)
2010	2 584
2011	3 225
2012	14 528
2013	16 902
2014	33 450

Source: Department of Energy (www.energy.gov.za), accessed 02 December 2015

- 4.28. One of the new entrants into the LPG market, Wasaa, supplies most of the LPG it procures to the export market. In 2013 Wasaa exported [between 50-70%] of its LPG supply, although this declined to [between 20-40%] in 2014. The second largest exporter was Reatile, with exports accounting for [between 10-30%] of its supply in 2013 and [between 10-20%] in 2014. Afrox's exports as a percentage of its total LPG supply decreased slightly from [between 10-20%] in 2013 to [between 10-20%] in 2014. Easigas exported [between 10-20%] of its LPG in 2014. Figure 16 captures the portion of each LPG wholesaler's total supply exported in 2013 and 2014.

Figure 16: Wholesaler contribution to the supply of LPG to the end-user family

Source: Wholesalers' information request, March 2015 submission

- 4.29. As stated earlier, wholesalers make provision to supply the domestic market. Despite their penetration of the SADC countries, wholesalers' total exports declined in 2014, likely because of LPG supplies that would have gone to the SADC countries being reverted to the South African market in response to domestic LPG shortages. Some wholesalers, like [REDACTED], indicated that they only export LPG once domestic demand is met and that the availability of local supply plays a crucial role in export volumes. Another factor considered by wholesalers was the relatively higher price received in the export market.

Distributors/Resellers

- 4.30. Distributors/Resellers comprise market participants selling LPG to an end-user. In an effort to reach the vast network of customers to be serviced, wholesalers appoint **distributors** to act as their agents. Distributors like Sims Gas, Kulani Gas and The Gas Guy are exclusively contracted to wholesalers, forming an extension of the wholesalers' route to market. Wholesalers generally make certain investments in the operations of the distributors or resellers. Some distributors bear all costs related to the supply and distribution of LPG to customers, relying on the wholesale supplier for LPG product and cylinders only.

Retailers

- 4.31. Some retailers procure LPG in bulk to fill cylinders.⁵⁰ Most offer LPG as part of a much broader product offering and rely on the large wholesalers for equipment, cylinders and logistical support.
- 4.32. According to the DoE, there are an estimated 452 retailers in the form of fuel stations and 4 000 smaller dealers that sell LPG from informal shops and trading stores.⁵¹ Given the diverse range of retailers, it seems appropriate to categorise them according to type of outlet, namely filling stations, and hardware and camping shops.
- 4.32.1. Filling stations. Most filling stations offer refilling services to LPG customers. According to CADAC, customers are encouraged to take their cylinders to dealers who have been pre-approved by the LPG Safety Association of Southern Africa ("LPGSASA") only to ensure that their cylinders are filled safely.
- 4.32.2. Hardware and camping stores. This category of retailer includes all shops (like MICA) with a hardware or camping division. These companies may choose to carry a specific LPG brand or a range of LPG brands. Given their stocking of more than just gas cylinders, it is customary to find a variety of brands. For instance, MICA offers a range of brands that include CADAC, Alva, Agrinet and Easigas.
- 4.33. Some retailers and distributors have filling facilities and can receive bulk product from wholesalers.⁵² These market participants are usually contracted to a wholesaler maintaining ownership of the filling equipment, and supplying its own branded cylinders.⁵³ These retailers and distributors do not sell LPG under their own brand name.
- 4.34. This level of the value chain is thought to act as a key channel to household end-users.

⁵⁰ Thus the inclusion of wholesalers: wholesalers have their own retail arm and do some distribution themselves but also use distributors.
⁵¹ Department of Energy (2013). Transformation of the Gas Sector: Presentation by Chief Director Hydrocarbons Policy dated 10 August 2010.

End-users

- 4.35. End-users can broadly be classified as industrial/commercial users or domestic (household) users. LPG is supplied to these end-users in either bulk or cylinder form, depending on the customer's requirements. Industrial/Commercial users of LPG in South Africa account for approximately 85% of consumption, while domestic (household) users consume the remaining 15%.
- 4.36. Industrial/Commercial users mostly run operations that require LPG as an input into their production process. Most wholesalers install and maintain the infrastructure (tanks, equipment etc.) at these users' premises. Industrial customers also use cylinders depending on what their demand and physical space requirements are. Importantly, the price is negotiated between industrial/commercial users and wholesalers and is not regulated as in the case of LPG sold to households. Pricing regulation is elaborated on in Section 8.
- 4.37. Amongst household users, LPG use is still limited. According to many stakeholders, this is largely due to the concerns households have about the safety of LPG in their homes. Given the benefits of LPG and the electricity crisis facing South Africans, LPG represents a reliable energy alternative. A comprehensive analysis of household consumers' LPG consumption trends is provided in the following section.

LPG distribution

- 4.38. The distribution of LPG takes place in two forms, namely through cylinders and through bulk tanks. Submissions received from market participants indicate their choice of bulk or cylinder depends on the application, volume consumed and the cost.
- 4.39. To determine demand-side substitutability (to what extent customers can switch from bulk to cylinders and vice versa), information was gathered on the volumes of LPG they require and on the cost factors unique to the supply of bulk and cylinder LPG relative to one another. Market participants were also asked questions about the cost of switching between the two; about the periods for effective switching; and about their willingness and ability to switch in response to a price increase. Customers' responses were then considered in light of their volume requirements; the cost of switching; and the period involved in switching.

- 4.40. Regarding demand substitutability, volume requirements and cost differences emerged as the salient factors determining the willingness and ability of LPG end-users to substitute between LPG supplied in bulk format as opposed to LPG supplied in cylinder format.
- 4.41. For Puregas (Pty) Ltd ("Puregas"), their application of LPG differs depending on the scale or quantity required. According to Puregas, switching from bulk LPG to cylinder LPG would not be practical as bulk users normally use quantities that would be difficult to supply in cylinders. This view is shared by Anglo American Platinum Limited ("Anglo American"), an end-user customer of bulk LPG. Anglo American indicated that its volume usage of LPG is too high⁵² for it to switch to using cylinder LPG.⁵³ Similarly, [REDACTED] stated that as it consumes [between 2 000 to 3 000] tonnes of LPG per month, switching to LPG in cylinders would not be a practical solution to its requirements.⁵² To substitute [between 2 000-3 000] tonnes of bulk LPG, [REDACTED] would need to procure [between 41 000 to 62 500] units of 48 kg cylinders (the largest available).
- 4.42. [REDACTED] stated that the cost structures of using bulk as opposed to cylinder LPG are also significantly different. Cylinders attract significant additional costs for labour, distribution, capital outlay on cylinders, maintenance of cylinders, filling premises and plant. Puregas stated that the cost of switching from one form to the other was difficult to estimate. Concerning the period, it could take six to 12 months.⁵³
- 4.43. In addition to the MRGP and primary transport costs, cylinder customers carry more costs than those borne by bulk customers. According to Totalgaz, additional costs to be borne by a cylinder LPG distributor include those of the amortised cylinder and filling equipment, a wholesale margin, secondary transport costs from the refinery to the wholesaler's filling depot, along with insurance and maintenance costs on large equipment. Similarly, retailer customers need to factor in the costs of secondary transport, cylinder and filling equipment amortisation and a wholesale margin. End-user customers end up bearing the same costs as a retailer but with the addition of a retail margin.⁵⁴
- 4.44. Regarding supply-side substitution (to what extent suppliers can switch from supplying bulk to cylinders and vice versa), the following factors were analysed: Cost to supply bulk as opposed to cylinder LPG; whether there is any difference in the product; and whether or not all wholesalers supply both bulk and cylinder LPG.

52

[REDACTED] response to information request, 26 October 2016

53

Puregas (Pty) Ltd, response to information request, 20 October 2016

Cost to supply bulk LPG as opposed to cylinder LPG

- 4.45. The costs involved in supplying LPG in bulk as opposed to supplying it in cylinder form are considered. The additional cost to set up a cylinder operation once a supplier is already supplying bulk LPG is approximately R1 million. Although the cost of transporting the LPG from the refinery to the wholesaler's depot is the same, there are additional costs in getting the LPG into the cylinders. These include the cost of laying out the necessary capital to procure the cylinders, for filling the cylinders, and for transporting the cylinders from the depot to clients.
- 4.46. According to [REDACTED], the main difference between supplying LPG in bulk as opposed to supplying it in cylinders is cost-related, more specifically, transportation costs, filling fees and the depot operating costs. Other differences relate to the type of equipment needed (manifold as opposed to bulk tanks, vaporizers and piping). In terms of supplying cylinders rather than bulk, the barriers to entry include contractual obligations, the availability of cylinders and supply, and cylinder transportation costs. Further, the supply chain required to distribute cylinder LPG is more complex than that required for bulk. It is simpler to distribute bulk, as the LPG is taken from the refinery and distributed directly to the customer. Most of the LPG wholesalers use outsourced vehicles for the delivery of LPG to bulk customers.
- 4.47. The period for switching from the supply of bulk LPG to the supply of cylinder LPG ranges between one month and a year. [REDACTED] estimates the period to be 6 to 12 months, depending on factors such as, how long it takes to set up the filling plant and to comply with NERSA requirements, by-laws and environmental requirements,¹ while [REDACTED] estimates the period to be approximately one month. According to [REDACTED], the time frame for gaining entry into the cylinder market should be calculated based on the time it would take to obtain the necessary approvals, for example, performing an environmental impact assessment ("EIA") for filling plants; carrying out the required major hazard installation ("MHI"); and obtaining approval from the local authorities. The lead times for procuring the necessary capital equipment and related installation time must also be taken into account. [REDACTED] estimated that the period would be approximately six to eight months. This includes the lead-time for cylinder purchases; acquiring the necessary equipment; completing MHI, EIA and achieving NERSA compliance; and raising capital for the installation costs.

- 4.48. When questioned about their willingness to switch between supplying LPG in the two different forms, [redacted] and [redacted] submitted that the increase in cost would be transferred to the customer as far as possible. [redacted] When this was no longer possible, they would decide whether to stop supplying LPG completely or to switch to supplying LPG in cylinder form. [redacted] Similarly, [redacted] submitted that it would not switch to only supplying LPG in cylinder form but would rather pass the cost on to its customers. [redacted] [redacted] submitted that it would not switch, because its strategy is to stay competitive in both markets. [redacted] [redacted] submitted that in applications where it is technically possible to supply using cylinders (not large-demand applications), it would switch from supplying bulk. [redacted]
- 4.49. The four major players in the market – Afrox, Easigas, Oryx and Totalgaz – and smaller players such as Reatile, Kayagas and Wasaa supply in both bulk and cylinder form. This indicates a wholesaler needs to supply LPG in both forms to be competitive in the LPG market.

4.4. Energy prices and costs for the low-income residential market

- 4.50. Table 7 provides a comparison of energy prices, efficiency and cost for cooking for the low-income residential market. As may be observed, electricity per kWh is the most affordable energy source in terms of both price and cost to cook, while LPG is the most expensive cooking fuel for low-income households.
- 4.51. Low-income households with limited disposable income rely on subsidies from government for energy under the Free Basic Energy ("FBE") Programme. The FBE programme is targeted at poor households and aims to provide sufficient energy for basic lighting, heating and cooking. The levels of service are 50kWh per household per month for consumers on a grid-based system.⁵⁴ However, for households without electricity access, LPG is an important source of clean energy. The Commission is of the view that government should consider subsidising LPG prices or providing some incentives for poor households as part of the Free Basic Energy programme.

⁵⁴

Department of Energy, Free Basic Energy. Available from: www.energy.gov.za/files/factsheets/freetbasic.html

Table 6: Comparison of energy sources for cooking in low income households

Energy source	Regulated price			Cooking appliance efficiency (%) ¹⁰⁶		Cost to cook
	Litre/kg/kWh	Per GJ	Per kWh			Per kWh
Paraffin (retail)	R8,47 /L	R227	R0,82	47%	Pump type	R1,72
LPG (retail)	R20,69 / kg	R431	R1,55	54%	Single burner	R2,85
Electricity ¹⁰⁹	R0,95 /kWh	R264	R0,95	75%	Electric coil	R1,27

Source: Department of Energy and WLPGA

- 4.52. These findings are different to those submitted by NERSA (Table 8) showing LPG is a cheaper energy source compared to paraffin, but is substantially more expensive than electricity for low income households (households that consume between 51 – 350 kWh).

Table 8: Fuel cost to heat two litres of water to boiling point in a pot in low income households (2014)

Fuel cost to heat two litres of water to boiling point in a pot						
Fuel Type	Fuel used to boil		Fuel Price		Cost to boil	Deviation from LPG as %
	Amount	Units	Unit price	Units		
Paraffin regulated max sales price (30 Sep 2014)	0,0374	kg	9,71	R/l	0,971	139,43%
LPG regulated max sales price (30 Sep 2014)	0,0273	kg	23,51	R/kg	0,6964	100,00%
Eskom home light Block 2 [51 – 350 kWh] (2014)	0,4381	kWh	0,9641	R/kWh	0,4224	60,65%
Eskom HomePower 4 [>600kWh] (2014)	0,4381	kWh	1,6251	R/kWh	0,712	102,23%

Source: NERSA submission dated 4 November 2014

Guidelines for the use of gas in the industrial sector

- 4.53. The Commission noted in the Sasol/Engen matter⁵⁶ that:

“LPG could possibly be substituted with other energy sources such as natural gas, coal, heavy and light fuel oil, electricity, paraffin and diesel. For LPG to be substituted with natural gas the (bulk industrial) users must be close to a pipeline. Hence,

⁵⁵ WLPGA, 2009, LP Gas: Efficient Energy for a Modern World.

Note: Percentages based on energy used per energy source to boil 1 ltr of water based on efficiencies observed in India.

⁵⁶ Case number 2004Nov1304

substitution could be a theoretical possibility. The degree of substitutability varies depending on the purpose for which the energy source is needed, but switching requires capital expenditure."

- 4.54. Customers stated the ability to switch between energy sources was a theoretical possibility but it depended on the nature of LPG use. LPG is more reliable and environmentally friendly than other products; occupational health regulation renders LPG safe for in-house use relative to, for instance, petrol and diesel. Electricity was deemed costly for space heating and not reliable in industrial applications, whereas LPG is used in equipment uniquely designed for LPG use.
- 4.55. In the course of the *Reatile/Egoligas* merger,⁵⁷ a comparison was performed between LPG and natural gas. The Commission observed that natural gas and LPG are derived from different sources and require different processes to become a usable end-product; natural gas can be transported over long distances while LPG cannot; and the appliances/equipment that use natural gas are different from those that use LPG because of the differences in properties of the two fuels. In light of this, the following was presented regarding the substitutability of these products:
- 4.55.1. Customers and competitors stated they do not view natural gas and LPG being substitutable because of the costs of switching and the time that it would take to alter appliances correctly; and
- 4.55.2. None of the customers contacted ever switched prior to being contacted by the Commission.
- 4.56. A United Kingdom ("UK") market inquiry into the supply of bulk LPG for domestic use found the closest functional substitute for LPG was natural gas. In Great Britain, the majority of customers are in locations that do not have access to the main network, so they do not have scope to switch to natural gas. This is also the case in South Africa, as natural gas networks are limited to a few places within the City of Johannesburg. Natural gas is substantially cheaper than LPG in both Great Britain and Northern Ireland (suppliers accepted that the price of natural gas was approximately half that of LPG).

⁵⁷ Case number 2015Sep0525

- 4.57. For analysis, the Commission will focus its assessment on LPG supplied through cylinders and bulk tanks.

LPG consumption in the residential sector

- 4.58. The characteristics of LPG consumption in households were examined based on information sourced from the DoE's 2012⁵⁸ survey on energy-related behaviour in the South African residential sector, and as data captured in the National Income Dynamics Study ("NIDS"). A more detailed summary of the results of this analysis is provided in **Annexure B**.
- 4.59. South African households rely on multiple energy sources to meet their daily energy requirements. The types of energy sources used differ depending on what is available to the household (particularly the household's electrification status) along with the application the energy source is intended for (cooking, water heating or space heating).
- 4.60. The DoE's study found that using gas is greater amongst electrified households (20% of households) than non-electrified households (13% of households). The likelihood that gas will be selected as an energy source increases concomitantly with an improvement in the household's living standard (including its income level). In terms of geographic areas, the domestic use of gas is greater on rural farms and in formal urban areas, especially amongst higher-income electrical households.
- 4.61. Regarding cooking, the study found that only a marginal number (5%) of both electrified and non-electrified households used gas as their primary energy source. Across geographic areas, gas was usually found to be used for cooking amongst urban formal households; only 2% to 3% households in other geographic locations used it for this purpose. In terms of the energy mix in cooking, it was found that 60% of South African households used a single energy source (typically electricity) for their cooking requirements. Of the remaining 40% that used a range of energy sources for cooking, only 10% used a combination of gas and electricity.

⁵⁸ Department of Energy, 2013, *A Survey of Energy Related Behaviour and Perceptions in South Africa: The Residential Sector*.

- 4.62. In terms of space heating, 41% of households used electricity while less than 5% used coal, gas and other energy sources. Using gas for space heating was only observed amongst households with medium and high living standards, and only to a marginal (5%) degree. Regarding the energy mix used for heating by households, using gas was only observed amongst electrified households with medium and high living standards. The combination of gas and electricity as a source of energy was most pronounced amongst households with a high living standard.
- 4.63. Similarly, the NIDS data showed that during 2008 to 2012, the portion of households that used gas as their primary source for heating was limited, although marginal growth over the 2010 to 2012 period was observed. Only 2.6% of households recorded gas as their primary energy source used for cooking in 2012.

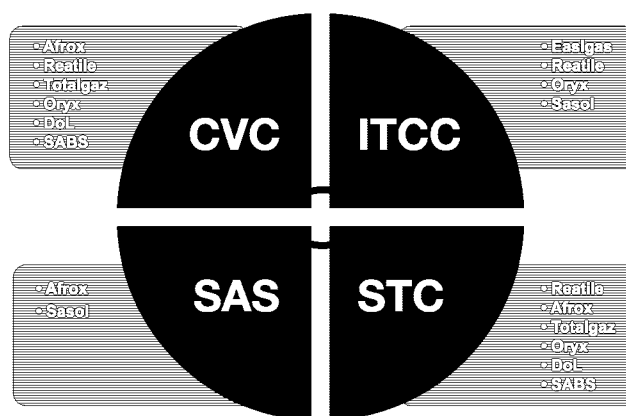
5. Industry associations

- 5.1. Several industry associations in the LPG sector exist. These associations are the result of market participants organising to: (i) Address specific concerns in the industry (eg. safety); (ii) Promote the use of LPG in the economy (joint advertising promoting using LPG at home); and (iii) Administer technical specificities in the field (registration of installers). The role and activities of each industry association are outlined:

Figure 16: The LPG sector's various industry associations (Source: LPGA submission to the DoL, 11 April 2015)

- 5.2. The LPGSASA is a non-profit organisation representing various companies involved in LPG installations, distribution, retailing, hardware and appliances. The association's aim is to ensure the sustainable growth of the LPG sector through compliance with the best safety and business practices.⁵⁹ Membership of the association is purely voluntary. Membership fees and adherence to its Code of Conduct are the main requirements. The LPGSASA is mandated by DoL to carry out all verification and enforcement activities under SANS 1539, 1237, 1156-2 and 10019. The membership structure of the LPGSASA is divided into six categories⁶⁰ and it is subdivided into four sub-committees.⁶¹ The LPGSASA committee meetings are held on a quarterly basis.⁶² Figure 17 demonstrates the committees where market participants meet.

Figure 17: The LPGSASA sub-committees (Source: LPGA submission to the DoL, 11 April 2015)



Source: LPGSASA submission, March 2015

⁵⁹ Retrieved from <http://www.lpgas.co.za/> [Accessed: 18 November 2015]

⁶⁰ These are the: (i) producers division; (ii) hardware division; (iii) installers division; (iv) auto converters division; (v) distributors/retailers division; (vi) resellers division; (vii) affiliates; and (viii) associates.

⁶¹ Refer to: LPGSASA submission dated 05 April 2015, p3

⁶² Submission by LPGSASA dated 4 May 2015, p3

Cylinder Verification Committee ("CVC")⁶³

- 5.3. The responsibilities of the CVC are to address complaints relating to cylinders, investigate cylinder-related failures, maintain compliance standards and maintain a register of accepted cylinders and valves. In addition, the CVC issues local manufacturers or importers of LPG cylinders with cylinder verification permits, required prior to the importation of cylinders.

Installer Training and Competency Committee ("ITCC")⁶⁴

- 5.4. The ITCC is the body accredited to conduct the training and assessment of LPG installers. This training covers the following disciplines which installers must be licensed to carry out: (i) Residential (domestic) LPG installer; (ii) Commercial LPG installer; (iii) Industrial LPG installer; (iv) LPG road tanker manufacture/maintenance; and (v) LPG road vehicle conversion (autogas). The committee reviews and make recommendations about installers for registration with SAQCC. Membership is open to any LPGSASA members in good standing.

Safe Appliance Scheme ("SAS")⁶⁵

- 5.5. In terms of the Pressure Equipment Regulations, it is mandatory for an importer of appliances, hoses and regulators to obtain a verification permit from the LPGSASA, if it intends on selling the product in South Africa. The SAS provides a platform to apply for the permit.

Specialist Technical Committee ("STC")⁶⁶

- 5.6. The STC provides technical and safety advice to the boards of directors of the LPGSASA and SABS committees and various government departments on numerous matters. Broadly speaking, these include matters relating to changes and/or amendments to LPG-related national and international safety standards, the nomination of representatives for various safety standards bodies (including the SABS' technical committees), the DoL's Pressure Equipment Committee and SANAS.

⁶³ Refer LPGSASA CVC terms of reference
⁶⁴ Refer to LPGSASA ITCC terms of reference
⁶⁵ Refer to Safe Appliance Scheme terms of reference
⁶⁶ Refer to LPGSASA STC terms of reference

- 5.7. The LPGSASA's sub-committees ensure that narrower interests are focused on, and that the association promotes, the use of LPG through the encouragement of safety practices. These narrower interests may be of more benefit to the sub-committee members, to the exclusion of members not part of the sub-committees⁶⁷

South African Petroleum Industry Association (SAPIA)

- 5.8. SAPIA plays a strategic role in addressing a range of customary issues relating to the refining, distribution and marketing of petroleum products, along with promoting the industry's environmental and socio-economic progress.^{68,69} SAPIA fulfils this role by proactively engaging with key stakeholders, providing research information and expert advice and communicating the industry's concerns to government, members of the public and the media. SAPIA is directed by a Board of Governors comprising ten members from member companies. Each member of the board represents a member company at the executive level. The Chairman and Vice Chairman rotate annually. SAPIA has committees comprising individuals from member companies and SAPIA staff members.⁷⁰
- 5.9. SAPIA was granted a conditional exemption in 2010 until December 2015 to allow players to carry out specific exchange agreements and practices required to ensure the continuity and stability of supply of liquid fuels in South Africa. The exemption followed the designation of the petroleum sector by Minister of Trade Industry in 2009. The exemption did not cover LPG. The exemption was renewed in December 2016 and will expire on December 2017.⁷¹

Independent Gas Association (IGASA)

- 5.10 IGASA is a voluntary association for small, independent LPG distributors. It represents independent distributors and/or resellers not affiliated with the four major distributors.⁷² The association aims to promote the safe and efficient use of LPG at competitive prices for both retailers and consumers.⁷³

⁶⁷ Submission by KeyGas dated March 2015, p41

⁶⁸ Retrieved from <http://www.sapia.co.za/> [Accessed: 18 November 2015]

⁶⁹ Some of the existing members are: Afric Oil (Pty) Ltd, Bahilega Technology, Brent Oil (Pty) Ltd, BP Southern Africa, Cental Fuels, Chevron South Africa, Ensigns, Elegant Fuels, Energy Oil (Pty) Ltd, Engen Petroleum Limited, Gulfstream (Pty) Ltd, Incozo Petroleum Traders (Pty) Ltd, Khuliso (Pty) Ltd, KZN Oils (Pty) Ltd, Mahele Fuels (Pty) Ltd, Makwanda Energy Trading (Pty) Ltd, MBT Petroleum (Pty) Ltd, Onyx Oil South Africa (Pty) Ltd, PetroSA (Pty) Ltd, Royale Energy Ltd, Sasol Ltd, Shell SA (Pty) Ltd, Sivanda Petroleum, Total South Africa (Pty) Ltd, TOTALGAZ Southern Africa and Tunisia Trading 59 (Pty) Ltd, trading as AEMCOR.

⁷⁰ The committees are: (i) Board of Governors; (ii) Strategic Oversight Committee; (iii) Legal Committee; (iv) Communications Committee; (v) Transformation Committee; (vi) Petroleum Industry Engineering and Environment Committee; (vii) Refinery Managers' Environmental Forum; and (viii) Technical Committee.

⁷¹ http://www.gov.za/sites/www.gov.za/files/46342_gon1239.pdf

⁷² Refer to IGASA submission, para 4, p2, dated 27 November 2014

⁷³ Refer to IGASA submission, para 5, p2, dated 27 November 2014

World LPG Association (WLPGA)

- 5.11. The WLPGA is the global organisation for the LPG sector and represents the full value chain. The association brings together public and private companies throughout the value chain, develops partnerships with international organisations and is involved in project implementation. The WLPGA network has over 220 members operating in over 125 countries. The primary goal of the association is to add value to the sector by driving premium demand for LPG while also promoting compliance with good business and safety practices.⁷⁴

Industry association activities and competition

- 5.12. In most situations industry association activities are procompetitive or competitively neutral. For example, a trade association may help establish industry standards that protect the public or may represent its members before government departments, providing valuable information to inform government decisions. These activities do not pose a competition risk when done with adequate safeguards.
- 5.13. One area of competition concern is the practise of exchanging sensitive business information among competitors, whether within the industry association or any other industry group. While information exchanges among competitors increases transparency in the market, which can lead to efficiency enhancing benefits, information exchanges may also present competition risks.
- 5.14. It is well accepted that increased transparency in the market, which results from information sharing, may benefit consumers directly and produce efficiencies for the firms involved, resulting in improved consumer welfare. For example, market transparency may be pro-competitive when it eliminates information asymmetries, enhances informed choice by market participants and even allows certain markets to function. Whether the information is shared among all the market participants or remains limited only to those on the supply side determines much of the benefits that will be derived from the information exchange. For suppliers, the benefits of information exchanges generally accrue, irrespective of whether the information is shared only among them or with the whole market.
- 5.15. Notwithstanding the benefits outlined above, enhanced transparency can harm competition. In some situations, competition may be harmed where the exchange of information facilitates collusion among competitors by allowing them to establish the terms of coordination, monitor adherence to coordinated behaviour and

⁷⁴ Refer to the World LPG Association Annual Report, available at <http://www.wlpga.org/wp-content/uploads/2015/12/WPGA-Annual-Report-2015-16.pdf>

effectively punish any firm part of the collusive agreement but decides to cheat and deviate from the terms of coordination. In other situations, competition may be harmed where information exchanges may lead to market foreclosure or exclusion of other competitors from the market. For instance, potential new entrants may be placed at a significant competitive disadvantage compared to the incumbent competitors involved in an information exchange scheme. There are also situations where the exchange of information harms competition by eliminating the uncertainty and secrecy of behaviour of competitors.

- 5.16. The potential for anti-competitive effects depends on several key factors, like the type of information exchanged and the structural characteristics of the market involved.
- 5.17. For example, the structure of the market and levels of concentration is an important factor in determining how anti-competitive information exchanges are, given that achieving and sustaining collusion is easier in more concentrated markets with few players. The nature of the information exchanged (the information age and level of aggregation) is also important because not all information has the same collusive potential or necessarily has to be exchanged in order for the benefits of increased transparency to be brought to bear. Exchanges of information on future pricing intentions carry the greatest risk to competition while information about costs or demand forecasts has little coordination potential. Past and historical information have a much lesser collusive potential than current or even future information. The level of aggregation is another important factor given that the exchange of disaggregated information has the greatest anticompetitive potential.

Conclusion on industry associations

- 5.18. While industry associations advance the interests of the industry, such as safety and the development of standards, associations can potentially become platforms used to either share commercially sensitive information or exclude market participants.
- 5.19. The Commission will pursue an enforcement route if any such evidence should be disclosed.

6. Recent developments in the LPG sector

- 6.1. Since the commencement of the LPG market inquiry in September 2014, several developments occurred in the LPG sector.

Changes in production

- 6.2. In April 2016, PetroSA issued a statement outlining the company's decision to halt LPG production at its Mossel Bay refinery.⁷⁵ PetroSA attributed this decision to a change in its operating model at the refinery necessary to expand the lifespan of the refinery. The company consequently had to reduce its throughput of gas feedstock into the refinery.

Merger between Easigas (Pty) Ltd and Reatile Gaz (Pty) Ltd⁷⁶

- 6.3. In December 2015, the Commission conditionally approved an intermediate merger between Easigas (Pty) Ltd ("Easigas") and Reatile Gaz (Pty) Ltd ("Reatile"). Both companies are wholesalers of LPG in South Africa and supply the product in both bulk and cylinder form, although Reatile is more active in the supply of bulk LPG.
- 6.4. In its assessment, the Commission found the removal of Reatile from the LPG market could cause in a significant prevention or lessening of competition. Reatile is majority-owned by historically disadvantaged South Africans. After the merger Reatile would be a minority shareholder in the merged entity, which would overall no longer be majority-owned by historically disadvantaged South Africans. The merger represented a dilution of ownership by historically disadvantaged South Africans in the LPG market.
- 6.5. The merger was approved on condition that the merging parties address the public interest concerns by requiring that the Board of Directors and Executive Committee to include a reasonable number of historically disadvantaged South Africans. A further condition required that Reatile must be involved in certain key decisions relevant to competition. This condition sought to mitigate the effects of the removal of Reatile from the LPG market by ensuring that its strategic inputs are incorporated into the merged entity's activities.

⁷⁵ <http://www.iol.co.za/business/news/lpg-shortages-prompt-more-expensive-imports-2007492> accessed on 2016.09.12
⁷⁶ Statement on the decisions of the Competition Commission, 10 December 2015. Available from: <http://www.compcom.co.za/wp-content/uploads/2015/01/Commission-Statement-10-December-2015.pdf>.

Merger between Totalgaz Southern Africa (Pty) Ltd and KayaGas⁷⁷

- 6.6. On 16 February 2016, the Commission conditionally approved a merger between Totalgaz Southern Africa (Pty) Ltd ("Totalgaz") and Kaya Gas (Pty) Ltd ("KayaGas"). Totalgaz and KayaGas are both wholesalers and resellers that supply LPG in bulk and cylinder form. While Totalgaz is active in all provinces in South Africa, KayaGas' operations are predominantly located in the Western Cape, with a limited presence in Gauteng, KwaZulu-Natal and the Eastern Cape.
- 6.7. [REDACTED], and the approval of the transaction would allow some of the assets to be used in the industry. The merger raised competition and public interest concerns.
- 6.8. Concern was raised regarding the impact of the merger on the supply of 5 kg LPG cylinders, being an important source of energy for low-income households in Western Cape townships. [REDACTED], KayaGas had a substantial distribution network through which it supplied LPG directly to spaza shops and retail outlets in low-income areas. The Commission was concerned Totalgaz may not have the incentive to continue to supply LPG in 5 kg cylinders to spaza shops.
- 6.9. The Commission imposed a condition that the merged entity may not withdraw any five kg cylinder stock from the townships in the Western Cape for a period of [REDACTED] years. This will ensure that spaza shops continue to receive LPG supply from Totalgaz.

Implications of the merger for competition

- 6.10. Mergers contributed to market concentration amongst wholesalers. The recent mergers between Easigas/Reatile and Totalgaz/KayaGas resulted in an increase in concentration at the broader wholesale, bulk and cylinder levels of the value chain. The Easigas/Reatile merger saw Easigas' market share increase by [between 0-10%] to [between 30-40%], while the market share accretion following the Totalgaz/KayaGas merger resulted in Totalgaz's market share increasing to [between 10-20%].

77 Totalgaz/KayaGas Merger Filing, Competition Process Report, Case No. 2015Nov0629.

- 6.11. The mergers also reduced the number of competitors in the market; [between 50-70%] of the LPG wholesaler market is now accounted for by Afrox and Easigas, with Oryx and Totalgaz jointly accounting for [about 20-30%]. This leaves approximately one per cent (1%) of the market accounted for by smaller firms.
- 6.12. The increase in market concentration amongst the wholesalers may facilitate an environment conducive to collusive outcomes at the broader wholesale, bulk and cylinder levels of the value chain.

7. Non-Pricing Regulation

- 7.1. Market participants raised the regulatory environment as a key concern. This is due to perceived overlaps amongst different regulators operating in the sector. The perceived lack of regulatory certainty has been cited as a barrier to entry and/or expansion. Aspects like the licensing process and the various safety standards in place were highlighted in this regard.

Overview of regulatory environment

- 7.2. The LPG sector has a myriad of regulations and licensing requirements at different levels of the value chain. To be active at the different levels of the value chain, a firm has to adhere to the relevant regulations and licensing requirements. The main regulatory bodies in the sector are the DoE, the DoL and NERSA. Other bodies like the municipalities also play a role.
- 7.3. Non-pricing regulation covers a broad range of aspects like safety, environmental aspects, licensing and trading. Aspects like the construction and licensing of import facilities are also included. Various regulatory bodies regulate these aspects. Table 9 summarises the different regulators and their mandates in the LPG sector, followed by a detailed discussion.

Table 9: Overview of regulatory environment

Table 9: Overview

Regulator	Regulation mandate	Comments
Department of Energy	Petroleum controller licence, pricing regulation, policy formulation	The DoE is mandated to regulate the buying and selling of petroleum and petroleum products. In addition, the DoE also issues licences across the value chain such as wholesale and retail licences.
National Energy Regulator of South Africa (NERSA)	Tariff applications, LPG storage, handling and construction licences	It should be noted that NERSA is not involved at the retail level.
Transnet National Ports Authority (TNPA)	Port land licencing	Under its mandate, TNPA may also grant licences for the construction of facilities around port confines.
Department of Labour	Occupational health and safety	None

Regulator	Regulation mandate	Comments
Department of Environmental Affairs	Environmental authorisation	The DEA is mandated to conduct EIA studies. Although the Department of Environmental Affairs is largely responsible for EIAs, there are other licences and permits issued outside the DEA that form part of an environmental assessment. This would include, inter alia, water use licences from the Department of Water Affairs, a blasting permit from the Department of Minerals if necessary, and a heritage permit from the South African Heritage Resource Agency.
Municipalities	Emergency Services by-laws	Municipalities are mandated to ensure site plan evaluation and approval prior to installations; dangerous goods certification and general community safety adherence Emergency Services By-laws, 2003 in accordance with their respective municipality by-laws

7.4. Roles of regulators

7.4. The roles of the regulators operating in the sector are outlined:

The Department of Energy ("DoE")

7.5. The DoE is mandated to regulate the buying and selling of petroleum and petroleum products.⁷⁸ This mandate also includes the pricing of petroleum and petroleum products, as stipulated in the Petroleum Products Act. LPG is included within the ambit of the Petroleum Products Act, as petroleum products are defined as "any liquid petroleum fuel and lubricant, whether used or unused".⁷⁹ As both a policymaker and economic regulator for the liquid fuels sector, the DoE is responsible for the drafting, reviewing, implementation, monitoring and enforcement of policies and legislation in pursuance of energy security for the achievement of the country's strategic objectives.⁸⁰

7.6. Some roles outlined in the Energy White Paper Policy include the development of the LPG sector, the transformation of the petroleum sector, ensuring the security

⁷⁸ Petroleum refers to crude oil and petroleum products.

⁷⁹ Information to assist licence applicants to file licence applications in terms of the Petroleum Pipelines Act, Act No. 60 of 2003, dated 1 November 2013.

⁸⁰ Refer to DoE Submission, p2, dated 15 June 2015.

and diversity of petroleum product supply, monitoring LPG supply disruptions along the value chain, and recommending LPG importation conjointly with the International Trade Administration Commission of South Africa. Besides developing the LPG sector, the DoE is mandated to enforce several Acts along with regulating the prices charged at different levels of the value chain. The latter refers to the MRGP regulation of 2008, the MRP regulation of 2010 and wholesale licensing.⁸¹

National Energy Regulator of South Africa ("NERSA")

- 7.7. NERSA's specific mandate in the LPG sector is limited to the approval of applications for construction and operation licenses. It also approves the tariffs for using LPG storage and handling infrastructure. It is granted these mandates under the National Energy Regulator Act, the Petroleum Pipelines Act and the Gas Act.

Transnet National Ports Authority ("TNPA")

- 7.8. The TNPA, under the National Ports Act, may grant concessions to infrastructure developers within port boundaries administered by the TNPA.⁸² The TNPA has 90 cargo terminals countrywide, of which 42 terminals are dedicated to liquid bulk. Not all liquid bulk terminals are exclusively used for LPG. The existing liquid bulk terminals are dominated by the handling of crude oil, petroleum products and other liquid bulk cargoes. The TNPA specifies, as part of the "use of premise" clause and in terms of the terminal operator licence, the "types of liquid bulk" to be handled at each terminal. Further, the TNPA imposes minimum throughput to develop and promote using liquid bulk terminals.⁸³

Department of Labour ("DoL")

- 7.9. The DoL acts as the custodian of the Occupation Health and Safety Act, ("OHS Act") and the Pressure Equipment Regulations of 2009. The OHS Act applies in the LPG sector in terms of the health and safety of a person at work, in general, and in connection with their operation of machinery, in particular. Regarding pressure equipment regulations, the OHS Act applies to the design, manufacture, operation, repair, modification, maintenance, inspection and testing of pressure equipment with a design pressure equal to or greater than 50 kilo Pascal.⁸⁴

⁸¹ Refer to DoE submission, para 2.2, p2, dated 01 June 2015

⁸² Refer to NERSA submission, para 2.1, p3, dated 12 May 2015

⁸³ TNPA model liquid bulk terminal operator licence, para 14.1., dated 14 December 2015

⁸⁴ Refer to DoL submission, para 2.2., dated 19 April 2015

- 7.10. As stated above, the DoL is mandated to regulate equipment pressure to ensure the safe use of LPG.⁸⁵ The schedule of incorporated standards includes SANS 347, 10019, 10087, 1539, 1237 and 329. The DoL also provides guidelines to specific LPG associations to assist them in implementing its mandate. The SAQCC is authorised to register LPG installers, whereas the LPGSASA is authorised to perform the verification and acceptance of all LPG appliances.
- 7.11. The DoL appoints inspectors to undertake the enforcement and monitoring of the OHS Act and its regulation. The duties of these inspectors include gas station audits, physical inspections and ensuring the compliance of stakeholders with the regulations. There have been instances where the DoL imposed penalties for non-compliance amounting to R500 000 of the legal fees accrued.⁸⁶

South African Qualification and Certification Committee ("SAQCC")

- 7.12. The SAQCC is a non-profit company officially appointed and mandated by the DoL to establish a central database of registered and authorised gas practitioners working on gas and gas systems in terms of Regulation 17 (1) of the Pressure Equipment Regulations. The following gas industry bodies founded the SAQCC: the LPGSASA, the Southern Africa Compressed Gases Association, the South African Refrigeration and Air Conditioning Contractors Association and the Southern African Gas Association.⁸⁷ SAQCC Gas's main function in the LPG sector is to register competent installers trained under the LPGSASA ITCC.
- 7.13. Membership is conferred after completing and passing the required theory course for the particular type of installation and then registering as a temporary installer to prepare a portfolio of evidence for full registration with the SAQCC. The temporary installer will undergo a mentorship programme for 12 months. After the installer has compiled a portfolio of evidence under the guidance of a mentor, the SAQCC LPG Committee evaluates the portfolio for registration. Once registration is confirmed, it applies for three years. The SAQCC has 928 accredited installers from the LPGSASA.

⁸⁵ *Ibid.*
⁸⁶ Refer to DoI submission, para 7.5, p2, dated 19 April 2015.
⁸⁷ Retrieved from <http://saqccgas.co.za/> [Accessed: 18 November 2015].

Department of Environmental Affairs ("DEA")

- 7.14 The DEA's role is to develop and ensure implementation of national environmental policies, strategies, plans and laws for key prioritised environmental issues to protect the environment and ensure that developments are sustainable.⁸⁸ The National Environmental Management Act, Act No. 107 of 1998 ("NEMA") is the main legal framework, supported by the specific Environmental Management Acts. Any activity conducted by the LPG sector that poses a specific regulated environmental threat will require a permit, a licence or authorisation from the DEA.
- 7.15. For the LPG sector, the environmental impact assessment ("EIA") process involves the identification, prediction and evaluation of actual and potential impacts on the environment, socio-economic conditions and cultural heritage sites. The process pinpoints risks and consequences along with alternatives and options for the mitigation of environmentally damaging activities, with the intention to minimise the negative impacts, maximising the benefits, and promoting compliance. The assessment is executed under Section 240 of the NEMA, and includes a basic content assessment report, a scoping report and an environmental impact report.⁸⁹

Municipalities

- 7.16. Municipalities participate in the LPG sector through the mandate outlined by the emergency services by-laws⁹⁰, the National Building Regulations and Building Standards Act with the Occupational Health and Safety Act. Its primary role in the LPG sector is to ensure site plan evaluation and approval prior to installations, recommend and process dangerous goods certification where necessary and to ensure the general community safety adherence to Emergency Services By-laws (2003) under with their respective municipality by-laws.⁹¹
- 7.17. Other departments provide supporting roles in the processes undertaken by the regulators listed. These include the Department of Water Affairs and the Department of Mineral Resources.

⁸⁸ Refer to the DEA submission, para 3.1., p1, dated 11 December 2015

⁸⁹ Refer to DEA submission, para 3.1., p1, dated 11 December 2015

⁹⁰ Such as the bylaws related to community safety - City of Cape Town March 2015 submission, p2.

⁹¹ Refer to City of Ekurhuleni March 2015 submission (pp3-7); City of Cape Town March 2015 submission (pp2-7)

- 7.18. The requirements for a wholesale licence include⁹²: (i) The payment of licence fee of R1 000 (ii) The provision of a list of all storage and distribution facilities intended to be used, including shared storage and distribution facilities, and (iii) A business plan outlining investment plans.
- 7.19. The key concern regarding the wholesale licensing process is the requirement for a business plan outline future investment plans in the necessary infrastructure to operate LPG activities. Specifically, market participants argued that many rogue traders do not undertake this investment⁹³ and the DoE does not perform the necessary inspections on businesses after they are granted a license to determine whether or not the investment has taken place.⁹⁴ In some instances, these rogue traders operate without a licence.
- 7.20. Market participants are of the view that the DoE issued several wholesale licences with the bulk of the licensees not having effective operational activities on the ground.
- 7.21. The licence requirements discussed above are meant to reduce barriers to entry for smaller players, however, if not properly monitored and verified after issuing the license, do not sufficiently encourage the level of investment required in the sector.
- 7.22. The Commission also found the holders of DoE wholesale licences owning storage facilities, as defined in the Petroleum Pipelines Act ("PPA"), also require licensing by NERSA. This creates an additional burden to wholesalers to approach multiple regulators that might act as a disincentive to investment. NERSA is also involved in licensing import, loading and storage facilities for market participants including wholesalers. It would appear that these licensing requirements could be housed under one regulator ensuring streamlined services and reduced delays.

92 <http://www.energy.gov.za/files/households/DE-28-Wholesale-Application-form.pdf>

Infrastructure related licensing

7.23. A key concern highlighted by a few market participants is that the regulatory framework in place in the LPG sector acts as an additional “burden” to investors and may be a contributing factor to the lack of investment observed in the sector. This particularly applies to infrastructure licencing because of a high number of regulators involved in the sector that may have overlapping jurisdictions, leading to projects being stalled. For example:✂

7.23.1. The tariff approved by NERSA as part of its mandate to grant construction and operating licences does not constitute an element in the MRGP pricing build-up calculated by the DoE.

7.23.2. The TNPA may grant concessions to infrastructure developers within port boundaries administered by the TNPA. These concessions may conflict with the tariffs approved by NERSA in its licensing applications, leading to the projects being stalled due to a mismatch between the two regulators.

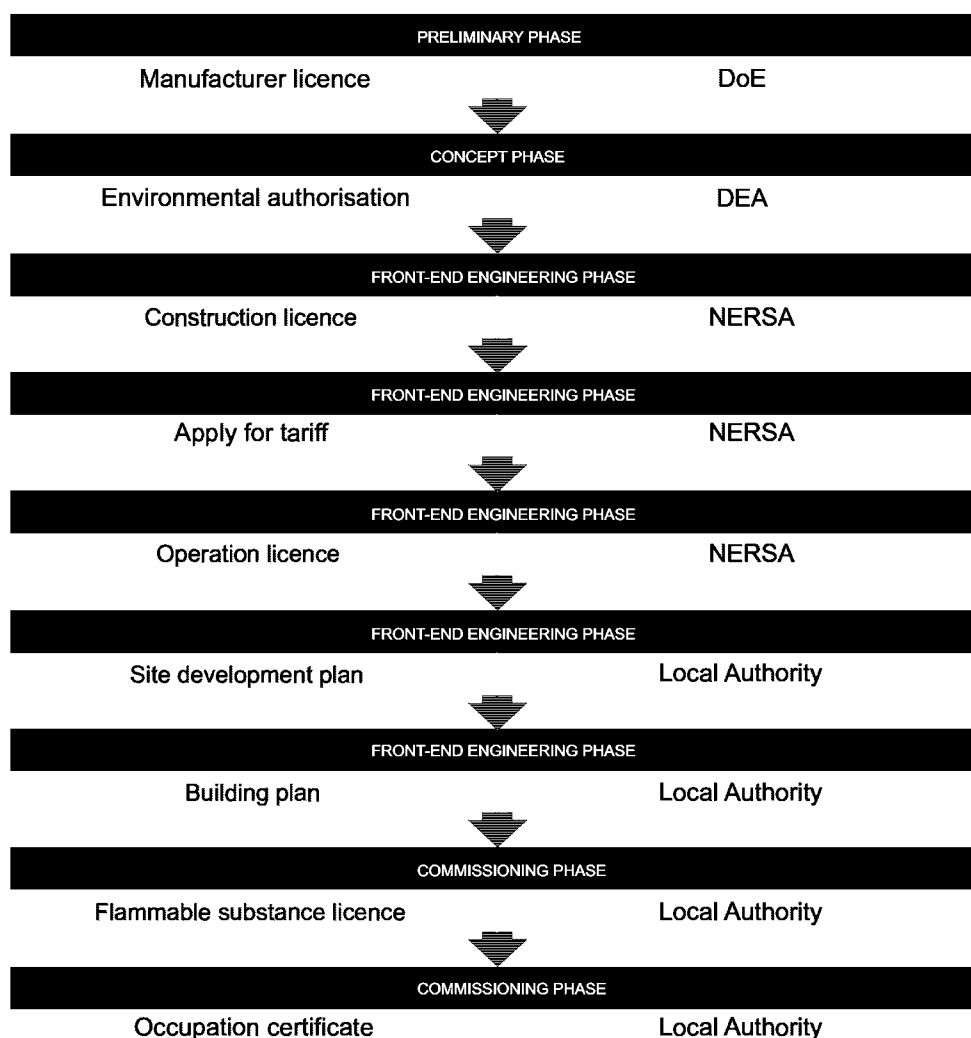
7.24. ✂ states, even though the sector is subject to many regulations, these regulations “do not create an insurmountable barrier to entry” as all market participants are subject to them.✂ Notwithstanding ✂ view, the Commission considers the overlapping jurisdictions as a potential barrier to entry.

Licensing and regulatory clearance process

7.25. Several market participants alluded to the time it takes to acquire key licences and regulatory clearance (particularly for operating licences across the value chain) as a potential barrier to entry.

7.26. The Commission estimated where a manufacturing licence is required, it could take up to 46 months to obtain regulatory clearance through all the licences and permits required for LPG manufacturers. Figure 18 provides an illustrative example of the steps required to obtain a manufacturing licence.

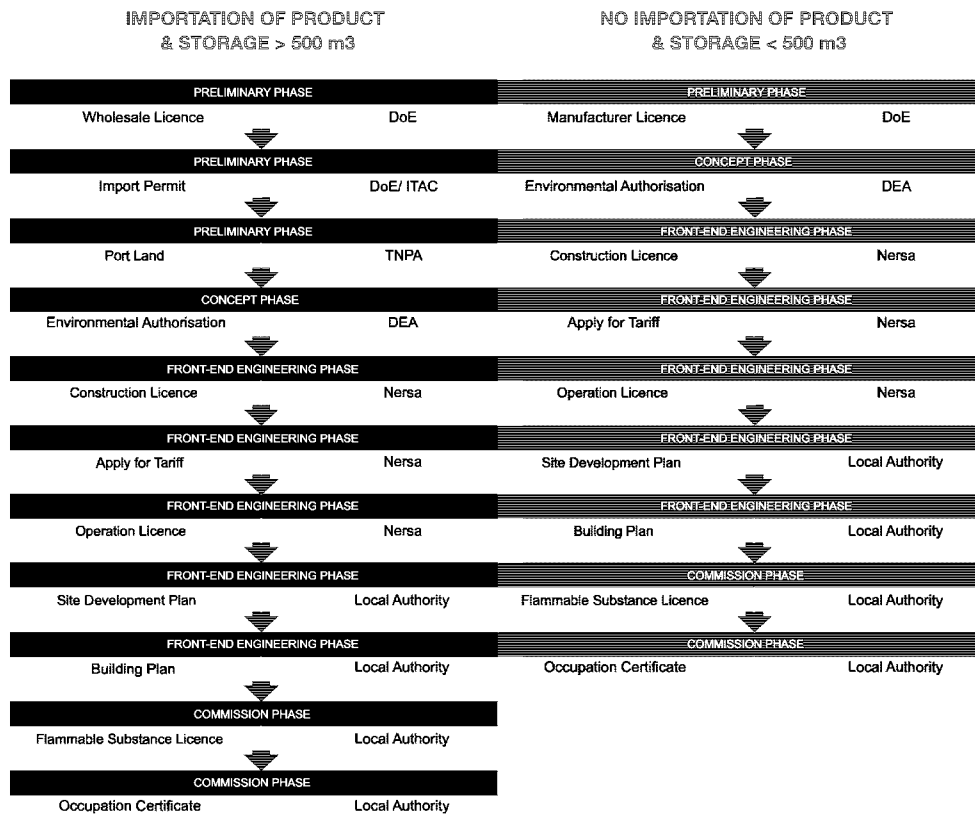
Figure 18: Multi-regulatory compliance process for a wholesaler



- 7.27. A wholesale licence and an import permit are critical for wholesalers to operate effectively in this sector. Figure 19 depicts the process that a wholesaler has to follow to be licensed.

Figure 19: Application for Import Licence

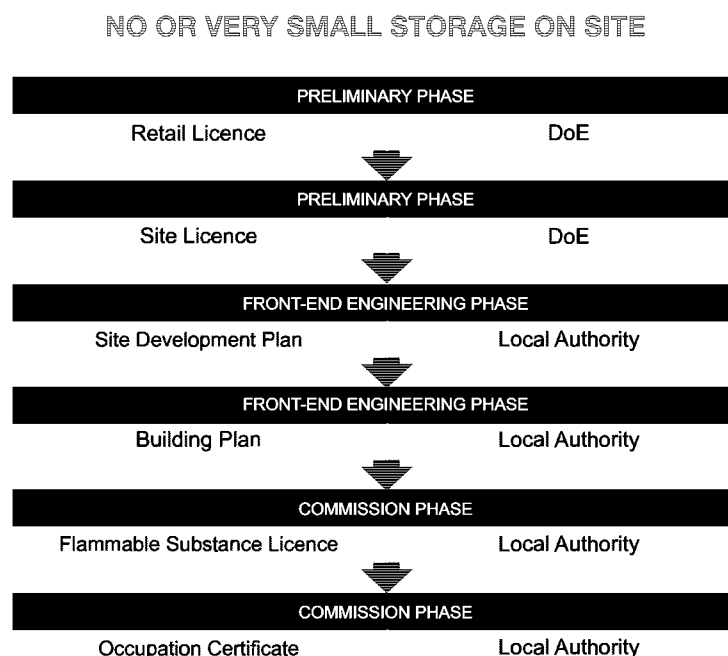
Figure 20: Application for Retail Licence



7.28. The Commission estimates that it can take over three years for a wholesaler to start operating from scratch, as heavy administration and long reviews hinder the process.

7.29. A retail licence applicant will face a significantly reduced infrastructure scale. Consequently, a shorter timeline is required to start operating as a retailer. The Commission estimates if all procedural matters were handled within the statutory periods, a retail licence applicant with a very small storage on site could be operational within seven months of submitting its application. Figure 20 depicts the application procedure for a licence and permits for potential LPG retailers.

Figure 40: Multi-regulatory process for the importation and distribution of LPG for vehicles



Regulatory Overlaps and Misalignment

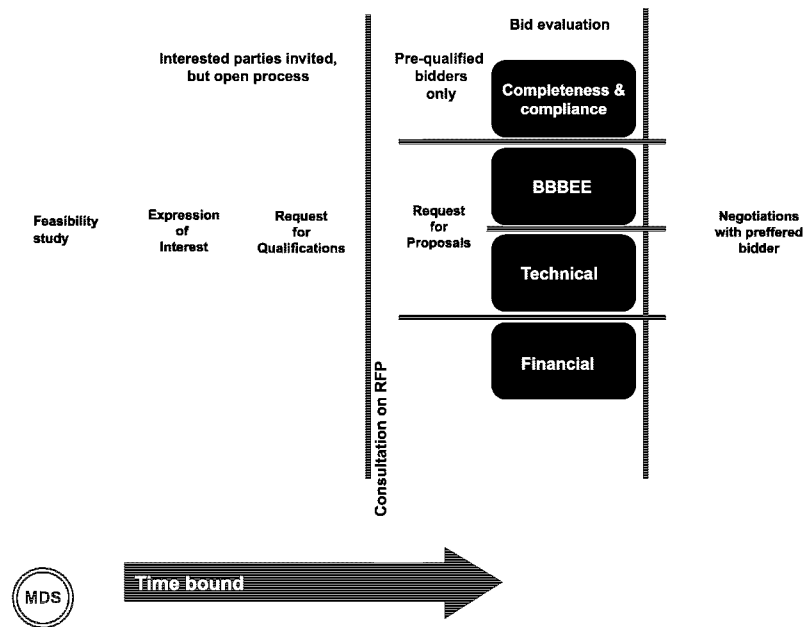
- 7.30. The Commission examined the extent to which the LPG sector is marred with regulatory overlaps and misalignment of regulations given the numerous regulatory authorities mandated to operate in the sector. There are several overlaps particularly related to infrastructure development. These overlaps and misalignments contribute to regulatory uncertainty, threaten security of supply and act as a bottleneck for expansion and growth of the LPG sector.
- 7.31. The Commission obtained the views of the relevant regulatory authorities on the perceived regulatory overlaps in the LPG sector. The DoE believes that the current legislative and regulatory frame is clear and there are no overlaps with any other government body for implementing its policy.⁹³
- 7.32. There is an overlap with the activities of NERSA, in its enforcement of the National Energy Regulator Act, the Petroleum Pipelines Act, and the Gas Act and the legislation governing the activities of the TNPA. The sequencing of approvals in the importation process is not aligned, throwing the application process into disarray.

⁹³ Refer to DoE submission, para 2.3.2., p4, dated 01 June 2016

- 7.33. The National Ports Act empowers the TNPA to own, manage, control and administer ports to ensure their efficient, economic, safe and secure functioning. The regulatory functions of the TNPA are performed in the exercise of its control over port facilities, port services and other activities in the ports. The TNPA enters lease agreements with users of ports and issues licences and permits.
- 7.34. In terms of Section 56 (1) of the National Ports Act, the TNPA:
"... may enter into an agreement with any person in terms of which that person, for the period and in accordance with the terms and conditions of the agreement, is authorised to— design, construct, rehabilitate, develop, finance, maintain or operate a port terminal or port facility, or provide services relating thereto; ..."
- 7.35. The Petroleum Pipelines Act empowers NERSA to issue licences for the construction and operation of petroleum pipelines, petroleum storage facilities and petroleum marine loading facilities. The Petroleum Pipelines Act also instructs NERSA to set tariffs to be charged for using petroleum pipelines as well as approve tariffs to be charged for the use of petroleum storage facilities and petroleum marine loading facilities. 'Petroleum' is defined in the Petroleum Pipelines Act to include LPG.
- 7.36. Where the TNPA enters a Section 56(1) agreement with another entity for the latter to design, construct, rehabilitate, develop, finance, maintain or operate a port terminal or port facility, where the facility in question is a petroleum pipeline, storage facility or loading facility, the owner of such a facility (this could either be the TNPA or the other entity, depending on the agreement) will have to apply for a construction licence and an operation licence before such construction or operation can commence.
- 7.37. A NERSA licence recipient is prohibited by the Petroleum Pipelines Act from charging a tariff for using the facility other than that approved or set by NERSA. The NERSA tariff is a crucial element to consider when decisions on investment in petroleum facilities in ports are made.
- 7.38. Parties to these types of agreements must be mindful of Section 34 of the Petroleum Pipelines Act according to which any agreement that contravenes its provisions, conditions of a licence issued by NERSA, regulation, rule or directive issued under the Petroleum Pipelines Act, is void. Any agreement entered by the TNPA in terms of the Ports Act, must – if it involves the construction and operation of a port facility subject to regulation under the Petroleum Pipelines Act comply with the Petroleum Pipelines Act.

- 7.39. In terms of the National Ports Act, the TNPA may grant concessions to infrastructure developers within the port boundaries administered by the TNPA. The Transnet Board has decided that all such concessions endure for a period of 20 years. The infrastructure developed at ports requires licensing under the Petroleum Products Act, with an element of overlapping jurisdiction. There are instances in which the TNPA has granted 20-year concessions through bidding rounds where the tariff to be charged was not part of the bidding process. TNPA focussed on the rent it could earn and when NERSA had to approve the tariffs, some of the tariff levels failed to meet investor expectation leading to projects being stalled.
- 7.40. There is also a mismatch between TNPA 20 year concession agreements and the Petroleum Pipelines Act regulations where the former incentivises recoupment in 20 years whereas the Petroleum Pipelines Act regulations only allow depreciation over the useful life of the asset. In most cases, the assets concerned have a useful life of longer than 20 years. NERSA licences are valid for 25 years in terms of the Petroleum Pipelines Act as opposed to TNPA's 20 year concessions. This misalignment can become a tariff issue, since the period to recover the investment differs. Each authority has its own licensing process and the sequencing of applications is important. Investors/developers ultimately need regulatory certainty.✂
- 7.41. Similarly, [✂] identified that the infrastructure developments for LPG require licensing under the Petroleum Products Act, leading to a jurisdictional overlap with NERSA. Section 56 of the National Ports Act outlines the concession process that needs to be followed by the TNPA for infrastructure developments. Figure 21 outlines the process.

Figure 27: TNPA tendering process



Source: TNPA September 2015 submission

- 7.42. The TNPA estimates the process in Section 56 should take three months. There are overlaps in the application process, as NERSA is mandated to approve import licences within 30 days, whilst the internal process of the TNPA may take up to 90 days.
- 7.43. In summary, the process is designed such that NERSA issues the licence and the TNPA is supposed to implement the recommendations. Due to a misalignment, the TNPA and NERSA processes deviate from each other, in that the TNPA confers terminals following a tender-based process, whereas NERSA issues licences following an application-based process.
- 7.44. The Commission found evidence of regulatory overlaps in the LPG sector. These overlaps in regulation may serve to increase regulatory uncertainty for potential entrants, as entering the industry would require approval from two or more authorities whose processes may be at odds with one another. Diagram 1 provides an illustrative example of the effect of these regulatory overlaps, based on observations made at the Saldanha Bay import facility developments.

Example of regulatory failure leading to significant delays

- 7.45. In 2010, the TNPA issued an invitation to interested parties to submit an expression of interest ("EOI") for the funding, construction, installation, maintenance and operation of an LPG import facility at Saldanha Bay.⁹⁴ Avedia and Sunrise each submitted an EOI.⁹⁵ Thereafter, in December 2010, the TNPA issued a request for proposals ("RFP"), which was subsequently amended and re-issued in February 2011. In June 2011, Sunrise re-submitted its proposal to the TNPA for constructing the loading facility, comprising a central buoy mooring located offshore, which was to be connected to an undersea pipeline and LPG storage facility. This was done after Sunrise obtained a licence⁹⁶ from NERSA on 23 February 2011. Avedia did not submit a proposal, and it was only granted the two licences⁹⁷ by NERSA on 1 July 2014.

94 See Case No. 8267/2015

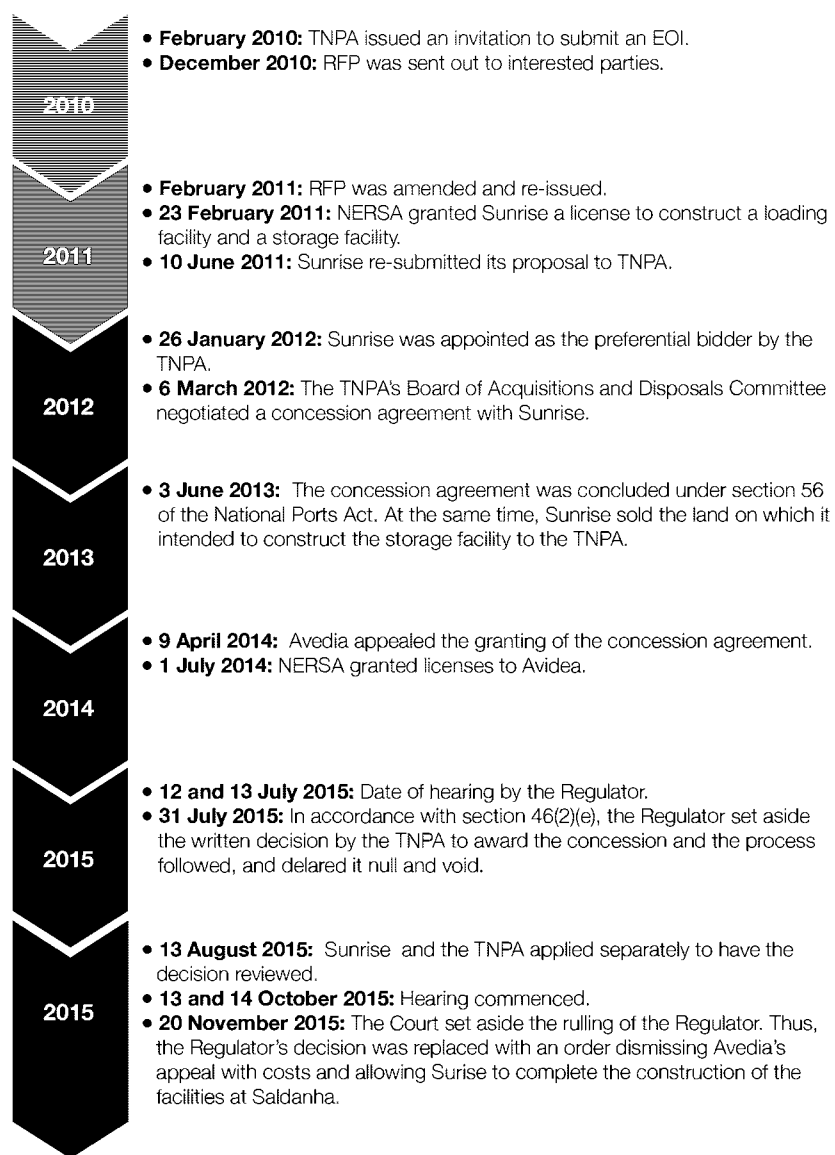
95 See Case No. 8267/2015

96 To construct a loading facility and a storage facility at the Port of Saldanha Bay

97 The first licence was for the construction of a petroleum storage facility and second licence was for the construction of a petroleum pipeline.

7.46. Diagram 1 highlights some of the issues that resulted in the construction delays at Saldanha.

Diagram 1: Timeline involving the construction of the Saldanha Port facilities



- 7.47. In January 2012, the TNPA announced that Sunrise was the preferred bidder. As indicated in Diagram 1, Avedia did not submit a proposal, since its business model did not cater for such a process; rather, it operated based on the "build, own, operate, transfer" ("BOOT") model.⁹⁸ Avedia did not intend to construct a berthing facility. It had intended building an LPG storage facility near the port.⁹⁹
- 7.48. On 3 June 2013, TNPA awarded an exclusive tender (concession agreement) to Sunrise based on the process outlined in Section 56 of the Ports Act. At the same time, Sunrise sold the land on which it intended to construct the storage facility to the TNPA, and NERSA amended Sunrise's construction licence.
- 7.49. In opposition to the awarding of the concession agreement, Avedia complained that the exclusivity agreement signed by Sunrise and TNPA constrained any other market players that wanted to establish operations at Saldanha's port terminal. In effect, it maintained that, this import facility was destined to operate as a regulated import terminal monopoly. Avedia appealed to have Sunrise's terminal operating licence set aside by the Port Regulator, based on Sections 20(1)(e), (j), (k), (l) and (n) of the Petroleum Pipelines Act, under which common user access was allowed to the loading facility and pipeline in addition to uncommitted capacity for storage facilities, interconnection with the facilities of other licensees based on technical feasibility and costs paid by the user. Considering this, the Port Regulator found that the Section 56 concession TPNA had granted to Sunrise contravened the National Ports Act and the Petroleum Pipelines Act, and declared their agreement null and void. Consequently, Sunrise had to delay its construction process at Saldanha.
- 7.50. In August 2015, Sunrise and the TNPA separately applied for the Port Regulator's decision to be reviewed by the High Court of South Africa ("the Court"). The Court found that the Port Regulator had failed to apply the principles of interpretation to interpret the meaning of 'port user' in the National Ports Act.¹⁰⁰ The Court noted that the Port Regulator was not supposed to have considered Avedia's licences in its ruling, as NERSA only granted Avedia the licences after the ruling had been delivered. The issue of where the inter-connection was to take place was to be dealt with by NERSA in the exercise of its mediation and/or arbitration powers. Avedia was unaffected by the concession agreement concluded as it had not competed in the relevant tender process and NERSA had not granted any licences at the time. In light of the above, the Court dismissed the ruling of the Port Regulator and ruled in favour of Sunrise and the TNPA on 20 September 2016.¹⁰¹

98 The BOOT model entails that at the end of the project, the operator is obliged to hand over a fully functional and operating service to the State.
99 See Case No. 8267/2015.
100 See Case No. 8267/2015.
101 *Ibid.*

Key lessons emanating from the Saldanha Bay experience

- 7.51. The Saldanha Bay import facility developments illustrates the impact of the regulatory barriers and the lack of synchronisation of the TNPA and NERSA processes which led to protracted legal challenges. Due to legal challenges, it has taken almost seven years for the Sunrise port terminal development in Saldanha Bay to be completed. This indicates that the bidding process can be lengthy and can lead to delays in constructing port terminals. In addition, it appears that the regulatory hurdles create an environment not conducive to the effective and efficient construction of an import terminal and/or loading facilities. The necessary processes are not synchronised amongst the regulators in terms of jurisdictions and this creates uncertainty in the market. This matter requires immediate intervention to resolve the challenges highlighted above.

Regulatory overlaps in cylinder management

- 7.52. The Commission also considered the extent to which there may be perceived regulatory overlaps in the governing and monitoring of aspects relating to safety in the LPG sector. In particular, the Commission received several submissions expressing confusion about the relevant body mandated to monitor safety in the management of cylinders.
- 7.53. The DoL believes its mandate is clear as it concerns itself strictly with the safety of persons using LPG. In the DoL's view, concerns arising from safety issues in the sector do not necessarily require the intervention of only the DoL but that of all the stakeholders involved. The DoE stated there has been a perceived misinterpretation of the role of the DoE in cylinder management safety due to its promulgation of the cylinder deposit. To identify any complexities that might arise from the matter, the DoL (primarily responsible for cylinder management safety), has a strategic consultation with the DoE every quarter about cylinder management and other policy considerations.
- 7.54. The DoL provided an example of such a consultation by referring to a *le kgotla* organised in September 2015 to identify matters around the safe handling, storage, distribution and maintenance of LPG cylinders.

*Commitment for action**Wholesale licensing*

- 7.55. Holders of DoE wholesale licences owning storage facilities as defined in the Petroleum Pipelines Act also require licencing by NERSA. This creates an additional burden to wholesalers to approach multiple regulators that might act as a disincentive to investment. NERSA is also involved in licensing import, loading and storage facilities for market participants including wholesalers.

Infrastructure licensing

- 7.56. The LPG sector is fraught with a myriad of regulators, regulations and licensing requirements at different levels of the value chain. The regulatory environment is acting as an additional “burden” for investors. This is attributed to the high number of regulators involved in the sector that may have overlapping jurisdictions, leading to projects being stalled.⁸¹ The stalling in the development of the much-needed import facilities provides an example of regulatory failure.
- 7.57. The misalignment in the duration of the TNPA concessions (20 years) and the NERSA licences (usually valid for 25 years) creates uncertainty for investors. In addition, TNPA could award a concession to a licensee and NERSA could refuse to grant the winner a licence to operate the facility. There are no existing legislative means to resolve such an impasse.
- 7.58. The length of time required to acquire key licences and pass all the necessary regulatory clearances is also found to act as a potential barrier to entry. The lack of effective monitoring by the regulators acts as a hurdle in the development and growth of the LPG sector.

Recommendations

7.59. The Commission recommends the following:

- 7.59.1. NERSA must be the regulator responsible for issuing wholesale licences and the monitoring thereof. NERSA is also involved in licensing import, loading and storage facilities for market participants including wholesalers.
- 7.59.2. NERSA and the TNPA's adjudication processes should be aligned to avoid delays in the construction of import and storage facilities and resolve the issues identified. As an MOU has been signed between the two entities, the Commission recommends that it be used as a mechanism to give effect to this recommendation. In addition, there should also be a sequencing of legal processes.

8. Pricing Regulation

- 8.1. The regulatory environment was identified as a feature of the LPG sector that may be lessening or substantially preventing competition. This section will focus on issues associated with the pricing regulation framework.
- 8.2. The pricing regulation pertains to the MRGP along with the MRP. The DoE, through its mandated role to regulate the buying and selling of petroleum and petroleum products, regulates both prices.¹⁰²
- 8.3. Two levels of the value chain are subject to price regulation. The first is the refinery level, where LPG is sold from the refinery gate by producers at a regulated maximum price determined by the DoE. The second level of the value chain subject to price regulation is the retail level, where the DoE also regulates the price of LPG sold through cylinders.
- 8.4. The rationale for the regulation of prices in the LPG sector is found in the "White Paper on Energy Policy" wherein it is stated that the price regulation of LPG will achieve the following objectives:¹⁰³
 - 8.4.1. Make LPG more accessible to all lower income groups.
 - 8.4.2. Make the price more attractive to all income groups.
 - 8.4.3. Encourage using LPG as an alternative energy source to electricity.
 - 8.4.4. Give opportunities for the establishment of more BEE companies in LPG and the creation of employment opportunities.

Maximum refinery gate price (MRGP)

- 8.5. The DoE submitted that the rationale for implementing the MRGP was to ensure "LPG is properly priced and aligned to the strategic thrust of the DoE to ensure security of energy through diversification of energy resources with LPG being a significant part of the energy mix".¹⁰⁴

¹⁰² This is as per the Petroleum Products Act (1977), which stipulates that the DoE may regulate the prices of petroleum and petroleum products. LPG is therefore included within the ambit of this act, as petroleum products are defined as "any liquid petroleum fuel and lubricant, whether used or unused".

¹⁰³ Refer to DoE submission, response to q3.2, p5 (01 June 2015).

¹⁰⁴ Refer to DoE submission, response to q3.2, p5 (01 June 2015).

- 8.6. The regulation of the MRGP is based on the principle that LPG mainly comprises propane and butane, which can be used to produce more valuable and profitable petroleum products in the refinery process. The price of LPG is derived from the 93 octane basic fuel price ("BFP") minus a discount of R74 per metric ton. The MRGP is an LPG equivalent of the BFP applied to petrol and diesel. Table 10 reflects the price calculated.¹⁰⁵

Table 10: Example of MRGP calculation for August 2016

August 2016		
BFP of 93 octane and LRP	The average basic fuel price of 93 octane LRP expressed in South African cents per litre for the month preceding the price adjustment	R4.96970 per litre
Convert to price in rands per metric ton	This is achieved by dividing by a density factor of 0.75 and multiplying by 1 000.	$(6.4465 \div 0.75) \times 1000 = R6\ 626.267$ per ton
Less R74.00 per metric ton	This is the discount factor applied by the DoE.	$6\ 626.267 - 74.00 = R6\ 552.267$ per ton
Convert to price in cents per litre	This is achieved by multiplying by a density factor of 0.555 and dividing by 10. ¹⁷⁰	$(6\ 552.267 \times 0.555) \div 10 = 363.65c/l$
Equals		MRGP

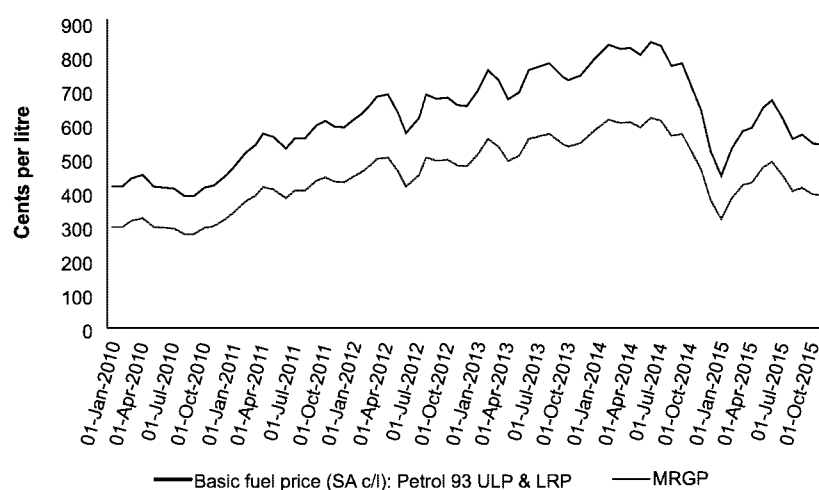
Source: *Working Rules to set monthly maximum retail price for liquefied petroleum gas (LPG)*, Department of Energy (2010)

- 8.7. As demonstrated above, the base price of MRGP is derived from the BFP. The BFP is based on the import parity principle, which determines, for example, what it would cost a South African importer of petrol to buy petrol from an international refinery. Factors influencing this price include international crude oil prices, international demand and supply, product inventory levels, geo-politics, the Rand/Dollar exchange rate, international refining margins and seasonality.¹⁰⁶

¹⁰⁵ www.energy.gov.za/files/policies/WORKING_RULES_2010.pdf [accessed: 11 September 2014]

- 8.8. Diagrammatically, the MRGP generally lies below the BFP, given the subtraction of the discount factor attributed to LPG. The price differential between BFP and MRGP is displayed in Figure 22. The calculated price differential between the MRGP and the BFP is 26%, constant throughout the sample period displayed. In general, the MRGP is lower than the BFP; this might be attributable to the higher economic value of petrol relative to LPG, which then lowers the incentive to produce LPG.

Figure 22 Price differential between BFP and MRGP (2010-2015)



Source: The Department of Minerals and Energy and Central Energy Fund Group, Commission's own calculation, 2015.

Maximum retail price

- 8.9. In 2010, the DoE embarked on a mission to regulate the maximum retail price ("MRP") of LPG supplied to residential consumers following a public outcry because of the high prices. The maximum retail price can be defined as *"the price of LPG as per prescripts of the Regulation in respect of the Refinery Gate Price of Liquefied Petroleum Gas, Regulation No. 1029 of 31 July 2002 or its successors"*.¹⁰⁶
- 8.10. The Petroleum Products Act stipulates that any person selling LPG from any outlet to a customer is required to do so at a price that is equal to or less than the MRP of LPG.¹⁰⁷ The MRP of LPG is calculated as the sum of the following factors:

¹⁰⁶ Discussion document on the review of the maximum refinery gate price of liquefied petroleum gas, 2012, Department of Energy, Notice 866.
¹⁰⁷ *ibid.*

- 8.10.1. MRGP.
 - 8.10.2. Reasonable costs associated with transport from the nearest coastal refinery to LPG filling plants.
 - 8.10.3. A margin determined from costs associated with the marketing and wholesaling of LPG.
 - 8.10.4. A margin determined from costs associated with the filling and retailing of LPG.
 - 8.10.5. Reasonable costs associated with the distribution of LPG from the cylinder-filling plant to the residential customer.
- 8.11. The rationale behind the costs used to calculate the MRP of LPG is as follows:
- 8.11.1. Transport. The costs contemplated in the above calculation must be based on the most economic and available mode of transport as published on the DoE website for all LPG pricing zones.¹⁰⁸ Road tankers can typically convey 22 to 26 tonnes per trip, and the lowest economies of delivery are achieved when the full load can be discharged into the storage vessel. The majority of LPG filling sites receive LPG via road delivery.
 - 8.11.2. Storage. Costs of storage are based on the size of the delivery received. For the lowest road distribution costs, this requires the storage to be sized within a range of 22 to 26 tonnes, with some reserve margin. Additionally, a pre-determined number of days of stockholding and the financing costs thereof are included.
 - 8.11.3. Operating and maintenance costs. The costs are based on industry average costs submitted by LPG licensees to the DoE in line with the LPG Regulatory Accounts Manual requirements. Costs are reviewed at least once per annum in consultation with the LPG sector.

¹⁰⁸ 'LPG pricing zone' refers to magisterial districts with similar transport costs from the nearest coastal refinery or designated port of entry grouped into magisterial district zones.

8.11.4. Distribution costs. These are based on road freight rate assessments of the Road Freight Association over a 20-kilometre radius from the filling plant.

8.11.5. Margins. The margins used to calculate the MRP must cover all reasonable costs associated with the storage of LPG, the respective operation, the maintenance of the facilities associated with the respective operation, and capital costs, including a reasonable return for the cylinder-filling plant. The DOE has stated that it will determine and set the margins based on data provided by the licensees and that it will publish guidelines relating to the provision of such data by the licensees.

8.12. Table 11 provides an example of how the MRP is calculated.

Table 11: Example of MRP calculation for a cylinder-filling plant

MRGP	In c/ kg	707.33
Plus primary transport costs (zone differential)	8As per schedule from the DME. This will differ from zone to zone. In Gauteng (Zone 09C), for example, since 14 July 2010 until the time of the writing of this report, this is equal to 175.96c/kg for bulk tankers of 22 to 26mt. ¹⁷⁵	175.96
Plus operating expenses	<p>For a cylinder-filling plant with a capacity of 35 000 kg/month, the following operating expenses will be allowed:</p> <p>Personnel expenditure:</p> <p>Manager: R25 000</p> <p>Admin staff: R16 000</p> <p>Plant operator: R3 800</p> <p>Driver: R9 600</p> <p>Handlers: R7 600</p> <p>Secretary: R3 800</p> <p>Company contribution (pension and medical aid): R9 300</p> <p>Other overheads: R45 000</p> <p>Total: R120 100</p> <p>Cost per kg = 12 010 000 ÷ 35 000 = 343.14 c/kg</p>	343.14

¹⁷⁵ Department of Energy (2010). "Magisterial District Zone Differentials", available at www.energy.gov.za/files/oscarcos/petroleum/April-2014/Transport-Cost-effective-from-C2-Apr-2014.xls accessed on 22 June 2015

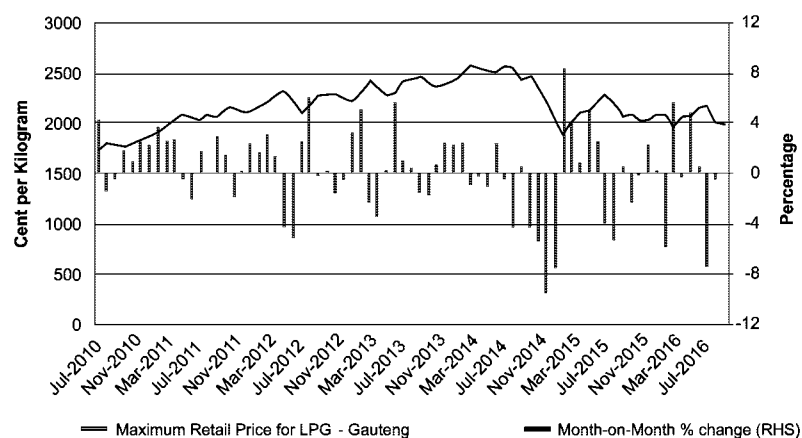
MRGP	In c/ kg	707.33
	Trade debtors for a period of 45 days: 20c/kg	
Plus working capital	Stock costs (10 days): 6c/kg	26
	Total 26.00c/kg	
Plus depreciation	Calculated over a ten-year period.	126
	Total assets-land ÷ 10 ÷ 12 ÷ 35 000 = 126.00c/kg	
	The following allowable assets for a 35 000 kg cylinder-filling plant will be included to determine the gross margin:	
	Asset value:	
	Site: R1 050 000	
	Building R2 100 000	
	Plant R400 000	
Plus gross margin: cylinder-filling plant	9 kg cylinders: 6200 x 330 = R2 046 000	160.93
	19 kg cylinders: 1658 x 500 = R829 000	
	48 kg cylinders: 730 x 800 = R584 000	
	Vehicles: R800 000	
	Less deposits: 8 588 x 150 = R1 459 960	
	= R6 349 040	
	ROA (wholesale margin): R6 759 000 ÷ 10 ÷ 12 ÷ 35 000 = 160.93c/kg	
Equals	Subtotal (1)	1539.36
Plus retail margin	15% of subtotal (1)	230.9045
Equals	Subtotal (2)	1770.2678
Plus VAT	14% of subtotal (2)	247.837
Equals	Maximum retail price (rounded to full cent)	2018c/kg

Source: Working rules to set the maximum retail price for LPG¹¹⁰

- 8.13. Figure 23 shows the MRP for the Gauteng zone for the period July 2010 to July 2016. The MRP in October 2015 was 18% higher than the July 2010 price. The maximum realised MRP in the sample period was 2559c/kg the July 2014. The price declined in line with international oil prices and associated local costs like transport and handling costs.

¹¹⁰ South African Petroleum Industry Association (2010). Available at: http://www.sapia.co.za/pdfs/legislation/workingrules_jpg_2010July.pdf, retrieved on 24 November 2015.

Figure 23: Maximum Retail Price for LPG - Gauteng (2010 - 2016)

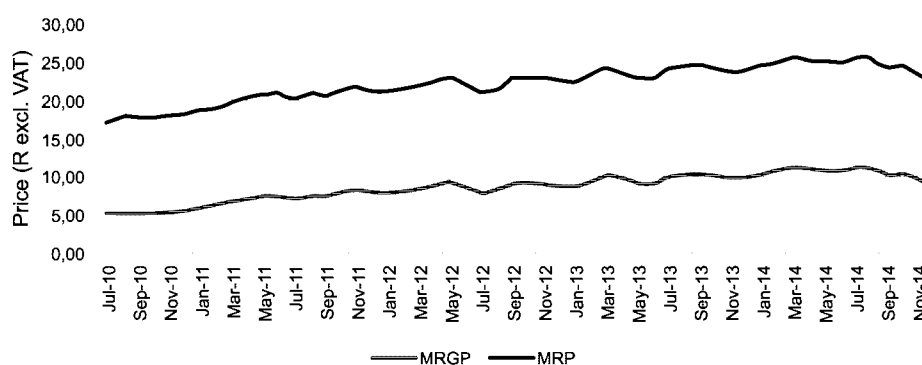


Source: Department of Energy (2016)

Table 10: MRP and MRGP for LPG

8.14. Figure 24 shows the MRP and MRGP differentials. Refineries sell LPG at MRGP which is 2.5 times than MRP.

Figure 24: MRP and MRGP for LPG (2010 - 2014)



Source: Commission's calculations¹¹¹

¹¹¹ Wholesalers include Airox, Esigas, Oryx, Totalgas and Bontillo. Prices exclude VAT.

Concerns with the current pricing structure of LPG in South Africa

- 8.15. Market participants stated the current pricing structure does not support the growth of LPG use in South Africa. They raised concerns regarding both the current MRGP and MRP. The following paragraphs provide a detailed discussion of these concerns.

The lack of incentives provided by the MRGP

- 8.16. Market participants have stated that the MRGP is not reflective of: (i) Local demand and supply factors; and (ii) The costs of importing LPG into South Africa. The MRGP does not commercially incentivise refineries to maximise their production of LPG.
- 8.17. Several concerns were raised on the suitability of the current pricing regime regarding its ability to stimulate growth of the market. As regards supply constraints, several issues were raised regarding the use of the molecules (propane and butane), seasonality, and the ability to import LPG and to produce it locally.
- 8.18. In terms of propane and butane, it was noted that the current MRGP is set well below the alternative value of these molecules. The MRGP is set at a level that encourages refineries to divert these molecules to other petroleum products. For instance, propane can be used as a feedstock for a propane cracker unit to produce ethylene and butane. LPG producers may find it more profitable to use propane for the production of these highly valued products rather than as a component of petrol and diesel.
- 8.19. Seasonal changes also influence the decision whether to produce LPG. During the winter months, local fuel specifications enable refineries to blend higher ratios of butane into petrol. Given that the value and profitability of petrol are higher than those of LPG, the MRGP does not provide the LPG producers with an incentive to produce more LPG.

- 8.20. In addition, the MRGP is based on 93 octane movements within the basic fuels price (BFP) mechanism, whereas the import price for LPG is based on Saudi Arabian prices. Given the international market is dominated by Saudi Arabia (it is the largest producer of LPG) and that 50% of LPG traded the world over is directly or indirectly priced relative to the Saudi contract price ("Saudi CP"), LPG producers suggest that the MRGP should be based on import parity pricing principles allowing for the MRGP to track the Saudi CP. LPG producers suggest this could have the added benefit of encouraging importing LPG, particularly given that South Africa is a net importer of LPG.¹¹²
- 8.21. The DoE stated, the MRGP has little influence on the market participants' ability to import LPG competitively and efficiently. Market participants are not in a position to import large volumes of LPG yet; the price paid for a small tank will be high. This is further expanded in Section 9.

Charges above MRGP

- 8.22. The Commission received submissions from [redacted] and an LPG distributor with the alias "Joe Soap"¹¹³ to the effect that [redacted] was charging above the set maximum refinery gate price. The Commission analysed the pricing data provided by LPG producers to assess if producers were indeed charging above the MRGP. Both [redacted] and [redacted] were found to have charged above MRGP at certain points in time.
- 8.23. The Commission's analysis showed that [redacted] had charged above the MRGP in the months of July 2010, August 2010 and January 2011. When questioned about these instances, [redacted] explained:¹¹⁴

The discrepancies in [redacted] sales data arose in months where a sale was recorded in [redacted] accounts in a different month from when the transaction was concluded. Where this happened the sales data compares the sale price to the wrong month's MRGP. There are various causes for this phenomenon: a sale may be concluded in one month but the product be collected in the next month or over an extended period of time; there may also be a delay before the transaction is recorded in [redacted] accounts; and there may be credit or debit notes pertaining to corrections (for instance, to reconcile the volume sold and the actual volume collected) that result in adjustments to the sales price.

112 Refer to Sasol Oil, Engen and Oxywren March 2015 submissions.

113 Refer to August 2014 emails sent by Joe Soap.

114 Refer to email by [redacted] to LPG market inquiry team, dated 18/09/2015.

- 8.24. [X] provided evidence of the premium charged by [X] revealing that the surcharge charged above the MRGP was charged per ton and consisted of: (i) Transport differentials; (ii) An administration fee; and (iii) A gantry fee. [X] When questioned about its reasons for charging above the MRGP, [X] referred the Commission to *Government Gazette R377 (the "Notice")*¹¹⁵ paragraph 1.3, stating:

"Refinery gate price" means the maximum price (excluding any inland transport cost values referred to in paragraph 4) at which a refinery shall be permitted to market those quantities of its production of LPGas which are intended for consumption within the Republic of South Africa, whether such transactions are by means of sales invoiced to another organisation or by transfer pricing between the refining division and another division of the company which owns the refinery.

- 8.25. Paragraph 4 of the Notice states:

It is noted that whilst this refinery gate price (which is determined on the basis of average import values at coast) will apply to all refineries, the price of LPGas supplied from refineries situated inland [i.e. the National Petroleum Refiners (Pty) Ltd (Natref) at Sasolburg (jointly owned by Sasol Oil (Pty) Ltd and Total SA (Pty) Ltd) and Sasol Synthetic Fuels (Pty) Ltd at Secunda] may be increased by the transport cost factor equal to the cost of transporting LPGas from the coast port to the applicable inland destination or manufacturing facility.

- 8.26. The Notice clearly stipulates that inland refineries have scope to charge above the MRGP. The DoE explained to the Commission that this exception does not apply only to LPG but to other petroleum products as well. They further submitted that the rationale behind such an exception was linked to the inland refineries incurring an additional cost to transport crude oil from the coast to their refineries and have to be duly compensated.

¹¹⁵ The Department of Minerals and Energy (2008), *Regulation in respect of the Maximum Refinery Gate Price of Liquefied Petroleum Gas*, Government Gazette No. 13077

- 8.27. The Commission notes this reason may be applied where an inland refinery produces LPG using the crude oil approach. Sasol Oil has adopted the CTL approach, meaning that LPG is produced from coal sourced in Secunda. The additional compensation is not linked to the manner in which Sasol Oil produces LPG. [X].
- 8.28. The surcharges charged by Sasol Oil are not insignificant and will make an impact on a wholesaler's ability to offer its customers a competitive price, as all wholesalers use the MRGP as the base for their price determination. Customers of Sasol Oil are likely to be at a disadvantage compared to competitors who procure LPG from other producers. The extent to which the overall charge for LPG (the MRGP plus the surcharge outlined above) may be deemed high could not be ascertained, as few customers raised this as a concern. It is likely that in some instances these costs are passed on to the end-user.
- 8.29. The Commission also considered the extent to which the current price regulation framework includes any sanctions that may be imposed in the event of non-compliance with the regulated price. The Commission has learnt that no mechanism exists to monitor the MRGP at the refinery and wholesale level and there are no remedial sanctions that may be imposed by the DoE inspectors.¹¹⁶
- 8.30. This analysis revealed several issues with the MRGP in its current form. The first is the disincentive it poses for refineries to expand their production and storage capacity of LPG. LPG is a by-product of profitable and valuable molecules that can deliver better returns if used to produce alternative petroleum products. The second disincentive stems from the MRGP being generally lower than the import price of LPG for small import parcels, making the importation of LPG unprofitable.
- 8.31. Regarding the claims relating to overcharges above MRGP, the Commission found evidence confirming these claims. This issue also outlines the lack of clarity among players about what the MRGP should encompass, specifically for inland refineries. Also at issue in this regard is the lack of monitoring of adherence to the MRGP by the DoE. This includes the active monitoring of the MRGP charged by the various refineries in addition to conducting impact evaluations to assess the validity of the MRGP under the current market conditions. The DoE stated, it does not have sufficient capacity to actively monitor the entire value chain as it only has nine dedicated inspectors to monitor the regulated prices of all petroleum products. Further, the DoE has stated that no mechanism exist to monitor implementing the MRGP at the refinery and wholesale level of the value chain.

¹¹⁶ Refer to email from DoE received on 23 November 2015.

Concerns raised regarding the MRP

- 8.32. The concerns raised in terms of the MRP are two-fold. Firstly, retailers raised concerns regarding the current MRP and the perceived high margins enjoyed by wholesalers. In particular, they state that the 15% distributors' margin that they receive from the sale of LPG is not sufficient to encourage the active investment of retailers and distributors in the domestic LPG market.
- 8.33. The Commission learned that the 15% margin generally covers the fixed costs of running an LPG retail site that may or may not include a small cylinder-filling rig and vehicles for delivery. Costs vary depending on monthly LPG throughput and what other products are sold from the site. A dedicated LPG retail site tends to entail higher costs and requires high throughput volumes.
- 8.34. The second issue identified with the MRP relates to the methodology adopted in the MRP Working Rules (2010) document. In particular, the Commission found the MRP working rules are based on an inefficient scenario regarding the utilisation of filling plant assets and manpower. The throughput of LPG is set at 35 tonnes per month, a low level of plant utilisation. Doubling the LPG throughput to 70 tpm (with the correct increases in capital outlays for extra cylinders) could potentially result in major filling plant costs (fixed cost, gross margin and depreciation) being reduced by about 41%.¹¹⁷ Another concern is that in the published working rules of the MRP, the annual cost adjustments for plant operations have not been implemented, and cylinder maintenance costs are not explicitly listed as part of the budgeted costs. The DoE failed to update the MRP methodology to better reflect the current dynamics in the sector.

¹¹⁷ Refer to LPG Filling Plant Throughput Analysis

- 8.35. There are concerns about the lack of monitoring of the MRP. The monitoring takes place at the petrol station retail level, making the monitoring of LPG prices applicable only at filling stations. Only nine DoE inspectors are assigned in all provinces, putting in question the capacity and effectiveness of the DoE to monitor its regulated prices. Where overcharging is found, the remedial action available to the DoE inspectors is to issue notice in terms of Section 2A(3) of the Petroleum Products Act. Specifically, the applicable penalty for non-compliance is a punitive penalty of R1 000 000, 00 or imprisonment for a period not exceeding 10 years, or both.¹¹⁸

Commissioner's findings

- 8.36. In summary, the Commission's findings with respect to pricing regulation are:
- 8.36.1. MRGP in its current form is not creating an incentive for refineries to expand their production and storage capacity of LPG.
 - 8.36.2. MRGP and MRP methodology had not been revised since implementation in 2010 despite the regulations allowing for periodic reviews¹¹⁹.
 - 8.36.3. There is evidence of prices charged above MRGP and MRP. There is also lack of clarity among market players, especially with regards to inland refineries, about what the MRGP should encompass.
 - 8.36.4. The DoE lacks the ability to monitor adherence to the MRGP and MRP. The DoE stated it does not have sufficient capacity to actively monitor the entire value chain as it only has nine dedicated inspectors to monitor the regulated prices of all petroleum products including LPG. The nine inspectors monitor over 5 112 service stations¹²⁰ in the country and annually they reach just under 2 000 service stations implying that it might take more than two years before another inspection takes place.¹²¹ This lack of monitoring results in some pricing abuse by the market participants. The sanctions of violating maximum pricing are ineffective as DoE does not have prosecutorial powers.

¹¹⁸ Refer to email from DoE received on 23 November 2015.

¹¹⁹ Draft review of 2012 had not been finalised.

¹²⁰ Malsha, Jim (2010). "The Retail Petrol Industry in South Africa," *www.sasac.co.za/infocentre/~/media/~/~/Notes%20Petrol%20Industry%20Malsha.pdf*. Accessed 5 March 2017.

¹²¹ Meeting with DoE on 11 November 2016.

CONTINUES ON PAGE 130 - PART 2

Vol. 622

28 April
April 2017

No. 40815

PART 2 OF 3

Industry Feedback

- 8.37. In light of the findings above, the Commission considered the following: (i) The extent to which the DoE was still best placed to monitor and implement pricing regulation in the sector; and (ii) The appropriateness of price deregulation in the sector.
- 8.38. Regarding the question whether DoE is best placed to deal with the function of price regulation and monitoring, six market participants were in support of the DoE remaining the relevant authority. [redacted] were of the view that the introduction of an alternative party might cause a duplication of the DoE's functions. [redacted] proposed that the DoE should increase its capacity to best cater for the relevant regulation. [redacted] were not in favour of maintaining the DoE as the custodian of pricing regulation and suggested that this function be moved to NERSA.
- 8.39. Nine market participants were in support of price deregulation while none voiced any concerns about it. [redacted] Those in support emphasised that the MRGP in particular increased the cost of doing business and this led to pricing abuse by wholesalers, [redacted] while [redacted] submitted that price deregulation should take place sooner rather than later.

Recommendations

8.40. The Commission recommends the following:

8.40.1. NERSA must undertake pricing and the monitoring of MRGP and MRP.

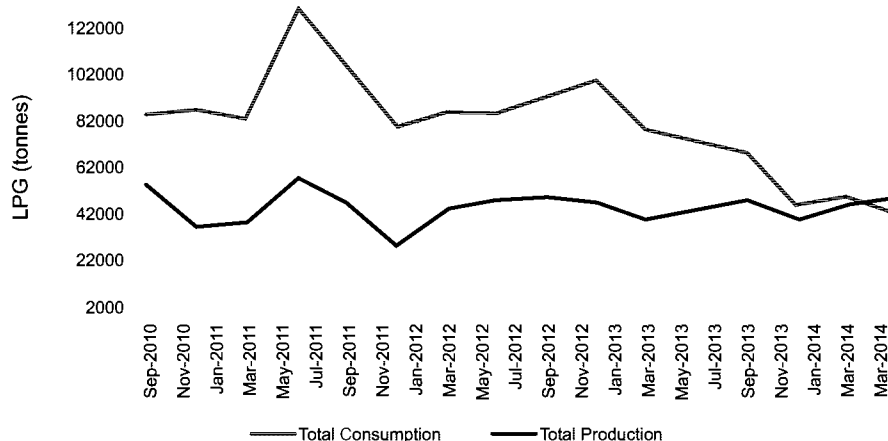
8.40.2. Price deregulation after supply constraints have been resolved. The reason for this is that the immediate deregulation of pricing may cause price increases above the current MRGP and consequently MRP, given the significant regulatory bottlenecks identified as well as the supply constraints faced by the sector. To circumvent this concern, the Commission is of the view that import efficiency and optimisation should be prioritised. This would result in an increase in import storage capacity and make it possible to accommodate larger LPG parcels, allowing for an increase in LPG supply domestically.

8.40.3. To give effect to the recommendation in 8.40.2., the DoE must undertake a study on how price deregulation in the LPG industry can be achieved.

9. Addressing the limited domestic supply of LPG

- 9.1. This section assesses the impact of infrastructure bottlenecks on the supply of LPG in South Africa. This is particularly important given the declining volumes produced at local refineries and increased demand of LPG especially during the winter months.
- 9.2. It is accepted that the domestic production of LPG remains low (Figure 25) and is not likely to grow in the foreseeable future. Local production is unable to meet domestic demand in South Africa, especially during the winter months when demand is higher. This period also coincides with both planned and unplanned shutdowns at the local refineries. The deficit of local production is supplemented by imports and infrastructure facilitating these imports thus becomes critical. Market participants that import or have at some stage, imported LPG include KayaGas, Oryx, Afrox, Easigas and SAPREF.¹²²

Figure 25a Domestic Supply and Demand for LPG (2010-2014) (tonnes)



Source: NERSA (2015)

¹²² Afrox imports through Richards Bay, while Easigas imports through Port Elizabeth, KayaGas through the Cape Town harbour and Oryx through Maputo. The Commission understands that SAPREF has occasionally imported LPG through Durban.

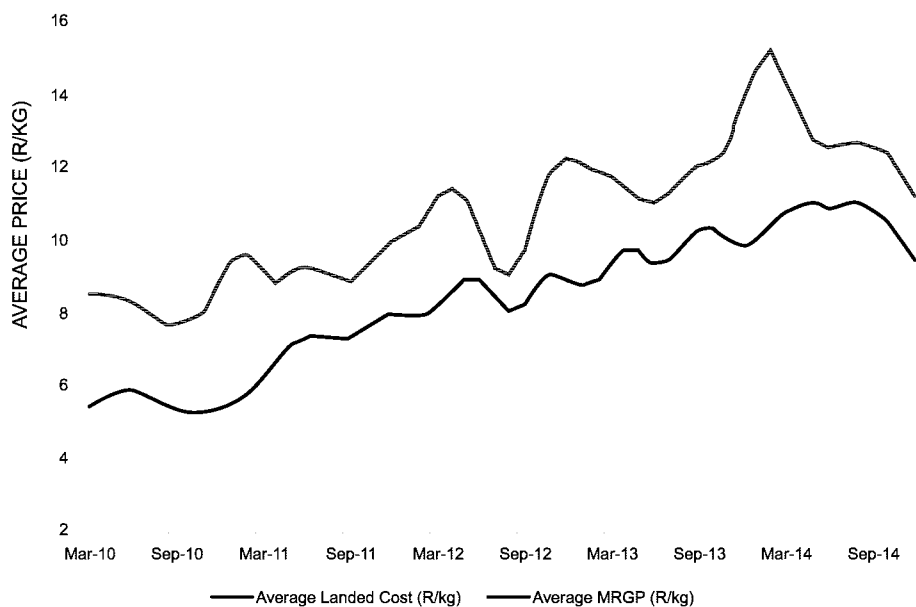
- 9.3. Market participants identified the following factors as contributing to limited domestic supply of LPG:
- 9.3.1. The regulated refinery gate price of LPG, the MRGP, is not reflective of the costs associated with importing LPG. Hence it does not provide a price signal to incentivise future investment; and
- 9.3.2. The limited capacity at the current import storage facilities constrains the importation of LPG as a commercially viable alternative supply source.
- 9.4. In light of the above, it is suggested the limited import volumes are not only a factor of the price regulations at play but may also be a product of the lack of availability of adequate infrastructure to cater for an increase in imports. It can be deduced the limited levels of imports observed in South Africa are a reflection of two issues, namely the MRGP and the lack of sizable and economic storage facilities in the country.

Imports of LPG

Price comparison between MRGP and landed price of LPG

- 9.5. The MRGP is derived from the 93 octane basic fuel price (BFP) minus a discount of R74 per metric ton. The MRGP is an LPG equivalent of the BFP that applies to petrol and diesel (as shown in Section 8). This brings into question the manner in which imported product can be aligned with MRGP from a pricing perspective to allow it to compete with locally produced product, which is regulated at a lower price point.
- 9.6. Figure 26 indicates that the current imported LPG product is not price-competitive compared to locally produced product because of high transport costs. When the freight, clearance and storage facility costs are factored into the Saudi CP, the landed cost of the imported LPG is higher than the MRGP. Market participants indicated that the Saudi CP is generally comparable with or even lower than the MRGP, but the storage and freight costs significantly increase the cost of imported product.

Figure 26: Monthly average landed cost and MRGP for LPG, 2010-2014



Source: [X]

- 9.7. [X] submitted to bring the landed costs of LPG down, market participants need a large storage capacity of approximately 15 000 to 20 000 tonnes so they can import LPG on a sustainable basis. This will assist in bringing down transport costs to approximately \$80 per tonne, thus making imports viable. [X] also attested to this, in stating that big vessels require bigger storage facilities than what the country has. It appears the price of imported LPG will reflect the volume of LPG imported.
- 9.8. The three scenarios in Table 12, based on small, medium and very large carriers of imported LPG, demonstrate how the landed costs of LPG vary in relation to different sizes of carriers. It is important to understand the economics of each parcel size as it demonstrates the potential to reduce the cost of LPG.

Table D2: The relative value of the small carrier compared to the large carrier¹²³

R/USD	13			
Propane \$/mt	315			
Butane \$/mt	345			
Interest cost	9%			

Ship size	Small carrier	Med. carrier	Large carrier	Units
Parcel size	1 500	19 208	46 099	Mt
Annual imports	36 000	230 496	553 190	Tpa
Propane content	60%	60%	60%	
Product cost CP	4251	4251	4251	R/mt
Product discount	0%	2%	5%	R/mt
Freight costs	3055	884	624	R/mt
Insurance/Losses	219	151	140	R/mt
Clearing	0,57	0,70	0,80	R/mt
Port fees	145	145	145	R/mt
Product testing	22,0	2,9	1,3	R/mt
Terminal S&H	500	570	542	R/mt
SUB-TOTAL	8 193	5 920	5 491	R/mt
Working capital	20	29	27	R/mt
Terminal gate price	8 213	5 949	5 518	R/mt
Reduction in price	0	28%	33%	
Import/MRGP	110%	80%	74%	

Compared to September 2015 MRGP at R5 446.80

Source: Commission's calculations

- 9.9. The small LPG carrier is representative of the current vessels delivering LPG to South Africa. This carrier requires a small terminal of approximately 3 750 metric tonnes ("mt") in capacity. Assuming the vessel makes twenty four (24) deliveries a year, it would see only 36 000 tonnes of LPG being imported per year. This would not lead to any reductions in the landed costs. Importers would still experience higher landed costs. If we base this analysis on September 2015 prices, the cost of the small import is estimated to be 50% more expensive than the published MRGP.

¹²³ Note that the pricing of LPG imports is for comparative purposes based on representative vessel time, charter costs, fuel oil consumption and costs. The same voyage distance is assumed for each ship size. *Working Capital Assumptions: Throughputs per month = 1 for Med-Large and 0,5 for small. Cost of credit = 9% p.a. Applicable value = 50%; parcel size = 15% reserve*

- 9.10. In comparison, a medium-sized carrier would require a terminal with approximately 19 400mt of LPG storage capacity. The annual throughput of the terminal can be doubled to over 460 000 t/ya, which will reduce the terminal storage and handling fees. The import cost is estimated to be 28% cheaper than for the small carrier and at least 10% above the MRGP.
- 9.11. In the case of the large carrier, the largest parcel size can be delivered using very large gas carriers ("VLGC"). Such carriers can deliver to either a single large import terminal or several smaller terminals. The economies of the larger parcel size result in an estimated 33% price reduction compared to the small carrier, which makes it 1.3% cheaper than the MRGP. It can be assumed there would be a small discount on pricing on larger volumes because of the volumes uplifted. Regardless of the discount structure, larger imports will be cheaper than smaller ones. The international benchmark prices of LPG can be expected to be lower from May to September than during the rest of the year, which will filter through to the domestic prices.
- 9.12. In summary, the analysis indicates that the importing of medium to large parcels can reduce the landed cost of LPG by approximately 28% to 33% respectively as compared to the importing of smaller parcels. The analysis demonstrates that imported LPG can have landed prices cheaper than the current MRGP model. Avedia and Sunrise noted that it is possible to obtain greater discounts on large shipments. The opportunity for sovereign deals on LPG may also attract preferential pricing. Sunrise indicated that the preferred mode of operation is to start small and then increase the number of imports, with additional storage capacity being made available at the terminal to enable larger parcel sizes as demand grows. The increase in terminal throughputs will result in a reduced fixed cost component per unit in terms of the storage and handling tariff.

Import of Liquefied Petroleum Gas

Current import storage facilities and problems with access to storage facilities

- 9.13 South Africa has three limited loading facilities available for imported LPG.¹²⁴ These facilities are located in Port Elizabeth, Richards Bay and Durban.¹²⁴ Table 13 lists the LPG loading facilities licenced for operation in South Africa and their estimated total capacity.

¹²⁴ Discussion document on the Review of the Maximum Refinery Gate Price of Liquefied Petroleum Gas, Government Gazette, Notice 806 of 2012, Dated 24 October 2012.

Table 16: LPG storage facilities in South Africa

Licensee	Storage capacity m3	Location
Shell South Africa (Pty) Ltd	4 000	Port Elizabeth
Bid tanks (Pty) Ltd	6 000	Richards Bay
BP and Shell (SAPREF)	1 800	Durban

Source: NERSA (2012)

- 9.14. Afrox and Easigas used to be the only two importers of significant volumes of LPG into South Africa. The two wholesalers lease import storage facilities and have import licences. Afrox leases the import facility in Richards Bay from Bid tanks [formerly IVS Richards Bay (Pty) Ltd]. Easigas imports via the Port Elizabeth terminal through its relationship with Shell. During the market inquiry, the Commission learnt that, Totalgaz, Camel Fuels and Oryx also use the Richards Bay port terminal through Bid tanks to import LPG. It is noteworthy that wholesalers are not operating from their own storage and/or loading facilities but rather are granted access to facilities owned by terminal operators. The existing storage and/or operating facilities are not able to receive VLGC, resulting in higher landed costs.
- 9.15. In addition, it appears that the existing import facilities operate on an exclusive basis. There are no common user terminals or terminals that offer imported product on an “open access” basis. This may pose a challenge for other market participants operating at the wholesale level, as they do not have their own import facilities, nor can they access those of others.
- 9.16. New entrants have highlighted the lack of import facilities as one of the key constraints to growth the LPG market and the promotion of competition. Despite several construction licences issued by NERSA in the past few years to independent merchant operators to construct large import capacities in Richards Bay, Port of Ngqura, many of these licensed projects have not yet materialised. Even if they do, experience to date suggests that the mere fact that the facilities become operational will not automatically ensure access for third party wholesalers wishing to import LPG. The practice in line with global practices is that anchor tenants sign long-term contracts (10-20 years) with the storage facility operator. The operator will then develop the facility and charge a monthly rental for capacity (‘take or pay’ agreements).

- 9.17. The Petroleum Pipelines Act prescribes that a licensee of a petroleum storage facility must provide access to uncommitted capacity in a storage facility on commercially reasonable terms. In practice, uncommitted capacity is interpreted to exclude capacity committed in terms of long-term "take or pay" agreements entered by the storage operators and its customers. Thus, due to being fully committed in terms of the contractual arrangements (no uncommitted capacity in terms of NERSA mandate), the facility could in fact be underutilised or standing empty.¹²⁵
- 9.18. In light of the limited import storage, industry players and regulators have identified areas that would be suitable for constructing additional import storage facilities within the ports of South Africa to increase the imported volumes of LPG.

Storage facilities licensed for construction at Saldanha Bay and Richards Bay

- 9.19. Market players like Avedia confirmed the current limited supply and inadequate import infrastructure have stifled the uptake of LPG. It was suggested the only way to unlock local LPG consumption is to substantially increase imports of LPG through newly constructed import terminals with sufficient storage facilities.
- 9.20. Avedia and Sunrise also indicated that importing large volumes of LPG would significantly reduce freight costs, and increasing the available storage capacity would drive down storage costs.¹²⁵ A large increase in imports of LPG into the domestic market would enhance competitive pricing for local customers, especially seeing that international prices are expected to decline over time.¹²⁶ Market players like Avedia, Sunrise, KayaGas, Vopak Reatile ("Vopak") and Bidtanks agreed that the only way to solve the local supply bottleneck is by substantially increasing imports, backed by security of supply from additional storage.
- 9.21. Vopak and Bidtanks are licensed to construct an import terminal and loading facilities at Richards Bay, while Avedia and Sunrise are licensed to do the same at Saldanha. KayaGas is licensed to operate a loading facility at Saldanha.¹²⁷ [REDACTED], through its loading operating licence, stated that it was able to import eight loads of LPG, amounting to 7 000 tonnes, from the Cape Town harbour.¹²⁸ It indicated that the cost of bringing in LPG from ship to road tanker was approximately R10 400/ton, higher than the prevailing MRGP based on twelve (12) hours to transfer 200 to 300 tonnes per day.

¹²⁵ Presentation by Sunrise Energy on 01 September 2015: LPG Import Terminal Saldanha Bay, Western Cape, South Africa and meeting with Avedia on 07 September 2015

¹²⁶ Presentation by Avedia for NERSA public hearing on 28 May 2014

¹²⁷ NERSA licence applications

¹²⁸ Meeting with [REDACTED] dated 02 September 2015

- 9.22. The interest in constructing LPG import terminals at Saldanha is because the Western Cape port is strategically located such that it is cheaper to import LPG from various locations, including the Gulf of Guinea, the Gulf of Mexico, the Middle East and East Africa.¹²⁹ Table 14 provides details about each industry player's activities at the import terminals and/or loading facilities at Saldanha Bay and Richards Bay.

Table 14: LPG import and loading facilities at Saldanha Bay and Richards Bay

Licensee	Type of license	Total capacity (metric tonnes)	Location	Date of issue
Sunrise Energy ¹²⁹	Pipelines, storage & loading	5 500	Saldanha Bay	23 February 2011
Avedia Energy	Storage & loading	8 000	Saldanha Bay	1 July 2014
KayaGas	Loading facility		Saldanha Bay	30 March 2015
Bidvest Terminal	Storage facility	40 000	Richards Bay	2 December 2015
Vopak Reatile	Pipelines, storage & loading	38 300	Richards Bay	5 December 2014

Source: NERSA website (2015)

- 9.23. At Saldanha, the TNPA awarded an exclusive contract to Sunrise, based on Section 56 of the Ports Act relating to terminal operators, for the funding, construction and operation of an LPG handling and storage facility for 30 years.¹³² The terminal is scheduled for commissioning in April 2017.¹³³
- 9.24. Since there are no open access import facilities, Sunrise's business model essentially envisages it being an open access import terminal operator in Saldanha, allowing any LPG importer, distributor or downstream customer(s) to access the terminal infrastructure for importing LPG.
- 9.25. The Sunrise terminal will include a multi-buoy mooring system located in Saldanha for the mooring of LPG vessels. Sunrise will allow LPG traders to import LPG supplied into the multi-buoy mooring system and transferred into Sunrise's terminal storage site through its own pipeline. It will be possible to store the LPG on Sunrise's premises for fourteen (14) days.¹³⁴ During a site visit, the Commission observed that the fabrication of the LPG vessels (also known as bullets) intended for storing the imported LPG was underway, as shown in Figure 27.

¹²⁹ Presentation by Sunrise Energy on 01 September 2013; LPG Import Terminal Saldanha Bay, Western Cape, South Africa.

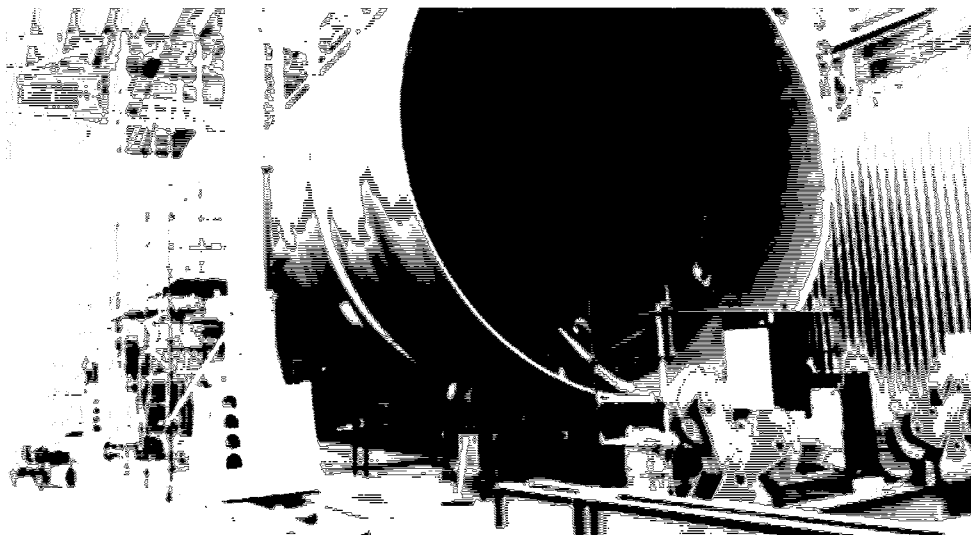
¹³⁰ All of these licences are acquired from NERSA and are valid for 25 years, and construction is supposed to commence within 36 months. Market players are supposed to submit a tariff application within 6000 months of the date of issue of these construction licences.

¹³¹ There was an amended construction licence on 29 April 2013.

¹³² Case No. 13A/2014/04/00009.

¹³³ <http://www.sunrise-energy.co.za/status.html>

Figure 28: Fabricated LPG storage bullet (7m ID and 60m T/T)



Source: Sunrise site visit (2015)

- 9.26. The storage facility will comprise five moulded LPG bullets (each 7m ID and 60 m T/T),¹³⁴ similar to the bullet shown in Figure 28.¹³⁵ The LPG will mainly be dispatched via road tankers from Sunrise's three offloading bays.¹³⁶
- 9.27. Sunrise indicated that it would not own or trade in LPG; it will manage the stock throughput. This will include blending commercial propane and commercial butane to fit the SANS 1774:2007 standards and customers' preferences.¹³⁷ As mentioned above, traders will be allowed to store the LPG on Sunrise's premises for [X] days.¹³⁸ The LPG traders will be charged a throughput fee which will range between [X] and [X] per ton which, according to Sunrise, is in line with international throughput charges.¹³⁹ Sunrise plans to increase its annual throughput through constructing additional storage facilities as demand in the market increases.

¹³⁴ Sunrise Energy submission dated March 2015

¹³⁵ Commission site visit to Sunrise Energy dated 01 September 2015

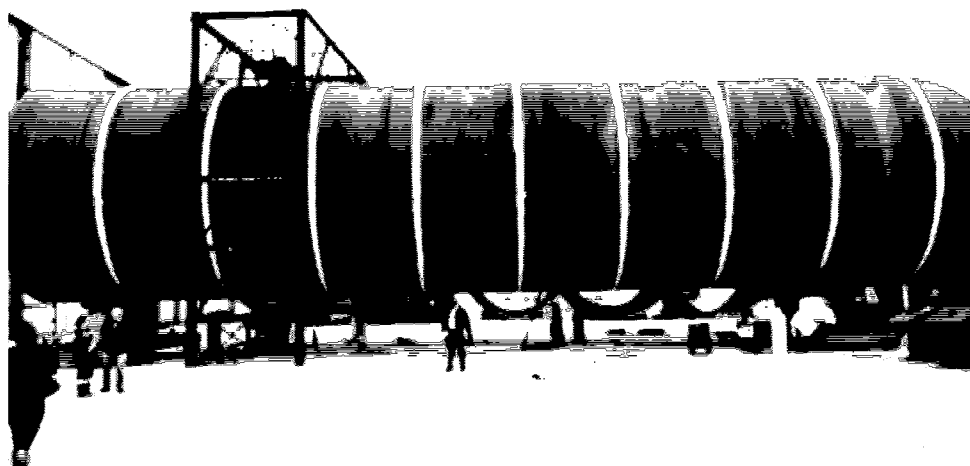
¹³⁶ Sunrise Energy submission dated March 2015

¹³⁷ Sunrise Energy submission dated March 2015

¹³⁸ Sunrise Energy submission dated March 2015

¹³⁹ Sunrise presentation on Project Overview SAIWA dated 12 November 2013

Figuur 28: Avedia-buikstelsel, Saldanha



Source: Sunrise site visit (2015)

- 9.28. Sunrise's LPG storage facility at Saldanha will be complemented by the Avedia facility. Avedia indicated it would operate as a wholesaler, meaning it will source LPG from local refineries and through imports.¹⁴¹ Avedia stated it would not only operate the bulk storage facility at Saldanha; it also planned to be involved in bottling facilities, transportation and cylinders. The Commission understands, even though this is not their primary function, Avedia's import storage facility at Saldanha will also be available for third-party users such as the [REDACTED]. [REDACTED]. [REDACTED]. In securing foreign supply of LPG, Avedia has entered a supply agreement with Bonny River Terminal in Nigeria to import [REDACTED] mt.¹⁴²
- 9.29. Avedia previously operated the Industria bottling plant at Cape Town on behalf of Totalgaz,¹⁴³ and the Commission understands that this arrangement ceased after Totalgaz acquired KayaGas. The bottling plant has a storage capacity of [REDACTED] mt and a filling capacity of [REDACTED] bottles per day.¹⁴⁴

¹⁴⁰ Commission site visit to Sunrise Energy dated 01 September 2015

¹⁴¹ Presentation by Avedia for NERSA public hearing on 28 May 2016

¹⁴² <http://www.avediaenergy.com/index.php/news-room/69-avedia-to-build-se-lpg-import-terminal>

¹⁴³ Site visit meeting with the Commission and Avedia on 31 August 2015

¹⁴⁴ Avedia meeting on 31 August 2015

- 9.30. Apart from their terminals at the Saldanha port, Bidtanks and Vopak Reatile ("Vopak") plan to construct additional import storage terminals at Richards Bay.¹⁴⁵ Bidtanks, an existing terminal operator at the Richards Bay port, plans to expand its operations. Bidtanks does not appear to have experienced much delay with the project, and is in the process of appointing an engineering, procurement, and construction management (EPCM) contractor. The other terminal operator, Vopak, will supplement Bidtanks' offering in Richards Bay. On 23 March 2012, the TNPA awarded land to Vopak under Section 56 of the Ports Act to construct an import terminal facility. It appears that the Vopak LPG project was put on hold, due to insufficient interest from the market.
- 9.31. Despite market players showing increased interest in constructing import terminals, with numerous applicants having been granted construction and operating licenses, the country has not seen any new import terminals come on line. When queried about this, market participants indicated that the misalignment between regulatory bodies has caused a bottleneck in the development of the proposed import terminals. Sunrise stated that the delays in constructing its terminal were due to slow decision-making about approvals by regulators, problems with environmental authorisations in 2014, and the litigation process started by Avedia regarding access to the LPG berth lines, with Avedia alleging that Sunrise would be monopolising the import terminal.¹⁴⁶

NERSA's tariff methodology for Greenfield developments

- 9.32. Submissions received indicated that the regulations in place were not designed to accommodate green field developments for import facilities.¹⁴⁷ [REDACTED] and [REDACTED] pointed out that NERSA dealt separately with construction and tariff licences, making it difficult to secure investors and customers, [REDACTED]. [REDACTED] In addition, using the existing NERSA models would make the start-up tariff very expensive and detract from the viability of the project. [REDACTED]

¹⁴⁵ <http://www.sahra.org.za/sahris/cases/vopak-reatile-richards-bay-terminal-bulk-liquid-storage-and-handling-facility> on 16.09.2016

¹⁴⁶ <http://www.iir24.com/Economy/Flow-over-Port-of-Saldanha-Bay-20140316>; <http://sh3.co.za/latest-news/construction-starts-on-r1-3bn-lpg-terminal-saldanha-bay-west-coast/>; <http://www.news24.com/Archives/City-Press/Cas-a-port-row-boats-up-20150429>

¹⁴⁷ Site visit meeting with the Commission, Sunrise and Avedia on 31 August 2015

- 9.33. NERSA's tariff calculation is based on capital expenditure ("capex") and the expected volumes, so there is a direct and positive relationship between capex and tariffs, but an indirect and converse relationship between volume and tariffs.¹⁴⁸ An increase in capex will lead to an increase in tariffs, but if volume increases, this will lead to a decline in tariffs. Investors are thus reluctant to make decisions; not only can the quoted tariff rate increase, but there may also be unanticipated cost increases due to delays in projects.
- 9.34. The Commission asked NERSA whether their tariff calculation model adequately address the particular needs of Greenfield developments. NERSA submitted that the current tariff methodology does adequately address the concerns listed above. Specifically, NERSA stated that the allowable revenue formula is appropriate to use for Greenfield developments as it accounts for the difficulties faced with these projects. Specific items like the weighted average cost of capital ("WACC") and particularly the project risk premium are said to be adjusted as necessary when calculating the tariffs for Greenfield developments.

Continued misalignment

- 9.35. The current inadequate import infrastructure has stifled the uptake of LPG. One way to unlock local LPG consumption is to increase imports of LPG substantially through newly constructed import terminals with sufficient storage facilities operating on open access to all interested third parties. The limited import infrastructure makes importation of small volumes of LPG less competitive as the landed cost is above the MRGP.
- 9.36. Significant obstacles are caused by the overlapping jurisdictions of NERSA and the TNPA in relation to approvals for constructing import and storage facilities at the ports (this aspect was also discussed in Section 7). This overlapping jurisdiction results from TNPA granting concessions to infrastructure developers within port boundaries, while such infrastructure also requires licencing under the Petroleum Pipelines Act, administered by NERSA. Another scenario is that NERSA may issue an import and storage licence with limited consideration of the TNPA's port development plans.
- 9.37. The Commission notes that the limitations in the regulatory framework, referred to above, contribute to the observed misalignment. This requires that a process of alignment be put in place in order to resolve these issues.

¹⁴⁸ Presentation by Suezco Energy on 01 September 2016; LPG Import Terminal Saldanha Bay, Western Cape, South Africa

Industry feedback

- 9.38. In light of the findings, the Commission considered the following remedies to address the issues identified. Firstly, introduce a joint bidding process between NERSA and the TNPA, whereby potential entrants are able to receive simultaneous approvals from both regulators after winning the bid. Alternatively, introduce a bidding process overseen by an independent body like National Treasury as part of the key strategic infrastructure procurement programme. Secondly, review the regulatory mandates conferred by the Ports Act and the National Energy Regulator Act. In particular, review the National Energy Regulator Act with the aim of removing all port-related activities (licensing in particular) regulated by NERSA. Lastly, require approval by the TNPA of all licences involving execution and implementation at the ports before any other subsequent licence applications are allowed.
- 9.39. Market participants were mainly in agreement with the Commission regarding the bottlenecks caused by the overlapping jurisdictions of NERSA and the TNPA.¹⁴⁹ The majority of market participants¹⁵⁰ also supported the introduction of a bidding process overseen by an independent body like National Treasury. [REDACTED], [REDACTED], [REDACTED] and [REDACTED] indicated that this recommendation would delay the process even further and ultimately make it more burdensome for potential investors. As NERSA and the TNPA are already familiar with the requirements, the harmonisation of their respective processes is required. Transnet advised that the Commission should refer to the memorandum of understanding ("MOU") signed between NERSA and Transnet as a sound engagement platform for better interaction.
- 9.40. NERSA and TNPA entered an MOU¹⁴⁹ in terms of addressing concurrent jurisdictions at the port facilities. The MOU was expected to assist in streamlining the work of the TNPA and NERSA.¹⁵⁰ The TNPA indicated that any possible bottlenecks would be identified and approvals would be sequenced as part of the engagement process between the two regulators.¹⁵⁰

¹⁴⁹ The MoU was concluded towards the finalisation of the inquiry.

¹⁵⁰ *Ibid.*

- 9.41. A review of the regulatory mandates conferred by the National Ports Act and the National Energy Regulator Act was also supported. [X] opposed the recommendation that all licences requiring execution and implementation at the ports should be approved by the TNPA before any subsequent licence applications are made. [X] submitted that Transnet is one of NERSA's licensees; hence, NERSA is not subordinate to the TNPA. NERSA makes its licences subject to permissions/authorisations received from other relevant authorities.

Section 10(1)(b)

- 9.42. The Commission recommends the following:

- 9.42.1. A review of the regulatory frameworks applicable to the construction of LPG import and storage facilities at ports, as outlined in the applicable legislation including the National Ports Act and the Petroleum Pipelines Act.

10. LPG supply agreements with refineries

- 10.1. This section assesses the impact of refineries' allocation mechanism to particular wholesalers. It has been alleged that preferential allocation is given to wholesalers with historical relationships with certain refineries.
- 10.2. New entrants have also raised concerns around rationed supply being allotted to them by certain refineries in favour of preferential allocation to their formerly owned downstream entities.
- 10.3. Producers/refineries allocate LPG volumes to wholesalers on a contractual and/or spot basis. Producers tend to prefer long-term supply contracts as opposed to spot sales. The rationale for this preference is linked to factors like the reliability of upliftment, available supply, credit lines and payment history, to name a few. Of these factors, reliability of upliftment is considered to be particularly important, possibly due to refineries' current storage limitations regarding LPG.
- 10.4. The concern of the new entrants is the extent to which these supply contracts create a constraint on their ability to compete effectively in the market. In particular, some market participants noted the historical linkages that exist between producers and major wholesalers.

Historical relationships between producers and wholesalers

SAPREF, Oryx and Shell

- 10.5. SAPREF is a crude oil manufacturing facility in Durban, KwaZulu-Natal, which was formed through a joint venture between BPSA and Shell, both of which have a 50% shareholding. The LPG produced at SAPREF is produced from crude oil imported by the shareholders individually.
- 10.6. The arrangement between the parties is one of toll manufacturing, with SAPREF manufacturing the product on behalf of its shareholders in terms of a management agreement.

Shell and Easigas

- 10.7. Prior to 2009, Shell SA was vertically integrated in the LPG market as a producer and wholesaler of LPG. In 2009, Shell SA disposed of its marketing business to Easigas, and is no longer active in the LPG market other than as a shareholder in SAPREF. In the case of Easigas' acquisition of the LPG component of Shell SA's business, the companies entered a supply agreement [REDACTED].
- 10.8. The agreement will continue for as long as [REDACTED] has a processing contract with [REDACTED]. [REDACTED] In addition to this agreement, Easigas sub-leases an import facility located in Port Elizabeth from Shell, which Shell in turn leases from the TNPA.¹⁵¹

BPSA and Oryx

- 10.9. In 2012, BPSA announced its intention to sell its LPG cylinder and bulk business along with some of its wholesale LPG activities in several countries.¹⁵² In South Africa, the transaction saw BPSA sell all of its downstream activities relating to the wholesale of LPG, conducted by BPSA's LPG Business and Masana Petroleum Solutions (Pty) Ltd ("Masana").
- 10.10. At the time of the transaction, BPSA's LPG business was well established in the sale of LPG to distributors, wholesalers and end-users. The company sold LPG in cylinder form (to residential and commercial end-users) and in tanker trucks (to distributors, wholesalers and industrial customers).¹⁵³ Masana marketed BPSA's LPG to the business sector and large commercial entities in particular. [REDACTED]
- 10.11. Oryx was selected as the preferred bidder for the purchase of BPSA's LPG business. Oryx had not been active in the LPG market prior to this acquisition. The transaction effectively resulted in Oryx entering the market for the downstream supply and marketing of LPG in South Africa. [REDACTED]
- 10.12. The outcome of the transaction was the removal of BPSA from downstream activities in the LPG value chain; BPSA is only active in LPG production through its refinery activity SAPREF. [REDACTED] Pre-merger, BPSA supplied all of its LPG to its BPSA LPG business in terms of a supply agreement. A similar agreement was entered between Oryx and BPSA upon its disposal of its LPG business.

¹⁵¹ Submission from [REDACTED] dated 24 April 2015, p4

¹⁵² Those countries included the United Kingdom, Portugal, Austria, Poland, Netherlands, Belgium, Turkey, China and South Africa.

¹⁵³ Competition Commission Merger Report: Oryx Oil SA v. PC Business of BPSA and Masana Petroleum Solutions, July 2013 (Case No. 2013May0185)

10.13. [REDACTED]

Other refineries

10.14. The Commission also examined whether any of the other refineries in South Africa, namely Sasol, Engen, Chevron and PetroSA, had similar historical supply agreements with any of the wholesalers or other market participants in the LPG value chain. While evidence was found of long-term supply agreements between refineries and wholesalers – for example, [REDACTED] formal supply agreements with [REDACTED] and [REDACTED] – the Commission did not find any other instances of historical vertical relationships.

Volumes allocated for long-term contracts and short-term contracts

10.15. Producers allocate LPG volumes to licensed wholesalers on a contractual and/or spot basis. Producers have indicated that they do prefer long-term supply agreements as opposed to spot sales, as this provides them with certainty of volume upliftment. [REDACTED] Specifically, producers indicated that reliability of volume upliftment by a wholesaler was an important consideration taken into account when signing a supply contract, as there were storage limitations at refineries for LPG.

10.16. For example, [REDACTED] submitted that because it is vulnerable to LPG production levels exceeding its available storage capacity, its sales model is based on a longer-term contract with reliable wholesalers that have the capacity and ability to commit to meaningful and continuous purchases of LPG in high and low demand periods throughout the year. In addition to reliability of consistent upliftment, [REDACTED] submitted that it prefers a customer that can readily resume procurement from [REDACTED] after extended shutdown periods.

10.17. The Commission analysed several long-term supply agreements in place between producers and wholesalers, with the percentage of LPG volumes allocated to contract customers. The following emerged:

10.17.1. ENREF [REDACTED] has long-term supply contracts with [REDACTED], [REDACTED] and [REDACTED].

10.17.2. Sasol Oil has long-term supply agreement with [REDACTED], [REDACTED], [REDACTED] and [REDACTED].

- 10.17.3. Chevron has long-term supply contracts with [REDACTED] and [REDACTED], with the remainder of the volume being sold through the spot market.
- 10.17.4. SAPREF allocates the total volume it produces to its two shareholders, Shell SA and BPSA, [REDACTED].
- 10.17.5. PetroSA has entered long-term supply contracts with [REDACTED], [REDACTED], [REDACTED] and [REDACTED]. PetroSA supplies a significantly larger proportion of its volumes to non-contracted customers, accounting for [between 40-50%] of its sales.
- 10.18. None of the refineries appear to have an official document or manual that sets out the requirements for a company to be granted a supply agreement. As mentioned above, [REDACTED] submitted that it is mostly concerned with ensuring reliable offtake from customers and hence the cultivation of long-term relationships is vital. [REDACTED] considers product availability; the availability of the required compliance documents; and the customer's business profile, ability to meet contractual obligations, financial standing, BBBEE status and previous year's offtake (vs requested volumes). [REDACTED]
- 10.19. The Commission notes that the existence of these supply agreements act as a barrier to entry and to the expansion of new entrants at the wholesale level of the value chain. This is because the ability of a wholesaler to compete is dependent on it being able to obtain sufficient and consistent supply of LPG. Submissions and meetings with wholesalers¹⁵⁴ indicated that the procurement of LPG from refineries is indeed a major barrier to entry into the sector. This becomes increasingly difficult in a sector that experiences shortages in supply and declining LPG volumes from producers. [REDACTED] submitted that in their experience, the allocation of LPG from refineries is in the following order: (i) Allocate product to satisfy the refineries own operational needs; (ii) Meet their contractual obligations; and (iii) If there is surplus product, fill spot sales requests.

¹⁵⁴ See 2015 submissions from Roodie, Aroxo, EnsiGas, Wesna, KayeGas and Totalgas.

- 10.20. Given this framework, it is clear that the wholesalers with contracts may have a competitive advantage over others. In a sector where price is regulated and there are supply constraints, competition occurs in terms of volumes; the reliability of supply becomes increasingly important. Smaller wholesalers like [REDACTED] raised concerns regarding the nature of contracts in the LPG sector, more specifically, on the pricing structure and the general relationships between refineries, on the one hand, and refinery-owned and former refinery-owned entities, on the other. [REDACTED] [REDACTED] also refers to vertical relationships that exist between refineries and wholesalers, in particular, former refinery-owned wholesalers.
- 10.21. The Commission assessed the percentage of LPG volumes allocated for contract and spot sales to major and non-major wholesalers to assess the validity of the concerns raised regarding the existence of long-term supply contracts. The analysis in Table 15 below considers the percentage of LPG volumes sold through supply contracts as opposed to spot sales by comparing the sales of three of the five LPG producers.¹⁵⁵
- 10.22. The analysis shows that producers awarded the vast majority of sales to contract customers over calendar years 2010 to 2014. Specifically, a total of 891 661 tonnes of LPG was sold to customers on a contractual basis over the 2010 to 2014 period as opposed to 193 673 tonnes sold on spot basis. This means that at least 82% of the total volume of LPG produced over the period was allocated to contracted customers and approximately 18% allocated to spot sales. This indicates that contracted sales are clearly refineries' preferred way to sell LPG.
- 10.23. Disaggregating the contracted sales volumes between major wholesalers and non-major wholesalers shows that major wholesalers receive the bulk of the allocation as shown in Table 15 for FY2013/14.

¹⁵⁵ Comparable data over the period considered was only available for Sasol, Engen and Chevron.

Table 16: Commissioned supply contracts for LPG for Wholesalers in 2013/14

Wholesaler	ENREF		Sasol		PetroSA		CHEVREF		SAPREF	
	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%	Volume (tonnes)	%
Major wholesalers contracted sales										
Afrox	[X]	20-40	[X]	30-50	[X]	20-40	[X]	40-50		-
Easigas	[X]	-	[X]	15-25	[X]	0-10	[X]	10-20	[X]	50-100
Oryx	[X]	-	[X]	-	[X]	0-10	[X]	-	[X]	50-100
Totalgaz	[X]	20-40	[X]	10-20	[X]	15-25	[X]	-	[X]	-
Non-major wholesalers contracted sales										
Reatile	[X]	10-20	[X]	0-10	[X]	0-10	[X]	-	[X]	-
Non-contract sales										
Other*	[X]	20-40	[X]	15-25	[X]	40-50	[X]	20-40	[X]	-
Total	[X]	100%	[X]	100%	[X]	100%	[X]	100%	[X]	100%

Source: Wholesalers and refineries

10.24. As shown, the majority of volumes were consistently sold to major wholesalers. On average, for 2013/14 period, approximately two thirds of sales volumes were awarded to the major wholesalers. [X].

10.25. From this analysis, there is a limited supply of LPG available to non-contract customers. The Commission found at least 22% of total domestic LPG volumes remain available for customers that purchase on a spot basis. In addition, of the total volumes available for sale, [X] was allocated at least 29%, constituting the majority of the volume of the LPG produced in the market.

10.26. The Commission notes despite the supply restrictions described above, new entrants have recently managed to secure short supply contracts.

10.27. Foreclosure and softening of competition at the wholesale level may harm competition, in particular, by increasing wholesale prices to those not contracted to refineries. Spot customers not able to procure directly from refineries will have to do so at a higher price, from wholesalers that do have supply agreements in place. The prevalence of long-term supply agreements between LPG producers and all of the major wholesalers, seen against the background of a limited number of supply agreements with other customers, has the potential of restricting or distorting competition. The ability of competitors to enter and/or expand at the wholesale level may be affected negatively due to foreclosure of supply. These effects may also be exacerbated due to the frequent occurrence of product shortage.

Other with a view to the Commission's findings on the LPG market.

- 10.28. LPG producers have stated their preference for providing LPG supply through long-term supply agreements. These supply agreements are provided to a select few downstream participants (the major wholesalers) who mainly have historical links to the LPG producers. The Commission has considered whether these supply agreements bestow any additional advantage to the major wholesalers who are signed into a supply agreement. The main features of the supply agreements entered by the refineries and their clients are considered below. In total, 52 supply contracts were reviewed.
- 10.29. Of interest to the Commission was the extent to which the long-term supply contracts provided additional benefits to major wholesalers in terms of pricing. The likelihood that the major wholesalers were benefitting not only from receiving a security of supply through the supply agreements but also from these agreements bestowing upon them lower prices for LPG was assessed.
- 10.30. The maximum price a refinery may sell LPG is the MRGP, set by the DoE. In certain instances it appears that besides the MRGP, the customer may be charged an additional transport cost, a gantry fee, an admin fee, a fee for products not lifted (underlift) in the previous month, VAT, duty at source, further duties or levies, and other applicable taxes. These elements inform the final price that the customer has to pay. A producer may choose to offer a customer a discount depending on the volume that they purchase. Discounts offered to the major wholesalers are displayed in Table 16.

Table 16: Discounts offered by refiners

		Engen		PetroSA		Chevron	
	Yes/No	Discount on volume	Yes/No	Discount on volume uplifted	Yes/No	Discount on volume uplifted	
Afrox	Yes	[REDACTED] for a minimum of [REDACTED] tonnes; and [REDACTED] for quantities in excess of this minimum.	Yes	[REDACTED] discount	Yes	[REDACTED] for volumes in excess of [REDACTED] tonnes	
Easigas	No	-	Yes	[REDACTED] discount	No	-	
Oryx	No	-	Yes	[REDACTED] discount	No	-	
Reatile	Yes	An annual discount of [REDACTED] of the purchase price is granted on all LPG uplifted.	Yes	[REDACTED] discount	No	-	
Totalgaz	Yes	The discount is [REDACTED] on any quantity up to and including [REDACTED]; and [REDACTED] for any quantity above [REDACTED] tonnes.	Yes	[REDACTED] discount	No	-	

Source: Submissions from wholesalers

10.31. Of the fifty-two (52) supply agreements reviewed:

10.31.1. Nine (9) contracts were found to have a provision for discounts.

10.31.2. No discount provision was found in any of the forty (40) [REDACTED] contracts reviewed.

10.31.3. Six (6) out of the nine (9) [REDACTED] supply agreement contracts made provision for discounts.

10.31.4. All three (3) supply agreements for [REDACTED] included provisions for discounts. [REDACTED].

10.32. The observations above indicate evidence of preferential pricing by some refineries. By way of example, [REDACTED] receives an annual discount of 10% off the purchase price for all LPG uplifted in each contractual year from [REDACTED]. [REDACTED] TotalGaz and Afrox receive annual discounts from [REDACTED], although conditional on volumes lifted. [REDACTED] Sasol submitted that it does not offer any discounts.

- 10.33. In a market with supply shortages, it is likely that preferential pricing confers particular advantages on certain players as opposed to others. This would likely have adverse effects on the competitive position of smaller players, notwithstanding the volume discounts.
- 10.34. [REDACTED], [REDACTED] and [REDACTED] dispute the argument that these agreements and the preferential pricing advantages attached thereto enhance their competitiveness. These players submit that supply inconsistencies stemming from unplanned and planned refinery shutdowns and the deficit in the sector mean they do not enjoy any advantage, notwithstanding the contractual arrangements.

Competition findings

- 10.35. The analysis conducted above reveals the perpetuation of the historical relationships that Shell and BPSA had with SAPREF regarding the allocation of LPG. The perpetuation of these historical relationships, through Shell and BPSA to Easigas and Oryx, is likely to afford these wholesalers a competitive edge in a market marred by insufficient and on occasion inconsistent supply.
- 10.36. The inability to secure supply of LPG from refineries is a significant barrier to entry for wholesalers. Wholesalers with long-term contractual agreements have a competitive advantage over other wholesalers.

Industry feedback

- 10.37. In light of these findings, the Commission considered the following potential remedies, which it then put to the industry for feedback. The remedies include: Firstly, decreasing the duration of the supply agreements entered by refineries and wholesalers to provide an opportunity for other wholesalers to compete for LPG supply. Secondly, cancelling all automatic renewal clauses in the supply agreements entered between refineries and wholesalers. Thirdly, implementing a new allocation mechanism wherein all wholesalers would bid for their required LPG volumes from all refineries and lastly, introducing a minimum percentage to be allocated to small wholesalers by each refinery.
- 10.38. In relation to the proposed remedy advocating for a decrease in the duration of supply agreements, the majority of market participants responded positively to this recommendation, with the exception of [REDACTED], [REDACTED] and [REDACTED]. [REDACTED], in its response to the proposed recommendation, stated that the long-term duration of supply contracts is necessary to justify investment in distribution equipment and to cater for supply volatility. [REDACTED] and [REDACTED] mentioned that efficiency benefits arise since long-term

supply agreements afford them the ability to plan sales, compete and ultimately serve customers more effectively.

- 10.39. In relation to the remedy highlighting the need for a new allocation mechanism to be put in place, the majority of parties who responded did not favour the recommendation. Refineries stated that a bidding process would be restricted by the regulated MRGP. Conceptually, the only way in which such a proposal could work would be if pricing were not regulated, which would then have the adverse effect of prices being driven up by large wholesalers who can bid at higher prices for LPG supply. Industrial consumer [X] agreed that a bidding process would increase LPG prices.
- 10.40. [X] raised concerns regarding safety, since safety risks increase when there are more wholesalers collecting product from refineries. Safety concerns were also raised by LPGSASA in that an increased number of wholesalers collecting from refineries would reduce efficiency in enforcing safety standards, which would further strain LPG supply to consumers. Concerned wholesalers stated supply is already limited and that such an allocation mechanism would further exacerbate the problem.
- 10.41. Given that the price of LPG is regulated by the MRGP, the bids submitted by wholesalers are likely to always revert to the MRGP and render the bidding process redundant.
- 10.42. In relation to the proposed remedy to introduce a minimum percentage to be allocated by refineries to small wholesalers, the majority of parties who responded were not in favour of this recommendation. Refineries were concerned that some of the small wholesalers do not have the capacity for larger off-take. This might lead to price increases, as some small wholesalers would not be able to take full truck loads, thereby incurring higher costs per tonne. If off-take agreements were not met, it would lead to a negative effect on refinery production due to excess LPG volume that could not be stored, creating a backlog in production.
- 10.43. Market participants stated that refinery supply is likely to decrease because of the recommendation, with refineries not likely to invest in infrastructure to supply small wholesalers. Wholesalers not in support of the recommendation concurred with refineries, submitting that the recommendation would exacerbate the problem of limited supply and that it was unlikely that small wholesalers could off-take the agreed-upon volumes allocated to them by refineries. [X], an industrial consumer, stated that the recommendation could lead to price increases if small wholesalers acting as intermediaries should on-sell their allocation to other wholesalers.

Recommendations

10.44. The Commission recommends the following:

10.44.1. Existing evergreen agreements or agreements with more than a ten-year duration must be capped to a maximum of ten years. The ten-year duration will provide sufficient opportunity for wholesalers to recoup the cost of investment in bulk storage equipment required to store the large volumes of LPG as negotiated in the supply agreements. This contract duration will provide refineries with predictability of demand for LPG, so they can mitigate against situations of under- or over-supply. The ten-year duration was determined using the typical recoupment period required by wholesalers for the various investments they need to make prior to operating in the market.¹⁵⁶

10.44.2. All automatic renewal clauses must be removed from all supply agreements.

10.44.3. To improve LPG access to small wholesalers, refineries must allocate a minimum of 10% LPG production (excluding internal consumption) to small wholesalers¹⁵⁷ on at least two-year supply agreements. The Commission believes that the 10% allocation must not be made available to small wholesalers on a take-or-pay basis, as this would increase the barriers created by financial limitations. In the event that small wholesalers are unable to purchase the entire 10%, the remaining LPG can be sold in the spot market¹⁵⁸ to any buyer.

10.45. These recommendations are a short-term solution to the supply constraints in the LPG sector, as it is envisaged that within five years South Africa's LPG import infrastructure and the storage facilities at its ports will support increased LPG imports, averting the domestic supply shortage.

¹⁵⁶ For example, a standard bulk carrier, which is required by most entry-level wholesalers, has a 'payback' period of at least eight years, whilst a larger bulk carrier (with a capacity of 60 Kt) would require at least 10 years for the costs to be fully amortised.

¹⁵⁷ The definition of a small wholesaler proposed by the Commission is any wholesaler that requires between 2 500 and 10 000 tonnes of LPG per annum. This definition was determined using the average volumes supplied to ~~the~~ and ~~the~~ over the 2010 - 2014 period.

¹⁵⁸ LPG infrastructure at refineries is limited; should a refinery experience an unplanned shutdown, it will likely have only 1-3 days of LPG in reserve. In such a situation, the refinery will be unable to accommodate spot sales, as the remaining LPG reserves will be allocated for internal usage.

11. Co-ordinated behaviour

- 11.1. Cylinder deposits are paid by end-users to gain access to a full LPG cylinder. A deposit fee entitles the end-user to use (or lease) the cylinder whilst the wholesaler retains ownership thereof. The DoE indicated that the rationale for cylinder deposits is to make it cheaper for end users to access cylinders and to promote LPG usage in South Africa. Similarly, cylinder deposit fees provide some financial protection to wholesalers who run the risk of not recovering their cost of investment should the cylinders fall into the hands of rogue traders/cross-fillers.

Complaints received regarding cylinder deposit fees

- 11.2. The Commission received information from an anonymous distributor indicating possible collusion by the four main wholesalers through co-ordinated increases in their deposit fees for the various gas cylinder sizes. Four letters were forwarded to the Commission by a certain "Joe Soap". The letters, coming from Afrox, Totalgaz, Oryx and Easigas, all notified their distributors of a pending increase in the cylinder deposit fee, while at the same time introducing a non-refundable rental fee for using their cylinders.
- 11.3. The DoE is the regulatory authority responsible for the determination of the cylinder deposit fee applicable in the LPG sector. The MRP Working Rules (2010) state: *"deposits on cylinders will be limited to a maximum amount of 45% of the cost of a cylinder and will be adjusted annually"*.
- 11.4. The letters received by the Commission indicated the possibility of coordination in the increase of the deposit fee by the four wholesalers. The letters of notification of the changes are discussed in the sequence in which they were sent:
- 11.4.1. In a letter dated 28 February 2014, Oryx advised that because of the increased cost of steel, valves and maintenance of their cylinders, cylinder deposit fees would be increasing, effective from 3 March 2014, as follows: 3 kg and 5 kg: R75 excl. VAT; and 9 kg, 14 kg, 19 kg and 48 kg: R250 excl. VAT.¹⁵⁹

¹⁵⁹ See submission from Joe Soap on 29 October 2014

- 11.4.2. On 3 March 2014, a fax sent by Afrox indicated that in addition to the R150 (R171 incl. VAT) refundable deposit, the customer would be required to pay a once-off non-refundable rental fee of R140 (R159.60 incl. VAT) to secure the usage of the cylinder and the ability to exchange an empty Afrox cylinder for a full one.¹⁶⁰
- 11.4.3. A letter from Totalgaz on 2 April 2014 informed customers of an increase in deposit fees¹⁶¹ and introduced a non-refundable deposit rental fee to be paid on each extra¹⁶² allocation. The non-refundable deposits were R25 excl. VAT on 5 kg cylinders, and R100 excl. VAT on all larger sizes up to 48 kg.¹⁶³
- 11.4.4. On 4 April 2014, a letter from Oryx read: *“as a result of the complexity in having differential deposits in the market and the potential barriers of having a higher deposit amount above our competitors, Oryx has revised its deposit structure.”*¹⁶⁴ While the deposit rates for 3 kg and 5 kg cylinders remained the same, the deposit for the larger bottles decreased to R150 excl. VAT. The letter further explained that a once-off incremental maintenance charge of R100 excl. VAT would be added to any additional cylinder purchased from Oryx exceeding 5 kg.¹⁶⁵
- 11.4.5. On 8 April 2014, another letter from Oryx explained that they were again revising their deposit structure. In particular, no maintenance charge would be levied against customers swapping cylinders; instead, they would only be affected in the event that they obtained another cylinder.¹⁶⁶
- 11.4.6. Finally, letters from Oryx (dated 1 June 2015),¹⁶⁷ Easigas (dated 2 June 2015)¹⁶⁸ and Totalgaz (dated 4 June 2015)¹⁶⁹ indicated that the cylinder deposit fees on each of these firms' cylinders would increase to R300 per cylinder excluding VAT, with some exceptions,¹⁷⁰ effective from 2, 3 and 8 June 2015 respectively.

¹⁶⁰ See submission from Joe Soap on 29 October 2014.

¹⁶¹ The new deposit fees were R50 excl. VAT on 5 kg cylinders, and R150 excl. VAT on all larger sizes up to 48 kg.

¹⁶² This refers to the number of Totalgaz cylinders provided to customers over and above the cylinders they returned to Totalgaz, its authorised distributors and/or its authorised dealers.

¹⁶³ See submission from Joe Soap on 29 October 2014.

¹⁶⁴ See submission from Joe Soap on 29 October 2014.

¹⁶⁵ That is, if you are in possession of an Oryx cylinder and you wish to exchange it, this will be done at R150 excl. VAT. If you require an additional cylinder or are swapping an opposition LPG cylinder for an Oryx-BP-branded cylinder, an additional R100 excl. VAT will be charged. This charge is a once-off usage fee.

¹⁶⁶ See submission from Joe Soap on 29 October 2014.

¹⁶⁷ See submission from Joe Soap on 2 June 2015.

¹⁶⁸ See submission from Joe Soap on 10 June 2015.

¹⁶⁹ See submission from Joe Soap on 9 June 2015.

¹⁷⁰ The deposit fee on Totalgaz's 5 kg Shesha cylinder would remain at R150 excluding VAT.

- 11.5. The Commission asked the DoE whether they indeed reviewed and changed the cylinder deposit rate in June 2015. The DoE confirmed that it had not mandated the changes in the cylinder deposits.¹⁷¹
- 11.6. During the market inquiry, the Commission received information relating to alleged collusive behaviour in determining cylinder deposit fees and the Commission has initiated an investigation.¹⁷²

Previous complaints

- 11.7. The Commission has received similar complaints from market participants. In January 2009, the Commission received a corporate leniency application ("CLP") from Afrox alleging that the members¹⁷³ of LPGSASA potentially contravened Section 4 of the Competition Act by supplying LPG to low-income households on preferential terms.¹⁷⁴ In this complaint, the Commission found that, while the respondents had agreed on a formula to determine the prices of LPG sold to low-income households, this formula was developed in consultation with the DoE.¹⁷⁵ The Commission found, around 2005, the DoE withdrew from the programme, stating the target number of households had not been reached and the project was considered a failure. Despite the DoE's withdrawal, the LPGSASA members continued to meet to discuss the project, and their pricing policies remained informed by the formula agreed upon with the DoE.
- 11.8. The Commission received complaints relating to the potential price fixing of the cylinder deposit rate in the Western Cape.
- 11.9. Based on the information available, the Commission decided not to refer the complaint to the Competition Tribunal. The following reasons were cited:¹⁷⁶

¹⁷¹ Refer to meeting with DoE, October 2015.

¹⁷² See Competition Commission press release (<http://www.compcom.co.za/wp-content/uploads/2015/01/Competition-Commission-receives-offices-of-LPG-suppliers.pdf>), accessed on 24 October 2016).

¹⁷³ Specifically Afrox, BPSA, Esigas and Totalgaz.

¹⁷⁴ See Competition Commission vs African Oxygen Limited, Esigas (Pty) Ltd, Totalgaz (Pty) Ltd, BP Southern Africa, and Wild Orchards (Pty) Ltd (Case number 2009Jhr4250).

¹⁷⁵ Refer to Notice CC8 (Notice of Non-referral of Complaint) (16 August 2011).

¹⁷⁶ Refer to CC case no. 2009Jhr4250 (CC8 Notice of Non-referral of complaint) 16 August 2011.

11.9.1. In relation to the Section 4(1)(b)(i) allegation, the Commission confirmed that the respondents agreed on a formula to be used to determine the prices of LPG sold to low income households. The Commission decided not to refer the matter as the alleged conduct by the parties was at the request of the DoE and was in the context of a government intervention to ensure sufficient supply of LPG to low income households. Further, evidence gathered by the Commission confirmed that this conduct ended and was limited to the period 2005 to 2007.

11.9.2. In relation to price fixing of cylinder deposits, the Commission decided not to refer the matter as attempts by one of the respondents to have the cylinder deposit rate increased was unsuccessful.

11.10. Whilst the Commission at that stage did not proceed with prosecution of the respondents, it subsequently became apparent that the Commission should have pursued both matters and referred the cases to the Tribunal. The Commission has witnessed the same conduct and there are ongoing investigations outside of the market inquiry regarding the fixing of cylinder deposit rates.

Continued Allegations

11.11. The Commission received information from an anonymous distributor during the market inquiry indicating possible collusion by the four main wholesalers through co-ordinated increases in their deposit fees for the various gas cylinders.

11.12. The DoE, as the regulatory authority responsible for the determination of the cylinder deposit fee applicable in the LPG sector, has not reviewed the deposit fees since 2010 in terms of the MRP Working Rules (2010).

11.13. The Commission has reason to believe that collusion in fixing cylinder deposits has taken place in this sector and that this conduct is likely to be continuing.

11.14. Furthermore, the Commission is of the view that the LPG market in South Africa exhibit features that are conducive for collusive behaviour to take place. This is over and above the evidence gathered with regards to cylinder deposit fees discussed above.

Recommendations

11.15. The Commission recommends the following:

11.15.1. NERSA, rather than the DoE, should be responsible for the determination of deposit fees and the subsequent annual reviews.

11.16. The Commission will continue with its ongoing cartel investigations separate from the market inquiry process.

12. The sale of LPG through cylinders

- 12.1. The direct supply of cylinders to end-users was identified as a route to market available to wholesalers. The percentage of sales made through cylinders varies across the wholesalers. For example, LPG sales through cylinders averaged at least [between 30-45%] of [X] total sales [X] and [between 20-30%] of [X] sales in 2014, [X] as shown in Table 17.

Table 17: Percentage of sales made through cylinders to end-users (2014) [X]

Wholesaler	Cylinder sales
Afrox	30-45%
Easigas	30-40%
Oryx	40-55%
Wasaa	20-35%
Reatile	10-20%

- 12.2. Cylinders are a necessary route to market to compete effectively in this sector. Consequently, wholesalers have invested in the cylinder market to ensure that their stock of cylinders is sufficient to meet market demand. As explained by [X]:

"The number of cylinders in the market affects the competitiveness of the supplier and the owner. The greater the number of cylinders you own and are able to refill, the better your turnaround time for fulfilling orders. Having low numbers of cylinders will impact on your margin as you will need to spend more money on retrieving cylinders in order to refill." [X]

- 12.3. Table 18 indicates the number of cylinders in circulation amongst major wholesalers in 2015. The information is disaggregated by cylinder size.

Table 18: Cylinder sizes in circulation

Wholesaler	Smaller than 5 kg	5 kg	9 kg	14 kg	19 kg	48 kg	Total cylinders supplied
Afrox		✕	✕	✕	✕	✕	✕
Totalgaz		✕	✕	✕	✕	✕	✕
Easigas		✕	✕	✕	✕	✕	✕
Oryx		✕	✕	✕	✕	✕	✕
KayaGas		✕	✕	✕	✕	✕	✕
Reatile		✕	✕	✕	✕	✕	✕
Wasaa		✕	✕	✕	✕	✕	✕
Private cylinders	80 642	26 350	37 362	–	–	–	150 629
Total cylinders	80 642	374 919	2 867 812	159 164	744 485	524 454	4 757 751
Percentage in circulation	1.7%	7.9%	60.3%	3.3%	15.6%	11.0%	100%

Note: (i) Cylinder sizes smaller than 5 kg include 3 kg and 4.5 kg cylinders supplied by Alva and Megamaster; (ii) The total cylinder calculation for Afrox excludes 6 275 cylinders of 6 kg each made available for direct purchase to customers in 2015. These cylinders are included in the total estimate for private cylinders with 6 890 cylinders of 7 kg each supplied by CADAC.

12.4. As shown in Table 18, the 9 kg cylinders accounted for at least 60.3% of all cylinders in circulation, followed by the 19 kg cylinders at 15.6%. The 5 kg cylinders are considered the most effective cylinder size for low-income households in South Africa. These cylinders accounted for only 7.9% of the cylinder population in circulation, indicating there is room for increased penetration using this cylinder size.

12.5. As a proxy of market shares, the Commission used the number of cylinders in circulation to estimate the share of the cylinder market accounted for by each wholesaler across the various cylinder sizes. Afrox had the largest number of cylinders in circulation (when aggregating across the cylinder sizes) and accounted for [between 35-50%] of the 9 kg cylinders in circulation, as reflected in Table 19.

177 Source: Afrox response to RFI – part 1 – 24.04.2015; Afrox response to cylinder clarification request – 01 Sep 2016; Easigas/Reatile merger competitiveness report (p22); Oryx 30 April 2015 submission, q 5.2, p6; Wasaa submission (8 May 2015), q 3.1, p4; Easigas – Response to Information Request – 25 August 2015; Total response to CC RF 126 August 2016; Megamaster response to CC RF (12 September 2016)

Table 13: Heavy formwork cylinder data

Source: Gas Cylinder Manufacturers' Association (2016)

Wholesaler	Afrox	Totalgaz	Easigas	Oryx	KayaGas	Reatile	Wasaa	Privately owned
5 kg	30-45%	15-25%	-	0-10%	25-40%	-	-	0-10%
9 kg	30-45%	10-25%	10-25%	10-25%	0-10%	0-10%	0-10%	0-10%
7 kg								0-10%
14 kg	0-15%	15-25%	10-25%	35-45%	0-10%	-	0-10%	-
19 kg	15-30%	30-45%	0-10%	25-40%	0-10%	0-10%	0-10%	-
48 kg	15-30%	20-35%	20-35%	20-35%	0-10%	0-10%	0-10%	-
Total cylinders supplied	25-40%	15-30%	15-25%	15-25%	0-10%	0-10%	0-10%	0-10%

Note: (i) This table omits the 3 kg, 4.5 kg and 7 kg cylinders privately supplied to customers. These cylinders account for approximately 1.92%. (ii) Further, the 6 kg cylinders sold by Afrox to customers are only accounted for in the calculation of the total cylinders supplied.

- 12.6. KayaGas had the largest volume of 5 kg cylinders in circulation at [redacted] cylinders in 2015, accounting for [between 25-40%] of the 5 kg cylinders. Afrox's 5 kg cylinders accounted for [between 25-40%] (or [redacted] cylinders) of the 5 kg cylinder population. Privately owned 5 kg cylinders accounted for [between 0-10%] of the total 5 kg cylinders available in 2015.
- 12.7. Major wholesalers accounted for the largest number of 48 kg cylinders in circulation, with an estimated market share of [redacted] going to Easigas and approximately [redacted] to Afrox. The smaller wholesalers had a limited presence in this segment with Reatile accounting for [redacted] and the other smaller players accounting for less than [redacted] of the 48 kg cylinders in circulation.
- 12.8. Privately owned cylinders accounted for [redacted] of the total cylinder population in circulation. The vast majority was composed of cylinders supplied by suppliers like CADAC, ALVA and Total. [redacted] submitted that it sells 6kg cylinders directly to customers for private ownership. [redacted]

Cylinder ownership models observed

Source: Gas Cylinder Manufacturers' Association

- 12.9. Various types of cylinder ownership models have been observed in various jurisdictions, namely: (i) Company-owned cylinders; (ii) Customer-owned cylinders; and (iii) The white cylinder. [redacted]

- 12.10. In South Africa, cylinder ownership predominantly resides with the LPG wholesalers. End-users pay a cylinder deposit entitling them to use the cylinder while the wholesaler retains ownership thereof. When the end-user no longer requires the cylinder, they return it and their deposit is refunded. Customers are able to exchange the empty cylinder for a full cylinder at numerous swapping points like petrol stations. This company-owned cylinder model is the standard model used in most of the European, Asian and African markets.
- 12.11. This model has numerous benefits: (i) It enables a full-for-empty exchange; (ii) Centralised filling reduces costs due to scale efficiencies; (iii) It reduces safety risks as filling takes place at fewer re-filling sites where risks can be consolidated and managed; and (iv) As each company's brand is printed on its cylinders, adherence to safety regulations and standards is more likely, given the reputational threat should it release unsafe cylinders into the market.¹⁷⁸
- 12.12. The customer-owned cylinder model is employed in the United States, Mozambique and Zimbabwe. Under this model, the customer makes the investment in the cylinder and has the advantage of being able to fill cylinders at any agent. This model has several challenges:¹⁷⁸
- 12.12.1. It necessitates the proliferation of many filling facilities. This has cost implications for LPG suppliers, and firms may struggle to achieve the economies of scale required to profitably provide ready access to re-filling stations. This may, in turn, increase the price incurred by a customer to refill cylinders.
- 12.12.2. Cylinders may not be repaired, revalidated or replaced as often as is required, as the customer either does not want to incur the associated cost, or is unaware that the cylinder needs to be repaired or replaced.
- 12.12.3. Cylinder retailers may take a margin on the cylinder price, further increasing the cost to the consumer.¹⁷⁸

¹⁷⁸

WILPGA, "Guidelines for the Development of Sustainable LPG Gas Markets: Early-Stage Markets Edition"

- 12.13. A permutation of the customer-owned model is observed in South Africa, with major retail chains importing LPG cylinders and supplying them directly to consumers (Megamaster, Total, CADAC and Alva). These cylinders typically come in 3 kg or 5 kg sizes, and customers refill their cylinders at any filling site (e.g. hardware stores and petrol stations).¹⁷⁹ These cylinders account for only [X] of the total cylinder population in South Africa.¹⁸⁰
- 12.14. In the white cylinder approach,¹⁸¹ employed in countries like Poland and China, where there is a general pool of cylinders in the market that can be filled by any licensed filling plant and sold or exchanged to any customer. As with the customer-owned approach, the customer purchases the cylinder.
- 12.15. Advantages to this model include: (i) enabling customers to exchange empty for full cylinder, (ii) it encourages competition amongst wholesalers and resellers, and allows for the achievement of scale of operation at filling plants. This model raises safety concerns as companies would generally supply the cheapest cylinders into the market, and cylinder inspections may not be carried out responsibly.¹⁸² This approach requires monitoring and enforcement of standards to deal with potential safety concerns.

International LPG cylinder ownership

- 12.16. A 2011 study conducted by the World Bank examined the LPG sector in 20 developing countries.¹⁸³ Amongst the indicators considered were cylinder ownership, cylinder exchange and the cross-filling models employed in those countries. Of the group of countries investigated, by far the most prevalent system was the company-owned cylinder model. This model sees the ownership, distributing and filling of cylinders centralised at the company level with empty cylinders returning to filling plants through the same network.
- 12.17. Based on the broader findings of the study, the World Bank submits that the customer-owned cylinder model is by far the most efficient system for delivering LPG to final customers, since it brings the bulk product as close as possible to the customers and minimises the transport and handling of full and empty cylinders. Its greatest drawback, is the lack of control over the cylinder itself and the monitoring of

¹⁷⁹ Meeting with LPGSASA on 12 August 2016

¹⁸⁰ This number includes the 6 kg cylinders made available for direct purchase by Afrox.

¹⁸¹ The cylinders are not always white; in Poland they are red and in China they are silver.

¹⁸² KayaGas explains that this model has either ended or laws have been introduced to scrap all these cylinders (as in China), or companies have progressively been allowed to replace these cylinders with their own colours (as in Poland) to mitigate against the high accident rate associated with these cylinders.

¹⁸³ Namely, Ghana, Kenya, Senegal, South Africa, Fiji, Thailand, Vietnam, Albania, Moldova, Turkey, Dominican Republic, Guatemala, Mexico, Peru, Canada, Texas (USA), Jordan, Morocco, Afghanistan, Pakistan and Sri Lanka

cylinder safety.¹⁸⁴ Under this system, it is more difficult to improve safety standards and enforce the criteria for cylinder rejection by filling plant operators. Very basic maintenance, like checking for leaks and valve replacement, is carried out at some filling plants. More thorough visual inspections, checking of revalidation dates and, if necessary, rejection of cylinders due for repair or revalidation seldom take place.¹⁸⁵

- 12.18. For a customer-owned cylinder system to be safe, mini-filling plant operators must have the expertise and authority to reject and confiscate a client's cylinder based on its condition or revalidation date. While mechanisms by which to build the cost of replacing a damaged cylinder into the product price can be explored, the more critical consideration is whether the quality of filling plant operators is such that they have the necessary expertise to make and enforce cylinder standards and procedures.¹⁸⁶
- 12.19. Several countries adopted a company-owned cylinder ownership model similar to that employed in South Africa. In Thailand, Brazil, Morocco and Turkey, the LPG customer pays a refundable deposit to gain access to an LPG cylinder which remains the property of the company owning that cylinder. LPG marketing companies re-fill cylinders at central locations and distribute the filled cylinders through a network of smaller distributors, dealers and retail outlets. Empty cylinders are returned to filling centres and the company that owns the cylinders is responsible for their testing, repair and revalidation.¹⁸⁷
- 12.20. The customer-owned cylinder model is in place in Vietnam, Nigeria and Ghana. In Vietnam, customers purchase cylinders and exchange full cylinders for empty ones. Cross-filling is a common practice and consumers may switch between retailers either in an effort to reduce turnaround times or if they suspect the retailer of under-filling cylinders. When a consumer has an empty cylinder, it is general practice to contact the preferred shop from where they purchased it to arrange for delivery of a full cylinder to their home.¹⁸⁸

¹⁸⁴ *ibid.*

¹⁸⁵ Mathews, W.G. & Zeissig, H.R. 2011. *Residential Market For LPG: A Review of Experience of 20 Developing Countries*, 14.5A.

¹⁸⁶ Mathews, W.G. & Zeissig, H.R. 2011. *Residential Market For LPG: A Review of Experience of 20 Developing Countries*, 19.

¹⁸⁷ *ibid.*

¹⁸⁸ *ibid.*

- 12.21. Cylinder ownership in Nigeria used to reside with the LPG marketing firms that issued cylinders to appointed distributors and consumers. Cylinders were issued on the understanding that the marketing companies would retain ownership of the cylinders and hold exclusive rights to fill, maintain and repair their cylinders. This system collapsed when the Nigerian Cylinder Gas Company, a major cylinder manufacturer, started transferring ownership of cylinders to consumers. While this initially encouraged the entry of independent LPG marketers and distributors, it eventually placed strain on the company-owned cylinder model, which gradually fell away. Cross-filling became rife and second-hand cylinders were imported by LPG traders.¹⁸⁹ The absence of clear regulations on ownership and the maintenance and filling of cylinders led to most cylinders in circulation being in poor working condition.¹⁹⁰
- 12.22. Avedia,¹⁹¹ which is active in that country, further corroborated the Nigerian experience. The company explained to the Commission that prior to the switch to a customer-owned cylinder model, the company used to import between five and ten thousand cylinders annually into the Nigerian market. With the drive towards a customer-ownership model, wholesalers became unwilling to continue investing in cylinders. Furthermore, while unaccredited cross-fillers proliferated in the market at first, these businesses gradually became strained as the number of cylinders in working condition became increasingly sparse.
- 12.23. Ghana is one of the few developing countries with a bulk-supplied mini-filling plant system. Customers own and retain their cylinders, and empty cylinders are re-filled at nearby filling plants or exchanged for filled cylinders. There is thus no significant exchange of cylinders in Ghana.¹⁹²

Safety perspectives on customer-owned versus company-owned cylinder models

- 12.24. In its report titled '*Guidelines for the Development of Sustainable LP Gas Markets: Early-State Markets Edition*', the WLPGA explains that the failure of a distribution model to ensure strict compliance with good cylinder management practices will result in an increase in safety issues experienced by customers. It particularly mentions: (i) Failure to remove all damaged or defective cylinders from the distribution chain, (ii) The lack of repair, retesting or scrapping of defective cylinders, and (iii) The lack of investment in replacing the cylinders removed from the market.¹⁹³

¹⁸⁹ World Bank, 2006, '*Nigerian LP Gas Sector Improvement Study*'.

¹⁹⁰ World Bank, 2007, '*Volcano III – Lessons Learned LP Gas Sector Improvement Studies Cameroon, Ghana, Nigeria*'.

¹⁹¹ Moulton will; Avedia, Pretoria, 18 July 2016.

¹⁹² Matthews, W.G. & Zeissig, H.J., 2011, '*Desiderata Market For LPG: A Review of Experience of 20 Developing Countries*'.

¹⁹³ WLPGA, 2013, '*Guidelines for the Development of Sustainable LP Gas Markets: Early-State Markets Edition*', p18.

12.25. The WLPGA found in numerous countries, the *customer-owned cylinder model has been abandoned in favour of the company-owned model* due to the widespread loss of control over cylinders by legitimate market participants. The report identifies the following reasons for the failure of this model:

12.25.1. *Safety incentives:* Cylinders are rarely, if ever, inspected, maintained or tested, and the expertise to repair or revalidate cylinders does not exist at retailers. Re-fillers have little incentive to conduct the relevant safety checks on cylinders, as they are likely to forfeit the sale of LPG if the customer's cylinder is found to be defective.

12.25.2. *Hazard of discarded cylinders:* Defective cylinders are often irresponsibly discarded (or reused by illegitimate cylinder fillers), and become a hazard to public safety.

12.26. Evidence has also been found of market and regulatory failure in markets adopting customer-owned cylinder models. Market failure was found to occur because of (i) A lack of new, legal cylinders being added to the market; (ii) A lack of growth in the volume of LPG being consumed by end-users; and (iii) An increase in the frequency of fires and explosions associated with LPG. Regulatory failure occurred due to blurred lines regarding which market participant is required to accept responsibility and liability of cylinders.¹⁹⁴ In the case of an accident involving a cylinder, multiple parties may be held responsible and liable. There is no clear recourse to the seller of the cylinder or the LPG filler, with the result that the burden of the incident is likely to fall on the customer.

12.27. In stark contrast to the customer-owned model, the WLPGA has found that *"the excellent global customer safety record for LP Gas is a direct result of the capability of the company-owned model"*.¹⁹⁵ This model sees LPG wholesalers bear the responsibility for the safe filling, revalidation and transportation of their respective cylinders. This model ensures that wholesalers retain the incentive to make on-going investments in very robust, high-quality cylinders, as the reputational loss that occurs in cylinder-related safety incidents act as a disciplining factor.¹⁹⁶

¹⁹⁴ In particular, in such instances, it is unclear who should be held liable for (i) the quality of the cylinder; (ii) the conditions under which the cylinder is used; and (iii) filling the cylinder.

¹⁹⁵ WLPGA, "Guidelines for the Development of Sustainable LP Gas Markets: Early-Stage Markets Edition", p19.

¹⁹⁶ WLPGA, "Guidelines for the Development of Sustainable LP Gas Markets: Early-Stage Markets Edition", p19.

- 12.28. Any increase in cylinder-related safety incidents has the potential to erode public confidence in the safety of LPG. This will have knock-on effects on the sale of LPG, particularly to households, being a key route to market for wholesalers. In addition, the market is likely to experience an increase in unsafe cylinder practices by non-compliant cross-fillers.¹⁹⁷ Maintaining the safety standards within the LPG sector is a key concern.

Cylinder safety in South Africa

- 12.29. South Africa has adopted a hybrid cylinder ownership model (comprising company-owned and customer-owned cylinders). In assessing the effectiveness of this model, the Commission considered incidents related to cylinder safety that occurred between January 2012 and January 2016. LPGSASA submitted that there were “virtually no recorded incidents involving LPG cylinders”.¹⁹⁸ The reasons for this are attributed to the following factors:¹⁹⁹

- 12.29.1. The LPG sector is subject to stringent regulations on cylinder safety. Through formats like the cylinder verification scheme, ongoing promotion of the need to use reputable suppliers and the dissemination of information to consumers and users of LPG on the perils of using illegally filled cylinders, the number of incidents to date has, from all accounts, been minimal.
- 12.29.2. Members are reluctant to report cylinder incidents to the LPGSASA as they view this as potentially being of a commercially sensitive nature.
- 12.29.3. Members are also reluctant to report cylinder-related incidents as it could be damaging to the brand owner.

Cylinder deposits

- 12.30. Cylinder deposits are paid by end-users to gain access to a full LPG cylinder. The DoE submitted that the deposits were put in place to help lower the cost of acquiring a cylinder for domestic end-users.²⁰⁰ Cylinder deposit costs must be high enough to avoid cylinders being used for other applications, but not so high that it limits conversion to LPG by new users. Ideally, companies purchasing cylinders want to recover their costs fully, yet the DoE's MRP Working Rules (2010) state that “*deposits on cylinders will be limited to a maximum amount of 45% of the cost of a*

¹⁹⁷ WLPGA, “Guidelines for the Development of Sustainable LP Gas Markets: Early State Markets Edition”, p18.

¹⁹⁸ LPGSASA, February 2016 response to information request (c.2.7)

¹⁹⁹ *Ibid.*

²⁰⁰ Refer to meeting notes, DoE meeting, held in October 2015

cylinder and will be adjusted annually".²⁰¹

12.31. The Commission examined whether market participants were adhering to the maximum cylinder deposit price of 45% of the cylinder value. The Commission evaluated the landed price of cylinders (all cylinders are imported) against the R150 deposit price which prevailed in the sector until 2015.²⁰² Table 20 compares the import prices and deposit fees for the four major resellers.

Table 20: Comparison of import prices and deposit fees for four resellers

Company	Pricing	9 kg	14 kg	19 kg	48 kg	
					Single valve	Dual valve
[X]	Import price	R 327,50	R 404,23	R 478,91	R 1 032,38	R 1 153,00
	45% of import price	R 147,38	R 181,90	R 215,51	R 464,57	R 518,85
[X]	Import price	R 295,98	R 382,34	R 471,72	R 847,95	R 986,57
	45% of import price	R 134,54	R 172,05	R 212,27	R 381,58	R 443,96
[X]	Import price	R 299,93	R 382,43	R 472,47	R 860,69	
	45% of import price	R 134,97	R 172,09	R 212,61	R 387,31	
[X]	Import price	R 360,62	-	R 634,44	R 1 223,13	
	45% of import price	R 162,28	-	R 285,50	R 550,41	

Source: Commission's own calculations

12.32. The results indicate that the R150 uniform cylinder deposit price that prevailed in the sector until 2015 does not equate to the 45% maximum cylinder deposit fee prescribed by the DoE. The R150 deposit is only sufficient to cover 45% of the cost of the 9 kg cylinders purchased by [X], [X] and [X]. These results further indicate that the DoE has not monitored and enforced its own regulations.

²⁰¹ Clause 10 of the "Working Rules to set the Monthly Maximum Retail Price for Liquefied Petroleum Gas (LPG)"
²⁰² This was before the increase in deposit fees to R300 excl. VAT in June 2015.

- 12.33. The cylinder deposit rate is uniform across wholesalers and the various cylinder sizes, excluding in some instances cylinder sizes below 9 kg. This is of particular interest, as the rationale for implementing a deposit rate was to lower the cost of acquiring LPG cylinders for domestic end-users. The deposit rate also applies to the 19 kg and 48 kg cylinders, being cylinder sizes not typically used by domestic end-users. The Commission is concerned that applying a uniform deposit rate across all cylinders may lead to instances where domestic end-users may be subsidising the commercial end-users relying on 19 kg and 48 kg cylinders.

The Cylinder Exchange Practice

- 12.34. The Commission received several complaints regarding the cylinder exchange practice. These complaints range from allegations concerning the prevalence of cross-filling by rogue traders and the hoarding of rivals' cylinders. As mentioned above, cylinders are a key route to market and the persistence of such practices has implications for the willingness of the industry to invest in cylinders and thus for the growth of domestic usage of LPG.
- 12.35. Cylinder exchange describes the practice amongst cylinder wholesalers/resellers and distributors of empty cylinders being exchanged between or returned to owners. This practice works as follows: when a supplier or distributor receives cylinders belonging to another supplier, it returns those cylinders to that supplier and receives in exchange any of its own cylinders that the latter may have in its possession. Cylinders are exchanged either on a one-to-one (1:1) basis¹³⁸ or, if the number of empty cylinders exchanged is not equal, the recipient with the greater number of cylinders will pay the deposit value on each of the additional cylinders received.¹³⁹ The deposit fee paid on each empty cylinder recently increased from R150 to R300 excluding VAT.¹⁴⁰
- 12.36. The purpose of the cylinder exchange is two-fold: First, the cylinder exchange mechanism allows cylinders to be retrieved quickly, thus reducing transport costs and turnaround times for cylinders to be acquired, serviced and re-filled for distribution.¹⁴¹ Second, cylinder exchange eliminates any inconvenience that may arise from consumers having to exchange their cylinders at a particular agent,¹⁴² reducing search costs and indirectly facilitating the use of LPG.

- 12.37. The cylinder exchange programme is not a legislated practice but has instead developed over time amongst the industry players²⁰³ and is adopted and adhered to by market participants.²⁰⁴ The practice is subject to the Occupational Health and Safety Act, Act No. 85 of 1993, as amended ("OHS Act"), primarily through the Pressure Equipment Regulations ("PER").
- 12.38. The Commission learnt of a memorandum of agreement [REDACTED]. This agreement, signed in 2003, outlines the parties' agreement regarding the rationale for entering into the cylinder exchange practice (to prevent cross-filling and hoarding of cylinders, and the recognition that in the interest of 'economic utilisation', cylinder exchanges should occur as swiftly as possible). The signatories undertake to inter alia refrain from cross-filling, repairing or maintaining another party's cylinders; to notify on a weekly basis the number of each other's cylinders in their possession; and to release any cylinders not owned against the payment of the cylinder deposit.
- 12.39. Since the lapsing of the [REDACTED] Agreement, industry players have opted for bilateral arrangements through which wholesalers and resellers facilitate cylinder exchange practice. For example, upon entering the market, [REDACTED] wrote a letter to all of the market participants informing them of the [REDACTED] brand and requesting their cooperation in the exchange of cylinders. This led to the company being registered in wholesalers and resellers' respective systems as a debtor/creditor to support the payment of cylinder deposits.²⁰³ [REDACTED] noted that it enters swapping agreements with any party that made an investment in its own cylinders, and is willing to enter into such agreements with any new entrants that invest in their own branded cylinders.²⁰⁴ [REDACTED] noted it is willing to exchange any cylinders if the other party legally owns the cylinders and that the cylinders are not commercial cylinders (such as Megamaster, CADAC, Alva, etc.).²⁰⁴

Advantages and disadvantages of the cylinder exchange practice

- 12.40. Market participants noted various advantages of cylinder exchange that echo those identified by the WLPGA in the section above. These benefits relate largely to efficiencies by wholesalers and resellers, convenience to customers, and safety considerations. In particular, it is maintained that the cylinder exchange practice holds the following benefits:

203 Further call for submissions
204 Second response to information request -- 16.06.2015

- 12.40.1. It promotes efficiencies in the tracking and retrieval of cylinders²⁰⁵ that, if done quickly, reduce transport costs and turnaround times so that refilled cylinders can swiftly re-enter the market.
- 12.40.2. It allows customers (end-users) to swop empty cylinders belonging to any party or person with any distributor in return for a full cylinder,²⁰⁶ paying only for the LPG.²⁰⁷ This improves accessibility to LPG for consumers and allows them to switch between suppliers.²⁰⁸
- 12.40.3. The exchange practice also serves as a safety measure. [X] submits that the interchangeability of cylinders across companies would weaken companies' incentive to repair or replace damaged cylinders. The exchange practice enables adherence to regulations²⁰⁹ regarding cylinder maintenance and replacement across all companies.²¹⁰
- 12.41. Market participants have noted various disadvantages of cylinder exchange. These pertain mainly to the recoupment of investment and the geographic dispersion of cylinders. Market participants have stated that the low deposit fees and mobility of cylinders sees them being transported across the border into Mozambique and Zimbabwe,²¹¹ where it is cheaper to obtain cylinders of South African origin than to purchase them directly from the manufacturer.²¹² This means that a wholesaler with a limited cylinder population in a particular area may end up with a constrained 'working stock' (i.e. may be short of empty cylinders that can be refilled to re-enter the market). This constraint applies to all market participants, but the impact is more acute for participants with a limited number of cylinders.²¹³ A few market participants raised concerns regarding the illegal filling of cylinders invested in by wholesalers.

205 [X] - Further call for submissions

206 [X] - Call for submissions

207 [X] - Further call for submissions

208 [X] - Further call for submissions

209 Cylinders are supplied and certified as being compliant with ISA 4706: 1989, with a cylinder verification period by the LPG Safety Association of Southern Africa. Valves are supplied and fitted to be certified as being compliant with the requirements of SANS 188. (Weisse - Information request answers - 8 May 2015)

210 [X] - Further call for submissions

211 [X] - Follow-up to information request - August 2015

212 [X] - Submission of information request - March/April 2015

213 [X] - Response to information request


Gas and LPG – Wholesalers

- 12.42. Cross-filling refers to instances where an industry player refills a branded cylinder belonging to another wholesaler.  Industry practice and the OHS Act²¹⁴ dictate that cylinders may only be refilled by the owner of the cylinder. The OHS does make provision for legal cross-filling to take place, whereby consent must be obtained from the owner of the cylinders to be cross-filled. Market participants have noted that (legal and illegal) cross-filling takes place between wholesalers (with and without consent from the cylinder owner).  estimates that 20% of its cylinders are illegally filled by industry players that are either unable or unwilling to invest in their own branded cylinders.²¹⁵
- 12.43. Illegal cross-filling limits cylinder owners' access to their own cylinders and to the returns that can be realised from their investment in such cylinders. Various safety concerns have been raised regarding cross-filling, ranging from over-filling cylinders to failure to conduct the necessary safety checks. In South Africa, the filling and distribution of a wholesaler's cylinders in the absence of an agreement (or some form of consent) is unlawful.
- 12.44. In Thailand, the government imposed regulations that prohibit cross-filling in 2002,²¹⁶ while in Brazil there are efforts to minimise cross-filling²¹⁷ by enforcing existing regulations. In Turkey, cross-filling is not allowed.

Description of the cylinder-filling process

- 12.45. The cylinder-filling procedure is a manual process involving: (i) A pre-filling safety inspection of the cylinders; (ii) Filling the cylinders with LPG; and (iii) A post-filling safety inspection. The specifics of each of these processes are explained below:

²¹⁴  (distribution) – Call for submissions – October 2014

²¹⁵  – Further call for submissions

²¹⁶ Ekoum, K. & Iurivato, V. 2012, *Household Energy Access for Cooking and Heating: Lessons Learned and the Way Forward*.

²¹⁷ *ibid.*

(i) *Pre-filling safety inspection of cylinders*

12.46. The SANS 10087-7:2011²¹⁸ and SANS 10019:2011²¹⁹ standards spell out the procedure that cylinder fillers must follow in conducting pre-filling cylinder tests. Pre-filling cylinder safety checks are conducted on an empty (or partially empty) cylinder each time it enters the depot or filling plant to be filled.²²⁰ The Commission observed the pre- and post-filling safety checks during site visits at the Easigas,²²¹ Wasaa²²² and Afrox²²³ cylinder-filling depots, and additional information was obtained through information requests to Easigas,²²⁴ Totalgaz²²⁵, Oryx²²⁶ and Afrox.²²⁷

12.47. The pre-filling cylinder safety checks involve a visual inspection by a trained cylinder filler. The criteria that cylinder fillers must adhere to include tests related to: (i) Damage to containers; (ii) The operation of cylinder valves; and (iii) Cylinder markings.

(ii) *Filling safety inspection of cylinders*

12.48. Empty cylinders declared safe to be refilled are rolled onto a calibrated scale measuring the tare mass (un-laden or un-filled mass) of the cylinder. A nozzle is inserted in the point of connection on the cylinder valve and LPG is pumped into the cylinder chamber. The calibrated scale measures the weight of the LPG pumped into the cylinder (9 kg of LPG in 9 kg cylinders). The total weight of the cylinder will equal the tare weight plus the weight of the LPG.²²⁸

(iii) *Post-filling safety inspection of cylinders*

12.49. As per SANS 10087-7:2011, the post-filling cylinder safety checks include weighing the cylinder to ensure that it is within the appropriate mass tolerances, and testing the valve with soapy water to detect leaks. Both Wasaa and Easigas confirmed these tests.²²⁹

²¹⁸ SANS 10087-7:2011 on the 'Storage and filling for refillable liquefied petroleum gas (LPG) containers of gas capacity not exceeding 9 kg and the storage of individual gas containers not exceeding 48 kg'

²¹⁹ SANS 19019:2011 on 'Transportable pressure receptacles for compressed, dissolved and liquefied gases – Basic design, manufacture, use and maintenance' – Table 15

²²⁰ Site visit to Easigas on 23 February 2016, site visit to Wasaa on 24 February 2016, Totalgaz response to information request on 29 February 2016, Oryx response to information request on 29 February 2016, Afrox response to information request on 2 March 2016

²²¹ Site visit to Easigas on 23 February 2016

²²² Site visit to Wasaa on 24 February 2016

²²³ Site visit to Afrox on 05 August 2016

²²⁴ Easigas response to information request on 29 February 2016

²²⁵ Totalgaz response to information request on 29 February 2016

²²⁶ Oryx response to information request on 29 February 2016

²²⁷ Afrox response to information request on 2 March 2016

²²⁸ Site visit to Easigas on 23 February 2016, and site visit to Wasaa on 24 February 2016

²²⁹ Site visit to Easigas on 23 February 2016 and site visit to Wasaa on 24 February 2016

- 12.50. Following the post-filling safety check, a seal bearing the wholesaler's brand name and/or colour is heat shrink-wrapped over the cylinder valve. The cylinder is then set aside for distribution.
- 12.51. Easigas explained that if LPG bubbles are detected post-filling, the LPG is decanted into a bulk storage tank and the cylinder is set aside for valve replacement.²³⁰ As Wasaa does not have the necessary facilities or equipment to decant LPG from a leaking cylinder into a bulk tank, the valve is covered with the plastic seal (Wasaa maintains it assists in containing the leak) and the cylinder is isolated to be sent for repairs. In this instance, the responsibility of emptying the LPG from the faulty cylinder is placed with the re-validator.²³¹
- 12.52. Easigas mentioned that it has imported an electronic leak testing machine for the 9 kg and 19 kg cylinders at an estimated cost of [REDACTED]. This machine can only be used for post-filling leak tests; the pre-filling leak tests will continue to be conducted manually by the cylinder filler.²³²
- (iv) *Cylinder-filling staffing requirements*
- 12.53. Filling LPG is conducted by 'cylinder fillers' employed by the wholesalers. Cylinder fillers receive training on the filling procedure, including the safety tests and standards that must be adhered to pre- and post-cylinder filling.
- 12.54. [REDACTED] outsources the training of its filling staff to external service providers like the LPGSASA. The training takes approximately one day (eight or nine hours), following which [REDACTED] appoints the platform supervisor to observe the filler for two to three months.²³³ [REDACTED] has established its own training processes and procedures for cylinder filling. The training is conducted by in-house staff and takes as little as 30 minutes. [REDACTED] mentioned, while training is available through the OHS Association, it is of the opinion the training is expensive and does not provide any additional benefits compared to in-house training.²³⁴

230 Site visit to [REDACTED] on 23 February 2016
 231 Site visit to [REDACTED] on 24 February 2016
 232 Site visit to [REDACTED] on 23 February 2016
 233 Site visit to [REDACTED] on 24 February 2016
 234 Site visit to [REDACTED] on 23 February 2016

12.55. The number of cylinder fillers employed will depend on the scale of the filling operations. [REDACTED],²³⁵ for example, employs two permanent fillers,²³⁶ while [REDACTED],²³⁷ having a much larger filling operation, employs ten fillers: two on the manual line and eight on the carousel. Given cylinder filling and the associated safety checks are conducted in-house, the cost of filling the cylinders and the cost of visual and manual inspections amount to labour²³⁸ and training costs²³⁹ only.

(v) *Cylinder safety: customer- versus company-owned cylinders*

12.56. The Commission also considered the extent to which there are differences in the safety legislation pertaining to the company-owned and customer-owned cylinders in circulation. The LPGSASA confirmed that the safety standards for any cylinder imported into the country are governed by SANS 1009.²⁴⁰ They submitted the first batch of cylinders imported by any wholesaler undergoes rigorous testing during which they ensure that the manufacturer of the cylinder complies with the mandatory safety regulations.

12.57. Regarding filling cylinders, LPGSASA stated that different filling procedures are applied to company-owned and customer-owned cylinders. The salient difference noted in the case of customer-owned cylinders is that these cylinders are only subjected to the visual inspection conducted by the filler prior to filling. These cylinders are said not to be subject to the same rigorous procedure that wholesalers put their cylinders through in terms of the post-filling safety checks (like cylinder repair and revalidation).²⁴¹ In terms of safety liability, the onus placed on distributors and fillers of customer-owned cylinders differs from that placed on distributors of company-owned cylinders.

12.58. The Commission also engaged with various wholesalers to understand how the responsibility for cylinder safety differs in the case of customer-owned cylinders. Totalgaz submitted that *the responsibility to maintain and revalidate a cylinder would lie with the owner... at all times*.²⁴² Similarly, [REDACTED] was of the view that *"the common industry practice is that the maintenance of customer-owned cylinders lies entirely with the customer"*.²⁴³

²³⁵ Site visit to [REDACTED] on 24 February 2016

²³⁶ [REDACTED] has trained two back-up fillers that can stand in if one of the permanent fillers is unavailable.

²³⁷ Site visit to [REDACTED] on 23 February 2016

²³⁸ [REDACTED] response to information request on 20 February 2016

²³⁹ [REDACTED] response to information request on 20 February 2016

²⁴⁰ Meeting with LPGSASA, Pretoria, 12 August 2016

²⁴¹ *Ibid.*

- 12.59. [REDACTED], [REDACTED] that confirmed that it had 6 kg²⁴² cylinders available for purchase by customers, submitted:

"the responsibility for conducting the necessary safety checks prior to the re-filling of the cylinder lies with the re-filler".²⁴³

- 12.60. However, they maintained that the responsibility for the cylinder itself "remains with the owner at all times". This responsibility extends to ensuring that the cylinder is correctly maintained and taken for revalidation when necessary.²⁴⁴

Cross-filling amongst wholesalers

- 12.61. This subsection examines the prevalence of cross-filling cylinders amongst LPG wholesalers. The discussion first identifies the legislation permitting cross-filling to take place. Following this, incidents of cross-filling between wholesalers are discussed and the rationale behind it is explained. Finally, the section considers whether wholesalers have ever contemplated entering into a cross-filling arrangement.

(i) SANS provision for cross-filling

- 12.62. SANS 10087-3:2008 provides the standards relating to "LPG installations involving storage vessels of individual water capacity exceeding 500L". Section 16 pertains to filling portable containers and allows for cylinders to be filled by a third party. Specifically, paragraph 16.1 states:

The filling procedure for portable containers shall, in general, be carried out in accordance with SANS 10087-7.²⁴⁵ Containers other than those owned by the gas company shall only be filled when permission to fill the portable container has been granted by the owner of the container.²⁴⁶

- 12.63. This paragraph is followed by a note:

NOTE: This requirement is solely for safety reasons, since the container containment history is an essential reference for correct filling.

²⁴² [REDACTED] owns the 5 kg cylinders that are in circulation and imports 8 kg cylinders for resale.

²⁴³ [REDACTED] response to CC RFI (01 September 2016), para 2.3.1.1, p5

²⁴⁴ *Ibid.*, para 2.3.1.2

²⁴⁵ SANS 10087-7:2011 covers the "Storage and filling for refillable liquefied petroleum gas (LPG) containers of gas capacity not exceeding 9 kg and the storage of individual gas containers not exceeding 48 kg".

²⁴⁶ SANS 10087-3:2008, Liquefied Petroleum Gas installations involving storage vessels of individual water capacity exceeding 500L.

- 12.64. These provisions permit wholesalers and cylinder-filling companies to cross-fill cylinders, provided permission was obtained from the cylinder owner. The note explains that this permission is necessary only as a safety precaution and not as a commercial constraint, and is in place to ensure that the cross-filled cylinders are subjected to the relevant inspections, repairs and revalidation required in SANS 10087-7.

(ii) *Prevalence of cross-filling with consent*

- 12.65. The Commission received information identifying incidents of cross-filling amongst wholesalers. Specifically, [redacted] confirmed that it cross-filled another wholesaler's cylinders, while [redacted] confirmed that it had given consent to another wholesaler to fill Afrox cylinders. Both [redacted] and [redacted] submitted that they never filled another wholesaler's cylinders.

Agreement between [redacted] and [redacted]

- 12.66. [redacted] and the [redacted] entered an agreement in terms of which [redacted] would fill cylinders for [redacted]. This agreement was entered in 2009 and concluded in 2010. [redacted] explained that the cross-filling agreement had been for reasons of commercial efficiency only. At the time of initiation of the contract, the volume of LPG sold through [redacted] was too low to warrant the operation of an LPG filling facility there. Accordingly, [redacted] re-evaluated its cylinder methodology and approached [redacted], which agreed to fill [redacted] cylinders for that period. Since the expiry of the contract, [redacted] has serviced its customers in the region with LPG cylinders filled at its [redacted].

- 12.67. The price paid by [redacted] was based on a product price quoted by [redacted] together with a filling fee. The [redacted] cylinders filled by [redacted] were sealed using [redacted] seals.

Agreement between [redacted] and [redacted]

- 12.68. [redacted] and [redacted] entered a short-term agreement for the period 20 July 2015 until 7 August 2015 in terms of which [redacted] filled 9 kg [redacted] cylinders on [redacted] behalf, and [redacted] permitted [redacted] to fill [redacted] cylinders with [redacted] LPG. [redacted] The companies explained that during the winter of 2015 there was a shortage of LPG in the Western Cape due to local refinery shutdowns. [redacted] explained while it was unable to source bulk product in the [redacted] for filling, [redacted] had access to bulk product through its [redacted] import facility. However, [redacted] was experiencing a shortage of LPG cylinders, and as such could not supply the market.

12.69. [REDACTED]

[REDACTED] and [REDACTED]

12.70. [REDACTED] and [REDACTED] entered an agreement for the period 1 May 2015 to 31 May 2015 whereby [REDACTED] cross-filled [REDACTED] cylinders at its [REDACTED]. [REDACTED] explained that [REDACTED] was building a filling plant in [REDACTED] and requested [REDACTED] to fill its cylinders so the company could start supplying customers whilst construction was still underway.

12.71. The price paid by [REDACTED] to [REDACTED] was [REDACTED].

Future possibility of entering cross-filling agreements

12.72. [REDACTED] submitted that it would not consider a cross-filling arrangement. [REDACTED] submitted it did not discount the possibility of cross-filling in the future, although this would only take place under very particular circumstances and would have to be pre-arranged with the relevant parties. At present, its cylinder-filling operations are running at full capacity, and it is unlikely to consider cross-filling other wholesalers' cylinders.

- 12.73. [X] submitted that it contemplated entering a cylinder-filling agreement in late 2014 when its new facility in Cape Town was under construction. Such an arrangement would have seen another wholesaler filling [X] cylinders on its behalf on a temporary basis until its own filling plant was completed and fully operational. [X] suggested that it may contemplate such agreements in the future. [X] maintained that due to the slow growth of the LPG cylinder market, several existing filling facilities had excess filling capacity. Market players could consider co-managing some under-used facilities to decrease costs. [X]
- 12.74. Key factors [X] would consider in entering a cross-filling agreement include: (i) The region or location of the filling plant; (ii) The operational and technical expertise of the other market player's staff; (iii) Whether the filling plant has the capacity to fulfil both [X] and the other company's cylinder-filling and distribution operations; and (iv) The filling fee. [X] [X] would place its own personnel at the other wholesaler's facilities to mitigate against any safety concerns that might arise from cross-filling. In addition, the parties would need to agree on standards and procedures relating to cylinder inspections, filling procedures, equipment calibration and verification, competency of staff, and the planning and distribution methodology. [X]

Key considerations in providing consent to cross-fill

- 12.75. The Commission examined the key considerations that were taken into account by wholesalers in consenting to another wholesaler cross-filling its cylinders.
- 12.76. [X] explained that its entry into cross-filling arrangements was limited to specific circumstances and only involved one other operator. The choice of [X] as a cross-filling partner was informed by the firm's reputation as a well-established operator with filling operations and operational processes complying with the relevant regulatory requirements. The cross-filling agreements that [X] entered with [X] allowed [X] filling sites to be inspected by a qualified [X] employee to ensure compliance with all the relevant safety legislation and requirements for the duration of the agreement. [X]

- 12.77. As both agreements entered between [X] and [X] were unidirectional (only [X] cylinders were being filled and by a single operator at a single site), [X] was better able to control and monitor the safety of its cylinders. Cylinder safety is of paramount importance to [X] as under the company-owned cylinder model it would be liable for any damage arising from a malfunctioning cylinder.

Instances of cross filling without consent

- 12.78. The Commission received information of allegations of unauthorised cross-filling and hoarding by licensed wholesalers. In its submission, [X] alleged that Afrox, Easigas and Oryx refuse to engage in cylinder exchange with [X] as the wholesalers believe that [X] operates as a cross-filler.²⁴⁷ The three competitors obtained court orders against [X] that restrict it from engaging in the cylinder exchange practice. [X] maintained that while these allegations were false, it agreed to the court interdict to avoid further costs from lengthy litigation. While [X] is prohibited from engaging in the cylinder exchange programme with [X] and [X], it conceded to the demands set by [X] for participating in cylinder exchange.
- 12.79. In a 2012 High Court case, Afrox alleged M&H Cohen and others²⁴⁷ were directly involved in the unlawful storing, filling and distribution of Afrox's cylinders. While the firms had an agreement in line with the cylinder exchange practice, there was no cross-filling or cylinder distribution agreement in place. While M&H Cohen admitted to filling Afrox's cylinders, albeit on a limited scale, the firm maintained that it engaged in this conduct in an effort to survive as Afrox was also filling and distributing M&H Cohen cylinders.
- 12.80. The Court found that the filling and distribution of Afrox's cylinders by M&H Cohen in the absence of an agreement was unlawful. Both parties alleged that the other was unlawfully stockpiling, filling and distributing its cylinders. To resolve the matter, the Court ordered both M&H Cohen and Afrox to return each other's cylinders as per the exchange practice, and prohibited them from filling, distributing or being in possession of one another's cylinders.

²⁴⁷ Matter in the High Court involving Afrox/M&H Cohen, M&H Cohen and Dale Crockett Properties CC, (Case No. 42659/2012)

- 12.81. A similar matter was heard by the High Court in 2006 in which Totalgaz²⁴⁸ and Easigas²⁴⁹ alleged that Solgas was engaging in the filling and distribution of cylinders without a distribution agreement being in place. The respondent claimed that a practice existed in the LPG cylinder market that entitled an LPG supplier to fill a competitor's branded cylinder should it not have sufficient stock of its own pre-filled cylinders to exchange with a customer. The appellants refuted this claim and referred to SANS regulation 100019: 2001²⁵⁰ in which Section 10.2.1(d) states "*no person shall fill a portable container...unless permission to fill the container has been granted by the owner of the container*".
- 12.82. In its judgement, the Court found that it could not be disputed that the appellants retain ownership of their own cylinders. The respondents did not provide sufficient evidence to support the alleged cross-filling practice. The Court found that the respondents derived unfair advantage in refilling its competitors' cylinders in that: (i) The respondent's cost of sales was reduced compared to a competitor that uses its own cylinder exclusively; and (ii) The respondent deprived the competitors of using their own cylinders to sell LPG. Concerns relating to the compromising of cylinder safety through cross-filling were also noted.
- 12.83. The combined 2013 matter between appellants Oryx²⁵¹ and Easigas²⁵² and respondent Mo Than Gas dealt with a similar complaint. In this case, the Court found that in flouting regulations regarding cylinder ownership and cross-filling, the respondent not only deprived the appellants of revenue due to unauthorised filling but also caused potential reputational risks and claims for damages in the event of an accident involving the appellants' cylinders.

Concerns raised by market participants regarding cross-filling

- 12.84. Various safety concerns arise in the case of cross-filling, including over-filling cylinders and filling cylinders with substances other than LPG (such as paraffin or propane). Overfilled cylinders pose a risk of rupture when heated and thus pose a serious safety concern. Cross-fillers – and particularly rogue traders – put customers at risk as these cylinders are not serviced and evaluated by trained professionals.

248 Matter in the High Court involving Totalgaz/Solgas (Pty) Ltd and Eduardo Porogino Castro (Case No. 22007/2006)

249 Matter in the High Court involving Easigas/Solgas (Pty) Ltd and Eduardo Porogino Castro (Case No. 23048/2006)

250 This clause is similar to that cited in SANS 10087-7:2011 and SANS 10019:2011.

251 Matter in the High Court involving Oryx Oil South Africa/Mo Than Gas Corporation (Pty) Ltd, Sibongile Dukada and Lunhile Mzinyi (Case No. 3/62/2013)

252 Matter in the High Court involving Easigas (Pty) Ltd/Mo Than Gas Corporation (Pty) Ltd, Sibongile Dukada and Lunhile Mzinyi (Case No. 4149/2013)

- 12.85. Wasaa explained that while rogue cross-fillers are likely aware of the safety issues related to filling cylinders, they suffer no reputational risk or recourse should a cylinder-related accident occur. As a result, regard for pre- and post-filling safety checks and cylinder repair is eroded.²⁵³ In the case that a branded cylinder malfunctions (the cylinder leaks or explodes), the wholesaler could rely on invoices and delivery notes to track whether the cylinder was: (i) Filled at its facilities; and (ii) Distributed by means of its own distribution system to the end-user that experienced the incident. This does not allow the wholesaler to determine whether the cylinder has been cross-filled in the interim. Regardless of whether this can be ascertained, the wholesaler will suffer reputational damage as a result of the incident.
- 12.86. All licensed wholesalers seal the cylinder valve with a seal bearing the name and/or colours of the wholesaler, whereas cross-filled cylinders either have a clear seal or are not sealed at all. Despite this, when empty cylinders are returned for refilling, the cylinder-owner is unable to determine whether the cylinder has been cross-filled through the visual and manual safety inspections.
- 12.87. In its submission, KayaGas identified several licensed wholesalers^[redacted] allegedly engaging in the practice of cross-filling. The legitimate owners of such cylinders often incur an investment loss as they are not likely to use those cylinders again. [redacted] estimated that the revenue lost on a daily basis due to cross-filling was [redacted], translating into a loss on gross margin of [redacted] per day.²⁵⁴
- 12.88. According to industry players, the existence of rogue traders and cross-filling is exacerbated by poor regulation and enforcement by the relevant authorities.^[redacted] As mentioned, one of the requirements for supplying LPG is to obtain the relevant licence (wholesale or retail) from the DoE. In addition, the application to the DoE has to be accompanied by a business plan outlining future investment plans in the necessary infrastructure to operate LPG activities. Many rogue traders do not undertake this investment^[redacted] and the DoE does not perform the necessary inspections on businesses after they are granted a licence to determine whether the investment took place.²⁵⁵ In some instances, these rogue traders operate without a licence.

253 Site visit to [redacted] 24 February 2016

254 [redacted] submission dated 29 April 2015

255 Summary of meeting between the Commission and [redacted] dated 4 March 2015, p1

- 12.89. Finally, the DoL – the custodian of safety practices in the cylinder market – expressed concern regarding the safety of cylinders, particularly the revalidation thereof. The DoL explained that at present, wholesalers are responsible for ensuring that the necessary safety checks and revalidation are performed on their cylinders. Under a customer-owned model allowing for cross-filling, there is uncertainty as to where the onus lies (the cross-filler or the customer) regarding cylinder revalidation, and how repaired cylinders would be returned to customers. Broadly, the DoL emphasised that any recommendations should be made in the interest of cylinder safety.²⁵⁶
- 12.90. In summary, the courts have established that the filling and distribution of another wholesaler's cylinders in the absence of an agreement (or some form of consent) is unlawful. The courts have relied on the SANS 100019:2001 regulation in establishing this. This means that South African wholesalers and distributors are unable to engage in cross-filling without the consent of their competitors.
- 12.91. The courts found that wholesalers derive an unfair advantage in refilling competitors' cylinders mainly related to the loss in revenue (as the wholesaler would then be deprived from using their own cylinder to sell LPG). The Commission believes, both safety and competition considerations are important in this sector and competition should take place within the confines of the law as highlighted above.

The hoarding of rivals' cylinders

- 12.92. Market participants were concerned about the practice of the hoarding of rivals' cylinders. In this situation, industry players make it difficult for owners to retrieve their cylinders by insisting on only one-for-one exchange, refusing them access to their cylinders, or increasing the transport cost of retrieving them. Hoarding cylinders ensures that wholesalers are not able to refill and service the asset, and drives up competitors' costs²⁵⁷ in retrieving cylinders,²⁵⁸ which threatens their ability to operate in the market.
- 12.93. The submissions received by the Commission contained several complaints regarding the hoarding of rivals' cylinders. Wasaa²⁵⁹ noted they were refused access to their cylinders in many instances. Some players insist that cylinders are exchanged on the one-to-one (1:1) basis only, and refuse to accept the R300 deposit payment where the number of cylinders exchanged is not equal. In [X] opinion, this is a tactic to remove players from the market by preventing them from accessing and refilling their cylinders. The one-to-one exchange is impractical as it

²⁵⁶ Submission from Department of Labour – 20 July 2016
²⁵⁷ NERSA – Call for submissions
²⁵⁸ Total Gas – Second response to information request – 15 May 2015
²⁵⁹ Wasaa – information request answers – 8 May 2015

assumes that all cylinder suppliers have the same number of cylinders in circulation. Despite being illegal in a sense, the hoarding of cylinders is alleged to be practised by all the major wholesalers in the sector, like [REDACTED], [REDACTED] and [REDACTED], as submitted by [REDACTED]. [REDACTED] alleged that [REDACTED] hoards rivals' cylinders and has never informed [REDACTED] that it has possession of its cylinders and that they are available for collection.²⁶⁰

- 12.94. IGASA submits that in certain circumstances, Afrox and Easigas appear to have relocated independent resellers' cylinders²⁶¹ to a private property from which the owner will struggle to collect them. Requests for collection were met with delays and obfuscation.²⁶⁰
- 12.95. Sims Gas, an authorised distributor of Oryx cylinders, alleges that the large gas companies hide cylinders and/or make it difficult or costly to carry out the exchange process. The exchange process typically sees Sims Gas take a load of its rivals' cylinders to the rivals' depot. The rival is expected to reciprocate by bringing the next load of cylinders for exchange to Sims Gas. The company alleges that this reciprocity does not always take place, such that Sims Gas is required to take the next load to its rival to retrieve its cylinders and bear the associated financial implications. It is further alleged that the large gas companies force Sims Gas' trucks to wait for extended periods to exchange cylinders, preventing the company from employing that truck elsewhere (full cylinder deliveries).

Conclusions and findings

- 12.96. The Commission analysed: (i) The effects of the cylinder exchange practice; (ii) Allegations received regarding cross-filling cylinders; and (iii) Allegations received regarding hoarding cylinders and the effect this has on competition. The following findings were made:

²⁶⁰ IGASA – Call for submissions

On the cylinder exchange practice

- 12.97. The Commission found the company-owned cylinder model is the most widespread cylinder ownership model internationally and that this model is associated with positive benefits in terms of managing cylinder safety. Whilst the customer-owned cylinder model is less widely established (particularly in developing countries), it is a model under which customers are able to fill cylinders with any agent and is the most efficient system for delivering LPG to final consumers. The greatest drawback of this ownership model is that it requires active enforcement of regulation, customer awareness about the safe use and maintenance of cylinders, and effective monitoring.
- 12.98. The Commission also found while the cylinder ownership models adopted may vary, the management of cylinder safety is of key importance across most countries. The Commission found a high level of cylinder maintenance is associated with countries operating on a company-owned cylinder model when compared to countries that adopted the customer-owned cylinder model.
- 12.99. South Africa adopted a hybrid cylinder ownership model wherein it employs both the company-owned and customer-owned cylinder ownership models. To date, safety incidents involving either company-owned or customer-owned cylinders have been minimal. As the cylinder exchange programme is not legally mandated and requires participants to enter bilateral agreements to exchange cylinders, the format of the cylinder exchange model has led to distortions in competition. Specifically, entrants to the cylinder market have been refused entry into the exchange programme (due to the bilateral nature of the agreements).

On the cylinder deposits

- 12.100 The Commission found evidence indicating that the uniform deposit rate applied until 2015 had not been equivalent to the 45% maximum cylinder deposit fee prescribed by the DoE. The Commission learnt that since implementing the 2010 Working Rules for the calculation of the MRP, the DoE had not made any reviews to the cylinder deposit rate. The DoE did not mandate the most recent increase in deposit fees and the Commission has evidence that this might have been a result of collusive behaviour by market participants.

12.101. The Commission found the cylinder deposit rate to be uniform, not only across wholesalers, but also across cylinder sizes with exclusion of cylinder sizes below 9 kg. The Commission is concerned that applying a uniform deposit rate across all cylinders may lead to instances where domestic end-users may be subsidising the commercial end-users that rely on 19 kg and 48 kg cylinders.

On cross-filling LPG cylinders

12.102. The Commission found the courts have established the filling and distribution of another wholesaler's cylinders in the absence of an agreement (or some form of consent) is unlawful. The courts have found that wholesalers derive an unfair advantage in refilling competitors' cylinders mainly related to the loss in revenue (as the wholesaler would then be deprived from using their own cylinder to sell LPG).

Industry Findings

12.103. In light of these findings, the Commission considered the following remedies to address the issues identified and put these remedies to the market. Firstly, abolishing the current form of the cylinder exchange practice to eliminate the frequent direct interaction amongst wholesalers and this would also deal with hoarding of cylinders. Secondly, an amendment of Section 10(4) of the Occupational Health and Safety Act was proposed to remove the requirement for written consent before cross-filling may occur. Finally, it was proposed that to foster competition in the cylinder segment of the LPG sector, in the long term customers should own their own cylinders (and voluntarily exchange cylinders) and fill at any accredited filling site.

12.104. Market participants provided several submissions to the Commission's proposed remedies. In relation to the proposal to abolish the cylinder exchange practice, the majority of industry players[❧] did not support the Commission's recommendation. Market participants submitted that apart from the practice being efficiency enhancing, abolishing the practice would make it difficult for customers to switch suppliers. A few market participants[❧] submitted that the abolishment of the cylinder exchange practice would cause cylinder safety risks as the current model gives cylinder owners incentive to maintain their cylinders as failing to do so influences their brand.

12.105. In relation to the amendment of the OHSA Section 10(4) to do away with consent for cross filling, a few market participants were in support of the Commission's remedies whilst the vast majority were against this remedy. Those in support of the remedy submitted that there were a few cross-fillers in existence that could be legalised provided they invested in the necessary assets required to own and operate cylinder filling plants. Those not in support of these remedies highlighted the proposed remedy disregarded the investments that were made by industry players into LPG cylinders and if this remedy were implemented, it would affect their likely return on any investment made. It was further emphasised that the proposed remedy would result in free-riding by cross-fillers and hence serve as a disincentive for any future investments into the cylinder segment of the LPG sector. The DoL submitted that as Section 10(4) of the OHSA does not only apply to LPG cylinders and the process to amend this Section of the Act will have an impact to other sectors of the economy.

12.106. In relation to the Commission's proposed remedy highlighting the need for a move towards the customer-owned cylinder ownership model, only three market participants were in support of this recommendation whilst the vast majority were not in support. The views of those not in support of this recommendation related to: (i) Safety concerns; and (ii) The lack of a clear approach to explain how wholesalers would be compensated for the cylinders in circulation they already invested in.

Recommendations

12.107. The Commission recommends the following:

On the cylinder exchange practice

- 12.107.1. The cylinder exchange practice must be enhanced and more inclusive, that is, no wholesaler should unreasonably be denied the opportunity by another wholesaler to enter a bilateral agreement to facilitate the exchange of cylinders. The guiding principles must be that any licensed wholesaler who made investments in cylinders and complies with all relevant regulations, including safety, must not be barred from participating in the exchange of cylinders. The Commission will consider enforcement action where a wholesaler is unreasonably denied the opportunity to engage in cylinder exchange. The Commission remains cautious of this practice and any evidence of the use of cylinder exchange to reach collusive outcomes will be followed by enforcement action.

12.107.2. The current hybrid cylinder ownership model must continue to enhance customer choice. More specifically;

12.107.2.1. For 9 kg cylinders and below,²⁶¹ customers will still have the choice to either lease a cylinder from a wholesaler or purchase a cylinder directly from a wholesaler or retailer.

12.107.2.2. If a customer chooses to lease the cylinder, they may only fill their cylinder at the respective wholesaler or its designated distributor or may exchange the cylinder at any accredited cylinder exchange site.

12.107.2.3. If a customer chooses to purchase a cylinder, they may fill their cylinder at any accredited filling site.

On the cylinder deposit

12.107.3. NERSA must review, on an annual basis, the cylinder deposit rate so that it is aligned with changes in market conditions.

12.107.4. The deposit fee for each cylinder size must be linked to the cost of the cylinder.

On cross-filling LPG cylinders

12.107.5. Cross-filling of LPG cylinders should occur within the confines of the law, which under section 10(4) of the OHSA requires written consent prior to a wholesaler filling the LPG cylinders of another wholesaler. The Commission is of the view that this practice must continue and the responsible enforcement authorities must impose the necessary sanctions to curtail any violation.

²⁶¹ The Commission notes that the logistics of handling and distributing a larger-sized cylinder (those larger than 9 kg) makes the cylinder exchange practice infeasible. The Commission notes that currently most wholesalers supply and fill these cylinders and as such, these cylinders are excluded from the Commission's recommendation, out of concern as they do not ordinarily form part of the cylinder exchange practice.

13. The high cost of switching

- 13.1. The ability of bulk end-users to switch LPG suppliers in a seamless manner (in response to a more competitive price offer, for example) was of interest to the Commission due to previous complaints²⁶² alleging that wholesalers cannot enter the bulk/industrial customer segment of the market. The ability of downstream bulk end-users to switch LPG suppliers plays a crucial role in determining the incentive for and ability of wholesalers to increase prices and/or reduce the quality of the service they provide. In a competitive market where end-users can switch LPG suppliers seamlessly and without incurring significant costs, efficient market outcomes are likely to be realised, as LPG suppliers will be constrained in their ability to increase prices. Costly switching confers some degree of market power onto LPG suppliers, allowing them to profitably increase their prices and/or reduce the quality of their service.
- 13.2. The analysis below assesses the extent to which switching LPG suppliers may be problematic for bulk end-users of LPG. The rationale for focusing the switching analysis on this narrow form of LPG consumption is three-fold:
- 13.2.1. The relationship between the LPG supplier and the end-user is determined by the form in which the end-user consumes LPG. End-users who consume LPG in cylinders can easily switch LPG suppliers by exchanging one brand of LPG cylinder for another. On the other hand, industrial and commercial end-users who use large volumes of LPG and hence typically consume LPG through a bulk tank or cylinder manifold are normally constrained in switching suppliers. The reason is that bulk and cylinder manifold LPG consumption requires capital investment in the installation of facilities on site.²⁶³ Notably, the required capital outlay can be made by either the LPG supplier or the end-user; hence, ownership of the equipment will reside with the party who made the outlay.
- 13.2.2. An important feature of the supply of LPG is that LPG is a hazardous substance. Safety considerations and regulations surrounding safety are an important feature of LPG supply and the LPG sector as a whole. In the case of bulk LPG and cylinder manifold LPG, the installations consist of several pieces of equipment, all of which are subject to the relevant safety standards.

²⁶² KayaGas vs Afrox (2012 May) 2601.

²⁶³ This may be a bulk tank or a cylinder manifold installation (although the installation of cylinder manifolds requires less investment expenditure).

- 13.2.3. Given the existence of supply contracts for a minimum agreed duration, it is possible that the LPG supplier can extract higher than normal profits due to the increased costs end-users would incur when switching and/or assured sales as a result of end-users' volume off-take requirements.
- 13.3. Given the investment and safety regulations involved in the supply and consumption of LPG, the supply arrangement between the supplier and the end-user is normally co-ordinated through a contract. The assessment of the process involved in switching suppliers of LPG conducted below is considered within a narrower framework of the commercial contractual obligations that exist between a supplier and an end-user in the supply of a hazardous substance subject to regulation.
- 13.4. The Commission notes that the likely narrative of harm that may arise from contractual obligations between a supplier and an end-user in the supply of LPG is:
- 13.4.1. The potential foreclosure of wholesalers attempting to either enter or expand the supply of LPG to bulk end-users; and
- 13.4.2. Direct consumer harm in the form of higher prices and/or reduced levels of service being offered to bulk end-users due to the inability of the end-users to change their LPG suppliers in a seamless, timely and cost-efficient manner.
- 13.5. As industry regulations prohibit filling LPG cylinders or bulk tanks owned by a third party, once an LPG supplier has entered supply agreement with an end-user, rival LPG suppliers are precluded from supplying LPG to that end-user for the duration of the supply agreement. Thus, foreclosure occurs in the form of precluding rival LPG suppliers from accessing customers by locking customers in with a supply contract for a significant duration. This can potentially lead to a chilling of competition as rival LPG suppliers are precluded from accessing customers, reducing the competitive constraints on the incumbent LPG supplier.

- 13.6. When an end-user switches to a rival LPG supplier, the incumbent LPG supplier is likely to remove its equipment because of its intrinsic value, under the supply arrangement between the incumbent LPG supplier and the end-user. Thus, the end-user is likely to incur switching costs (the cost that the end-user has to incur to switch to an alternate LPG supplier, as opposed to remaining with the incumbent supplier). If the switching costs are high relative to the value of LPG being supplied to the end-user, then the end-user is less likely to switch to a rival supplier. This allows the incumbent LPG supplier to increase prices and extract increased profits from the end-user and/or provide decreased levels of service.
- 13.7. It is not customary for bulk end-users to switch LPG suppliers. Switching is not always seamless and the ease of switching is peculiar to the circumstances under which the incumbent supplies the end-user. The degree of difficulty experienced in switching depends on how the contractual circumstances affect either the costs incurred by the end-user due to disruption of supply or the costs incurred by the incumbent LPG supplier in selling/removing their equipment. The common reason for not switching suppliers is that the end-user managed to renegotiate supply on more favourable terms, such as lower pricing.²⁶⁴
- 13.8. The Commission notes that the other reason for not switching suppliers may be that the costs incurred by the end-user outweigh the savings that can be earned by switching. This is dependent on the contractual circumstances surrounding the arrangement between the incumbent supplier and the end-user.

13.9. Table 21 below shows some actual switches noted by the Commission.

²⁶⁴

See instances highlighted in Table 21

Table 21: Evidence on switching costs

End-user	Previous supplier	Incoming supplier	Type of installation	Transfer of equipment
✕	✕	✕	Bulk reticulation	New
✕	✕	✕	Bulk reticulation	Takeover
✕	✕	✕	Bulk	New
✕	✕	✕	Autogas (Cylinders)	New
✕	✕	✕	Bulk	Takeover
✕	✕	✕	Bulk	New and takeover
✕	✕	✕	Bulk	Takeover
✕	✕	✕	Bulk	New
✕	✕	✕	Bulk	New
✕	✕	✕	Cylinder manifold	New

Source: Various submissions from market participants

13.10. In some instances, the incumbent sold its equipment to the incoming supplier, while in others, the equipment was removed and a new installation was put in place.

13.11. The Commission also found numerous examples of attempted switches by end-users that proved to be unsuccessful. Some reasons provided for this included:

13.11.1. The end-user was able to renegotiate favourable supply terms with the incumbent LPG supplier;

13.11.2. It proved too costly to switch in terms of the impact the disruption in the supply of LPG would have on the end-user's production process;

13.11.3. The cost to switch LPG suppliers would have been too high due to the refusal of the incumbent supplier to on-sell its LPG equipment;

13.11.4. Exclusivity arrangements between the incumbent LPG supplier and the end-user precluded the switch.

13.12. Table 22 provides an overview of the salient reasons provided by various end-users for not switching LPG suppliers.

Table 22. Failed switching attempts

End-user	LPG supplier	Reason for not switching
✕	✕	Renegotiated favourable supply terms
✕	✕	Switching would be too costly (Disruption of supply)
✕	✕	Safety responsibility
✕	✕	Renegotiated favourable supply terms
✕	✕	Renegotiated favourable supply terms
✕	✕	Renegotiated favourable supply terms
✕	✕	Renegotiated favourable supply terms
✕	✕	Renegotiated favourable supply terms
✕	✕	Switching would be too costly (Refusal to on-sell equipment)
✕	✕	Switching would be too costly (Refusal to on-sell equipment)
✕	✕	Renegotiated favourable supply terms
✕	✕	Switching would be too costly (Disruption of supply)
✕	✕	Switching would be too costly (Disruption of supply)
✕	✕	Exclusivity between supplier and landlord
✕	✕	Supplier exclusivity
✕	✕	Switching would be too costly

Source: Various submissions from market participants

- 13.13. The instances of failed attempts at switching noted by the Commission above provide a cursory glance at the frequency of such attempts by end-users. It is clear that the switching of LPG suppliers by bulk end-users does occur. The reasons for this vary from one end-user to the next, but typically, more favourable prices and supply conditions are listed as the main reasons why end-users change suppliers, as shown in Table 23.

Table 26: Instances of switching to a different LPG supplier

LPG supplier	Total number of switches recorded	Comment
✕	13	Common reason stated for losing customers – uncompetitive pricing compared to rival LPG suppliers
✕	14	Includes mostly end-users consuming cylinder manifold LPG; and new equipment was installed
✕	3	New equipment was installed in every instance

Source: Various submissions from market participants

Note: This table does not include instances of switching in the tables above to avoid double-counting.

13.14. Where switching was attempted yet proved to be unsuccessful, the most common reasons cited were: (i) The end-user was able to renegotiate more favourable supply conditions; and (ii) The cost of switching might have been too high, in the form of the perceived costs involved in the disruption in supply or the cost of implementing new equipment.

13.15. The analysis above further highlighted the importance of the terms and conditions of the contractual supply agreements signed by end-users and LPG suppliers. The features of these agreements are outlined in detail.

Contractual relationships between end-users and LPG suppliers

13.16. The Commission notes two broad types of contractual relationship that wholesalers and end-users can enter, each with various implications regarding the relative ease with which an end-user can switch LPG suppliers.

- 13.16.1. *The first type of relationship:* The end-user takes ownership of the equipment by financing the installation.²⁶⁵ One scenario is that the equipment is purchased outright, with the result that ownership transfers to the end-user immediately. Another scenario is that the full price of the equipment is amortised over an agreed period and built into the price of the LPG, such that at the end of the life of the contract, ownership of the equipment is ceded to the end-user. The terms and conditions of the purchase of the installation typically form part of the contract entered for the supply of LPG.
- 13.16.2. *The second type of relationship:* The LPG supplier retains ownership of the equipment and hence ownership does not pass on to the end-user. The LPG supplier and the end-user enter a contractual agreement for the supply of LPG only. In this regard, should the end-user switch LPG suppliers, the incumbent supplier can either sell the equipment to the incoming supplier or remove their equipment, after which the incoming supplier can install its own equipment and begin supplying the end-user. The Commission noted at times this is not a seamless process, as there is also a possibility that the incumbent may refuse to remove its equipment or may neglect to do so in a timely manner.
- 13.17. Switching is likely to be problematic in the second type of relationship.²⁶⁵ Three major factors discourage industrial end-users to switch wholesalers. Each factor is discussed separately below.

Classifications of clauses in LPG supply contracts that restrict switching

- 13.18. The Commission examined clauses from a sample of bulk LPG supply contracts between LPG suppliers²⁶⁵ and bulk LPG end-users to establish the degree of restrictiveness imposed on the bulk LPG end-users' ability to switch LPG suppliers.

²⁶⁵ in respect of the first type of relationship there is always a challenge around the parameters for the valuation of the equipment. This challenge exists whether it is a customer or a competitor purchasing the equipment.

- 13.19. *Exclusive supply.* The exclusive supply clause prohibits bulk LPG end-users from procuring LPG from any other LPG supplier during the course of the contract period. In cases where the contracted LPG supplier is unable to supply LPG in times of shortage not due to force majeure,²⁶⁶ the bulk end-user is allowed, with the permission of the incumbent wholesale supplier, to purchase the shortfall in its requirements from a supplier that has been nominated by the contracted LPG supplier, until such time as the contracted wholesaler can commence supply. This limits the LPG end user's choice of LPG suppliers. In addition, it may cause the end-user not acquiring LPG supply from the lowest-priced supplier, as the incumbent supplier may decide to use a supplier who charges a significant premium.
- 13.20. *Contract duration.* In most instances, contracts entered are for a minimum period of five years, with a renewal clause included in the contract upon notice being given by the party that wants to renew the contract. Under some contracts,²⁶⁷ if the wholesaler carries out any work or alterations to equipment at any point during the initial period of the contract, the contract duration will be extended by a period equal to the time which has lapsed since the initiation of the contract up to when the alteration was done, or even for a longer period.²⁶⁸ It is unclear what alterations encompass and whether it would be initiated by the wholesaler or the bulk LPG end-user. The clause may provide scope for suppliers to alter equipment at their discretion whilst attributing such alterations to changes in regulations or technological advancements.

Cost of bulk LPG supply and the effect of the exclusive supply clause

- 13.21. The Commission obtained installation and equipment costs from various wholesalers. There is a huge variation in costs due to the varying sizes and complexity of installations. Table 24 provides an indication of the costs submitted by some wholesalers.

²⁶⁶ An act of God for which no party can be held accountable

Table 24. Cost of installation

Cost of installation	Wholesaler
Large installation	
R1 000 000 – R20 000 000	✂
+R10 000 000	✂
R2 910 000*	✂
Cylinder manifold installation	
R20 000 – R1 000 000	✂
R10 000 – R60 000	✂
Shopping mall	
R400 000 – R500 000	✂
+R500 000	✂

Source: Various LPG wholesaler submissions

Note: * refers to the installation of a 22.5m³ vessel with safety and isolation valves

- 13.22. Table 24 shows that the cost of large installations ranges from R1 000 000 to R20 000 000. One large component of the cost is the size of the vessels installed. ✂ submitted the price of the three most commonly used types of vessel✂:

13.22.1. 9m³ vessel – R 373 230.

13.22.2. 22.5m³ vessel – R619 740.

13.22.3. 45m³ vessel – R787 820.

- 13.23. Besides the cost of the differently sized vessels, other costs determine the overall price of installing a new LPG bulk tank for large users. These include the length of piping, the location of the vessel and pipes, vaporisers, electrical work, drawings and pressure regulators.

- 13.24. In addition to the cost of bulk tank installations, the Commission also obtained the cost of installing cylinder manifolds. The major cost components here are the manifold itself and an LPG pump/scale. Manifold installations vary significantly and can cost between R10 000 and R1 000 000 depending on complexity and desired consumption. Manifold installations are typically found in various standalone restaurants like KFC and Steers.

- 13.25. The capital investment made for the installation of LPG equipment puts the LPG supplier in a position of having to recover the cost thereof as part of the price charged for LPG supplied to the end-user. Typically, the LPG supplier depreciates the cost of equipment used until it equals the replacement value of the equipment. These costs are amortised over a period agreed with the LPG supplier, at which time the end-user takes ownership of the equipment. The period over which the costs are fully amortised in relation to the duration of the supply agreement is unclear.
- 13.26. The Commission notes that the period over which the cost of the equipment is amortised may not necessarily correspond to the duration of the supply contract between the LPG supplier and the end-user.✂
- 13.27. The Commission notes that the period over which the cost of the equipment is amortised can be extended beyond the length of the contract in order to win customer business.✂ The LPG supplier takes on additional risk due to the possibility that the end-user will switch and the LPG supplier will be unable to recover part of the capital investment. In light of the mismatch between the amortisation period and the length of the supply contract, the incumbent LPG supplier will have an incentive to retain its customers in an attempt to recover the capital costs incurred for supplying the customer.
- 13.28. The possible loss that the incumbent LPG supplier may incur due to a mismatch between the amortisation period and the length of the supply contract can exacerbate the negotiation process for the following reasons:
- 13.28.1. The incumbent LPG supplier may be reluctant to remove its equipment at the time it is supposed to, as a longer period of supply will allow further recovery of capital costs.
- 13.28.2. The incumbent supplier may attempt raising the selling price to extract part of the capital loss from the incoming supplier.
- 13.29. Given that in many circumstances an incoming supplier cannot install its own equipment without first removing the incumbent's equipment, the incumbent LPG supplier may raise the price of the equipment above its replacement value. This cost is then likely to be passed on to the end-user, as the incoming supplier will seek to recover the additional cost of having to purchase the equipment.

Of course, the ability to raise the price will depend on the terms and conditions regarding the removal of the incumbent's equipment outlined in the supply contract.

Disruption of supply

- 13.30. For some bulk end-users, LPG constitutes a significant portion of their total energy costs; alternatively, LPG is a critical input into their production. For example, the LPG that [REDACTED] uses constitutes nearly 40% of its total energy costs. [REDACTED] It has been using [REDACTED] services since its genesis in 1995, citing zero disruption in supply as the primary reason for never contemplating switching suppliers. LPG accounts for [between 50-60%] of [REDACTED] total energy costs. [REDACTED]
- 13.31. For other end-users, LPG has strategic value in the sense that a disruption in supply will interrupt their production process. For example, for motor vehicle manufacturers, LPG does not form a significant portion of operating costs (typically between 0,05% and 2% of annual operating costs) [REDACTED] but it has strategic value in the sense that supply disruption would cause production line stoppages. [REDACTED] [REDACTED] also noted that production line stoppages resulted in a loss in income. [REDACTED] The strategic value of LPG for end-users in the food industry, including restaurants and hotels, [REDACTED] is obvious: without LPG, restaurants cannot supply customers with food products. Other manufacturers use equipment in their production process designed specifically for LPG, [REDACTED] alternatively, equipment used in manufacturers' production process may be limited to LPG or other non-available substitutes as an input, [REDACTED] or manufacturers may find that using anything other than LPG in the production process would be inefficiently expensive. [REDACTED] One end-user also submitted that LPG was a key component of its manufacturing process as it was not merely an energy source but rather a component of the product itself. [REDACTED]
- 13.32. Given the significance of LPG to end-users, the Commission notes several factors that may heighten the possibility of a disruption of supply to the end-user, decreasing the likelihood of switching suppliers.

Long-standing relationships with incumbent LPG suppliers

- 13.33. Market participants cited their long-standing relationships with their incumbent LPG suppliers as a basis for procuring consistent supply of LPG. The Commission learned that [X], [X] and [X] had previously been approached by other suppliers, but opted to remain with their current suppliers primarily because of the guarantee of consistent supply necessary to ensure zero disruption in their daily production. The trend amongst large industrial end-users not to switch is also evidenced by [X], the largest industrial end-user of LPG in South Africa, who maintains long-standing relationships with its two largest suppliers, [X] and [X].

Time needed to install equipment

- 13.34. The Commission noted that some end-users had previously cited disruption to production as a hindrance to switching. This notion is closely linked to the time it would take to install new equipment. The longer the installation takes, the longer the disruption to production and the greater the possible loss in profits. [X] submitted that it could typically take up to two weeks to switch suppliers, provided that the equipment is readily transferred in the event that an industrial user does not own it. If a transfer is delayed by prolonged negotiations between wholesalers, this process can take up to eight weeks.²⁶⁷

Restrictions on switching under EIA requirements

- 13.35. The EIA report is a technical tool that identifies, predicts and analyses impacts on the physical environment along with social and health impacts. The EIA process including the report takes approximately nine months to complete.²⁶⁸ In the context of LPG, one instance in which the regulations are triggered is when the total storage capacity of LPG on the end-user's site has increased by over 80m³.²⁶⁷ This is important, because under circumstances where the incumbent supplier refuses to move its equipment or delays doing so, the incoming supplier may be constrained. This constraint can take two forms as discussed below.

²⁶⁷ National Environmental Management Act No. 107 of 1998, Fourth under Activity 42 in Listing Notice 1 (GN R544 of 18 April 2010). Available at https://www.capetown.gov.za/town-environmental-foresight/Management/publications/documents/NEMA-gia-regulations-2010_gn_no_r544_listing_notice_1_as_amended_13dec2010.pdf. Accessed on 16 November 2015.



- 13.36. *First scenario:* The first scenario is where, not to cause a disruption in supply, the incoming supplier installs a temporary tank or cylinder manifold to supply the end-user until the incumbent has removed its facility. The problem here is that such temporary facility must be under 80m³, because anything bigger will trigger an EIA, disrupting supply to the end-user. This can be extremely costly to resolve, particularly where the incumbent delays removing its equipment.
- 13.37. *Second scenario:* The second scenario is where the end-user wishes to expand its LPG capacity while at the same time considering switching to a new LPG supplier. Here, too, there may be circumstances where switching to the new LPG supplier will trigger an EIA, causing significant disruptions to the end-user. If the end-user is under severe pressure to expand its operations, the option to switch suppliers is significantly constrained and the end-user is likely to remain with the incumbent LPG supplier.

Contractual provisions relating to exclusivity

- 13.38. Besides the two instances discussed above, the Commission has learned of switching limitations due to contractual obligations as well. [redacted] stated that it attempted to switch from [redacted] but failed due to contractual obligations. [redacted] made it clear that it attempted switching suppliers primarily due to poor service and pricing considerations. Contractual terms and conditions obstructed its ability to terminate the contract it had with its supplier. In addition to the contractual issues, [redacted] also referred to “bulk tank fixtures” as an impediment to its attempt to switch, referring to the argument referenced by [redacted], [redacted] and [redacted] about the complexity of the installation of the equipment.

Contractual provisions relating to removal of equipment

- 13.39. The Commission examined the relevant clauses pertaining to the removal/on-selling of LPG equipment.

- 13.39.1. *Equipment ownership:* Ownership of equipment typically resides with the LPG supplier and is not transferred to the bulk end-user at the end of the contract. Two LPG suppliers provide the end-user with the option to purchase the equipment in a limited number of their contracts.  Notably, the clause regarding ownership of equipment is not accompanied by a clause regarding the removal of LPG equipment in the case of switching. Thus, the incumbent LPG supplier may delay the removal of its equipment whilst retaining ownership. This may heighten the barriers to switching if the end-user has knowledge that the incumbent may be about to undertake such a strategy.
- 13.39.2. *Contract termination.* Notice periods range from between 2 to 12 months across contracts and LPG suppliers. Some contracts  state that notice of termination is not allowed during the initial period of the contract, indirectly further restricting the ability of a bulk end-user to switch freely.
- 13.39.3. *Early termination costs:* The contracts sampled suggest that, typically, the bulk end-user pays the capital costs, installation costs and removal costs for the equipment for the remaining contract period. The end-user does not play an active role in determining these costs, and is likely subject to the LPG supplier's choice of installer to remove the equipment.
- 13.39.4. *Transfer of ownership upon sale of business:* The successor clause in bulk supply contracts requires that in the event that a bulk end-user wants to sell its business, it must include a condition in its sales agreement stipulating that the new business owner must keep using the current wholesaler to supply it with LPG. This clause restricts the ability of the new business owner to freely choose new LPG wholesaler to procure bulk LPG from.
- 13.40. The clauses examined in the LPG supply contracts may also contain provisions that hinder the timely removal of equipment by the incumbent.

- 13.41. [redacted] submitted [redacted] its supply contract with the incumbent LPG supplier, [redacted], contained a provision allowing it first right of refusal. When [redacted] chose to switch suppliers, [redacted] exercised this right and refused to remove the equipment. The EIA for [redacted] site precluded the installation of additional tanks. [redacted] had to wait before acquiring a new LPG supply until [redacted] removed its equipment.
- 13.42. The incumbent may also refuse to on-sell the equipment by relying on an exclusivity provision in the supply contract that restricts the incoming supplier from installing its equipment until the incumbent supplier has decommissioned its own equipment. The Commission notes the submissions from LPG suppliers that on-selling of equipment to the incoming supplier is not common [redacted] and is the overwhelming barrier to switching from the customer's point of view. [redacted] LPG suppliers provided various reasons for refusing to on-sell equipment, including that the tank can be uplifted and used at an alternate location [redacted] and that the parties could not reach agreement on a selling price. [redacted] Typically, in such cases the incoming supplier will have to install its equipment. [redacted]
- 13.43. The Commission notes the experience of [redacted] where the incumbent LPG supplier, [redacted], refused to allow the incoming supplier to install its equipment on site or on-sell its equipment to the incoming supplier. [redacted] [redacted] only agreed to allow the incoming supplier to install its equipment after [redacted] instituted legal action against [redacted] at a cost of approximately [redacted]. [redacted] The negotiations with [redacted] delayed the switch to the incoming supplier by approximately one year.
- 13.44. The incumbent supplier also refused to on-sell equipment in the case of [redacted]Products Ltd ("[redacted]"). After [redacted] took a decision to switch LPG suppliers, the incumbent supplier, [redacted], refused to transfer ownership of its equipment to either the incoming supplier or [redacted], threatening to remove its bulk tanks should they switch suppliers. [redacted] Upon expiry of the contract and [redacted] refusal to transfer ownership, [redacted] elected not to switch suppliers. [redacted] agreed to on-sell the equipment at another [redacted] site to the incoming supplier.

(Switching from one supplier to another)

(Switching from one supplier to another)

13.45. LPG installations can differ in their design and usage. The Commission notes a clear distinction between LPG bulk installations used by one end-user, on the one hand; and LPG bulk installations used by more than one end-user, where each end-user is a separate commercial and legal entity on the other hand. This relates to shopping centres having bulk LPG tanks installed on their premises reticulated throughout the shopping centre or to outlets at tenants that are the final end-users. As before, two scenarios are considered:

13.45.1. First scenario: The shopping centre owner possesses the bulk tank/cylinder manifold and reticulation system either by having purchased the equipment outright or by having financed the full cost of the equipment throughout the duration of the contract. In this case, ownership of the installation is ceded to the shopping centre owner. The shopping centre may purchase part of the equipment.

13.45.2. Second scenario: The LPG supplier remains the owner of the equipment for the duration of the contract and ownership is not ceded to the shopping centre owner. Thus, where the end-user chooses to switch LPG suppliers, the incumbent LPG supplier can choose to either sell the equipment to the incoming LPG supplier or remove its equipment. Should the incumbent LPG supplier remove its equipment, the incoming supplier will have to install new equipment. The incumbent LPG supplier may remove part of the equipment.

13.46. These two scenarios illustrate, similar to those discussed earlier, the critical feature related to switching is ownership (and the degree thereof) of the equipment. In the first scenario, the Commission notes that it is unlikely to cause significant costs if the shopping centre should want to switch LPG suppliers. The owner of the equipment can choose its LPG supplier without being constrained to one LPG supplier.

13.47. The second scenario may result in switching problems and significant costs. This has been discussed extensively above in the context of bulk LPG consumption and will not be repeated here, except for the differences.

Costs related to switching in the context of a shopping centre

- 13.48. Unlike in the case of bulk LPG consumption, multiple end-users who are independent entities housed inside a shopping centre complex consume LPG through a bulk installation and reticulation system. The costs associated with either selling or removing the incumbent's equipment may be higher.
- 13.49. There are two reasons why switching costs in the context of shopping centres may be higher:
- 13.49.1. Developers building shopping centres have to contract the initial LPG supplier during the development phase of the shopping centre. The reason for this is that the equipment has to be installed early on during the construction phase. The complexities of the shopping centre design as well as the fact that the reticulation system which carries the LPG from the bulk tank to the end-users tracks through the shopping centres walls, ceilings and underground must be considered. It is thus difficult to inspect the various parts of the LPG installation, to remove existing equipment and to build any temporary bulk tanks should switching occur.
- 13.49.2. Arrangements in the form of service delivery agreements ("SDA") have to be concluded between the LPG supplier and the owner of the shopping centre, and between the LPG supplier and final end-users operating on the shopping centre premises. This type of agreement typically includes terms and conditions that outline, inter alia, the responsibilities of each party, including those relating to the ownership, installation and maintenance of the equipment. The shopping centre will inspect the equipment (and report any faults to the supplier) and read the metres measuring LPG usage. The SDA does not make provision for the supply of LPG to the shopping centre – supply of LPG is contracted between the supplier and the actual end-user, for example, the shopping centre tenant. The shopping centre is a 'facility', and the supplier will contract with each tenant in the shopping centre individually. The contract between the supplier and the tenant will contain a clause determining the price the individual tenant will pay for LPG.

- 13.50. Several contracts will be in place as the supplier will contract individually with each tenant, and the timing of these contracts is likely to be staggered. Contracts between the tenants and the supplier will not be signed, renewed or terminated at a single point in time but will be spread out over time as old tenants left and new tenants enter the shopping centre. This will result in the perpetual existence of contracts between tenants and the incumbent LPG supplier. Given that the LPG supplier will at any point in time be required to supply to at least one tenant by virtue of a contractual arrangement, and given that regulatory and safety concerns do not allow more than one supplier to supply a shopping centre, switching from an end-user's perspective would become extremely costly, if not impossible.
- 13.51. Several costs are associated with switching LPG suppliers. The Commission has already noted the costs associated with switching in the context of a bulk tank installation.
- 13.52. Due to the nature of the LPG installation in a shopping centre, much of the reticulation system is installed in the walls of the shopping centre and is not directly accessible. This construction aspect can frustrate the switching process by making it more difficult for the incumbent supplier and the incoming supplier to reach agreement on the value of the incumbent's equipment. The reason for this is that it will most likely not be possible to do a visual inspection of the reticulation system to assess its quality. The incoming supplier may attach a lower value to the reticulation system than the incumbent supplier will accept.
- 13.53. The nature of the installation also makes removal of the equipment extremely costly. The result for the incumbent supplier is that removing the equipment for use elsewhere may cost more than investing in new equipment.
- 13.54. Due to the increased likelihood of a hold-up being caused by these factors in the event of switching LPG suppliers, the incoming supplier can install temporary LPG equipment to ensure there is no disruption in the production process. Temporary tank will increase the cost of switching, and in the context of a shopping centre, where space is limited; only certain temporary tanks can be used. These tanks may be less efficient than the larger bulk tank that would have been installed by the incumbent.

13.55. [REDACTED]

13.56. Given the above factors, it is also highly likely that many of the tenants that may have experienced difficulties with switching LPG suppliers are not included in the sample the Commission considered. Based on the evidence gathered, the Commission notes that switching LPG suppliers in the context of shopping centres and residential estates is not costless.

Commitment to Supply

13.57. In light of the analysis conducted above, the Commission has found that switching takes place at the bulk LPG segment of the market, but it does not occur seamlessly. The Commission found some problems bulk end-users experienced in switching included: (i) the substantial capital investment required to install LPG bulk and cylinder manifolds; (ii) the ownership of equipment usually remains with the party that provides the capital outlay (typically the LPG supplier and not the end-user); (iii) safety considerations and regulations; and (iv) the existence of highly restrictive supply contracts between LPG wholesalers and end-users.

13.58. The Commission analysed the terms and conditions of supply agreements between LPG suppliers and end-users. The Commission found bulk LPG supply agreements are structured in a vague manner regarding equipment ownership²⁶⁸ during and after the expiration of the initial supply agreement. In particular, the Commission found there is limited disclosure on when the costs of the installed LPG equipment will be fully amortised and whether the end-user will ever own the installed equipment. An examination of the supply agreements revealed that in the majority of cases, equipment ownership lies with the wholesale supplier and that equipment ownership is not transferred to the bulk end-user at the end of the term.

²⁶⁸ The equipment referred to above includes bulk tank and the refuelling system.

13.59. Supply agreements entered by tenants and proprietors/property developers at shopping centres are structured in an equally vague manner that does not facilitate switching. The same is also true for residential estates where a supply agreement is entered between the body corporate and a supplier. The following salient features were of particular concern to the Commission:

13.59.1 Ownership of the installed reticulation system rests with the supplier even where the property owner fully amortised the cost of the installation.

13.59.2. The LPG supplier signs an initial contract with the proprietor to install and operate the equipment at a shopping centre. Subsequent to this, the LPG supplier enters another contract with each tenant at the shopping centre for the supply of LPG. Given that the contracts between the supplier and the proprietor and those between the supplier and the tenants are entered at different times, the contracts tend to be staggered. The contractual period entered by the proprietor and the supplier generally differs from the stipulated period that the tenant and the supplier sign for. This means that if tenants' termination period is not aligned with that of the proprietor, they will be unable to switch suppliers.

13.59.3. The Commission found evidence of some supply agreements including clauses under which wholesalers pay proprietors a monthly rental fee/ commission commensurate with the volume of LPG consumed by the tenants or based on a percentage of the invoiced amount. The argument provided by market participants was the payment is for rental space (the space where the bulk tanks are installed). The Commission found this might be construed to provide perverse incentives to proprietors to ensure the continued use of a certain wholesaler's LPG, inhibiting the ability of the shopping centre (or residential estate) to switch LPG suppliers even if the tenants were to identify a supplier with a competitive price. A separate rental agreement between mall owners and LPG wholesalers for the equipment should be considered.

13.60. The Commission found, the limited disclosure of these salient features of supply agreements creates an environment wherein end-users are unable to switch effortlessly at the end of a contractual period because the installed equipment is either not fully amortised or ownership of the equipment remains with the supplier (regardless full amortisation of the equipment).

Industry Feedback

- 13.61. The Commission put forth several remedies and invited the industry to provide feedback. One proposed remedy is a separation of agreements entered into between an end-user and an LPG supplier wherein the first agreement would pertain to the cost and usage of the installed LPG equipment, while the second agreement would pertain to the supply of LPG. Regarding the agreement pertaining to the cost and usage of LPG equipment, the Commission proposed that an end-user should be in a position to own the installed equipment after the costs have been fully amortised. Secondly, the Commission proposed the establishment of a dispute resolution mechanism (if parties do not agree on the commercial terms related to the sale of the equipment) to allow for the transfer of ownership of the LPG equipment between the incumbent supplier and the incoming LPG supplier. This dispute resolution mechanism would standardise the process followed if the LPG suppliers do not agree on the valuation of the equipment. The Commission also requested comments and proposals related to the equipment valuation methodologies with the relevant independent body/entity (either existing or new) that would facilitate the dispute resolution mechanism.
- 13.62. Regarding the Commission's proposal on the separation of the supply agreement from the equipment agreement, industry players were broadly in support of the Commission's proposal. Concerns were raised regarding health and safety risks and that ownership of equipment should not be ceded to end-users with less expertise in the handling safety aspects. Market participants stated that equipment should only be transferable to LPG suppliers. Further, market participants raised a concern regarding the lawfulness of the approach.²⁶⁹
- 13.63. Regarding the Commission's proposal for the establishment of a dispute resolution mechanism to ease the burdens associated with switching, market participants broadly supported this recommendation. There were major concerns in relation to the mechanism increasing the costs of LPG supply.
- 13.64. Regarding the Commission's request for further comments on the appropriate equipment valuation methodology that may be used in the event of any disputes between LPG suppliers, market participants were broadly in agreement with the replacement cost with due consideration of depreciation and any additional expenditure which may extend the useful life of the equipment.

²⁶⁹ The proposed recommendation is allegedly in contravention of Section 25(1) of the Constitution of the Republic of South Africa No. 108 of 1996 (as amended).

- 13.65. In terms of the Commission's request for further comments on the applicable independent dispute resolution body/entity, market participants proposed the major auditing firms, the Arbitration Foundation of South Africa, the Alternate Dispute Resolution Association of South Africa, NERSA, the South African Qualification and Certification Committee and the Association of Consulting Engineers.

Recommendations

- 13.66. The Commission recommends the following:

13.66.1. *Separating the LPG supply agreement from the LPG equipment agreement.* The parties to any supply agreement must separate the agreement in relation to the supply of LPG from that pertaining to the use of LPG equipment. The LPG equipment agreement must reflect the cost and usage of the installed LPG equipment, while the LPG supply agreement should reflect the cost of the supply of LPG. The agreement pertaining to the cost and usage of LPG equipment must provide for the end-user to own the installed equipment after the costs have been fully amortised; or, alternatively, it must be clear that the equipment is subject to a rental agreement. The contracts contemplated in this recommendation should, at a minimum, include the following terms:

13.66.1.1. By default, contracts between customers and wholesalers must contain provisions for transferring tanks, with a clear methodology for valuing the equipment.

13.66.1.2. Incoming suppliers must have a right, subject to a commercially agreeable arrangement, to buy the existing tank and piping equipment from the outgoing supplier. The incoming supplier must have two options: first, to negotiate with the incumbent for the transfer of the equipment; or, take over the equipment based on the existing terms between the customer and incumbent supplier. The outgoing supplier will have an obligation to sell the equipment at a price determined by applying the appropriate methodology.

13.66.1.3. Customers must be provided with information on how to switch in their contracts. This information must be clearly explained before they sign the contract, and both parties must sign a legal declaration to prove that this discussion took place. All future supply agreements must contain this

legal declaration and that it must be added as an addendum to supply agreements already in existence.

- 13.66.2. *Guidelines for the valuation methodology of LPG equipment.* In order to facilitate the transfer of LPG equipment and reduce any potential impediments in commercial negotiations relating to same, NERSA must develop and publish guidelines setting out the appropriate valuation methodology that market participants can use for the sale and transfer of bulk installation LPG equipment (e.g. bulk tanks, cylinder manifold and reticulation system). This is specifically in relation to those instances wherein a new LPG supplier seeks to purchase existing and previously used LPG equipment from the incumbent supplier for the purposes of supplying a bulk customer.
- 13.66.3. The mandate of NERSA must be expanded to include the resolution of disputes relating to the interpretation and application of the *valuation methodology of LPG equipment*. In the event of a dispute in the interpretation and application of the valuation methodology for the transfer of LPG equipment, such disputes should be referred to NERSA.

14. Conclusion and recommendations

- 14.1. The recommendations resulting from the market inquiry seek to introduce or encourage changes in the domestic LPG sector that will promote efficiency, improve security of supply, encourage investment and provide customers with competitive prices and product choices.
- 14.2. The recommendations have been summarised from the various sections of the report. The relevant sections should be referred to directly for more detail.

Recommendations to the Department of Energy

- 14.3. The Commission's analysis identified a need for measures aimed at improving the regulatory environment the LPG sector.
- 14.4. Regarding price regulation, the Commission found that the DoE has not been able to finalise its review of the MRGP since issuing a draft framework for comment in 2012, despite commitments that it would review the MRGP periodically. Similarly, the Commission found evidence that the MRP framework has not been updated since the regulation commenced in 2010. The Commission recommends the following:
- 14.4.1. NERSA must undertake pricing and the monitoring of MRGP and MRP.
- 14.4.2. Price deregulation after supply constraints have been resolved. The reason for this is that the immediate deregulation of pricing may cause price increases above the current MRGP and consequently MRP, given the significant regulatory bottlenecks identified as well as the supply constraints faced by the sector. To circumvent this concern, the Commission is of the view that import efficiency and optimisation should be prioritised. This would result in an increase in import storage capacity and make it possible to accommodate larger LPG parcels, allowing for an increase in LPG supply domestically.
- 14.4.3. To give effect to the recommendation in 14.4.2. above, the DoE must undertake a study on how price deregulation in the LPG industry can be achieved.

- 14.5. The Commission is of the view that the deregulation of prices in the sector must be regarded as a long-term solution and should only be considered after the existing supply bottlenecks have been resolved. The priority in the short-term must be to improve import efficiency, increase import storage capacity and accommodate larger LPG parcels in order to allow for an increase in LPG supply domestically.
- 14.6. In terms of non-price regulation, the Commission found that the LPG sector has a number of regulators, regulations and licensing requirements at different levels of the value chain. These regulators were found to have overlapping jurisdictions, leading to projects being stalled. Overlapping jurisdictions between NERSA and the TNPA have resulted in delays and cost escalation in relation to approvals for the construction of import and storage facilities at the ports. The Commission recommends the following:
- 14.6.1. NERSA must be the regulator responsible for issuing wholesale licences and the monitoring thereof. NERSA is also involved in licensing import, loading and storage facilities for market participants including wholesalers.
- 14.6.2. NERSA and the TNPA's adjudication processes should be aligned to avoid delays in the construction of import and storage facilities and resolve the issues identified. As an MOU has been signed between the two entities, the Commission recommends that it be used as a mechanism to give effect to this recommendation. In addition, there should also be a sequencing of legal processes.

Recommendation 14.7: Limited domestic production of LPG

- 14.7. The Commission's analysis found that the limited domestic production of LPG necessitates that imports must be used to fill in gaps in the supply of same. The Commission also found that the current inadequate import infrastructure has stifled the uptake of LPG. In particular, the Commission found that significant obstacles are caused by the overlapping jurisdictions of NERSA and the TNPA in relation to approvals for the construction of import and storage facilities at the ports. The Commission recommends the following:
- 14.7.1. A review of the regulatory frameworks applicable to the construction of LPG import and storage facilities at ports, as outlined in the applicable legislation including the National Ports Act and the Petroleum Pipelines Act.

Recommendations to the Refineries and Wholesalers

- 14.7. The Commission's analysis found that long-term supply agreements offered by the refineries to large wholesalers have conferred some degree of competitive advantage to these wholesalers. The Commission also found that these long-term supply agreements are offered on a preferential basis, which has allowed the major/large wholesalers to maintain their positions in the market regardless of new entry.
- 14.8. The competitive position of a wholesaler (large or small) is dependent on its ability to obtain a sufficient and consistent supply of LPG. Accordingly, the Commission is of the view that the market is likely to be more competitive if smaller wholesalers are able to secure sufficient volumes of LPG on a consistent basis. This has been clearly demonstrated by the price competitiveness of the smaller wholesalers who have been able to secure LPG volumes.
- 14.9. The Commission recommends the following:
- 14.9.1. Existing evergreen agreements or agreements with more than a ten-year duration must be capped to a maximum of ten years.
- 14.9.2. All automatic renewal clauses must be removed from all supply agreements.
- 14.9.3. Refineries must allocate a minimum of ten percent of LPG production (excluding internal consumption) to small wholesalers²⁷⁰ on at least two-year supply agreements.
- 14.10. These recommendations are a short-term solution to the supply constraints in the LPG sector, as it is envisaged that within five years South Africa's LPG import infrastructure and the storage facilities at its ports will support increased LPG imports, averting the domestic supply shortage.

Recommendations to the Refineries and Wholesalers

- 14.11. The Commission's analysis found that contrary to the terms of the MRP Working Rules (2010), cylinder deposit fees have not been reviewed since 2010. In addition, the Commission has reason to believe that collusion in fixing cylinder deposits has taken place in this sector and that this conduct is likely to be continuing. The Commission recommends the following:

²⁷⁰ The definition of a small wholesaler proposed by the Commission is any wholesaler that requires between 2 500 and 10 000 tonnes of LPG per annum. This definition was determined using the average volumes supplied to ~~XXXX~~ and ~~XXXX~~ over the 2010 – 2014 period.

- 14.11.1. NERSA must be responsible for the determination of the cylinder deposit fees and must review same on an annual basis, so that they are aligned with changes in market conditions.
- 14.11.2. The deposit fee for each cylinder size must be linked to the cost of the cylinder.
- 14.12. The Commission will continue with its ongoing cartel investigations separate from the market inquiry process.
- 14.13. In relation to the cylinder exchange practice, the Commission recommends the following:
 - 14.13.1. The cylinder exchange practice must be more inclusive. No wholesaler should unreasonably deny another party the opportunity to enter a bilateral agreement to facilitate the exchange of cylinders. Any wholesaler who has invested in cylinders and complies with all relevant regulations, including those relating to safety, should not be barred from participating in cylinder exchange.
 - 14.13.2. The current hybrid cylinder ownership model must continue to enhance customer choice. More specifically:
 - 14.13.2.1. For 9 kg cylinders and below,²⁷¹ customers must have the choice to either lease a cylinder from a wholesaler or purchase a cylinder directly from a wholesaler or retailer.
 - 14.13.2.2. If a customer chooses to lease the cylinder, they may only fill their cylinder at the respective wholesaler or its designated distributor or they may exchange the cylinder at any accredited cylinder exchange site.
 - 14.13.2.3. If a customer chooses to purchase a cylinder, they may fill their cylinder at any accredited filling site.

271 The Commission notes that the logistics of handling and distributing a larger-sized cylinder (those larger than 9 kg) makes the cylinder exchange practice limited. The Commission notes that currently most wholesalers supply and fill those cylinders and as such, those cylinders are excluded from the Commission's recommendation outlined above as they do not ordinarily form part of the cylinder exchange practice.

14.14. Regarding cross-filling, the Commission recommends the following:

14.14.1. Cross-filling of LPG cylinders should occur within the confines of the law, which under section 10(4) of the OHSA requires written consent prior to a wholesaler filling the LPG cylinders of another wholesaler. The Commission is of the view that this practice must continue and the responsible enforcement authorities must impose the necessary sanctions to curtail any violation.

Recommendation 14.15: Facilitating switching

14.14. The Commission recommends that the following measures be implemented to facilitate switching:

14.15. The Commission recommends the following:

14.15.1. Separating the LPG supply agreement from the LPG equipment agreement.

The parties to any supply agreement must separate the agreement in relation to the supply of LPG from that pertaining to the use of LPG equipment. The LPG equipment agreement must reflect the cost and usage of the installed LPG equipment, while the LPG supply agreement should reflect the cost of the supply of LPG. The agreement pertaining to the cost and usage of LPG equipment must provide for the end-user to own the installed equipment after the costs have been fully amortised; or, alternatively, it must be clear that the equipment is subject to a rental agreement. The contracts contemplated in this recommendation should, at a minimum, include the following terms:

14.15.1.1. By default, contracts between customers and wholesalers must contain provisions for transferring tanks, with a clear methodology for valuing the equipment.

14.15.1.2. Incoming suppliers must have a right, subject to a commercially agreeable arrangement, to buy the existing tank and piping equipment from the outgoing supplier. The incoming supplier must have two options: first, to negotiate with the incumbent for the transfer of the equipment; or, take over the equipment based on the existing terms between the customer and incumbent supplier. The outgoing supplier will have an obligation to sell the equipment at a price determined by applying the appropriate methodology.

- 14.15.1.3. Customers must be provided with information on how to switch in their contracts. This information must be clearly explained before they sign the contract, and both parties must sign a legal declaration to prove that this discussion took place. All future supply agreements must contain this legal declaration and that it must be added as an addendum to supply agreements already in existence.
- 14.15.2. Guidelines for the valuation methodology of LPG equipment. In order to facilitate the transfer of LPG equipment and reduce any potential impediments in commercial negotiations relating to same, NERSA must develop and publish guidelines setting out the appropriate valuation methodology that market participants can use for the sale and transfer of bulk installation LPG equipment (e.g. bulk tanks, cylinder manifold and reticulation system). This is specifically in relation to those instances wherein a new LPG supplier seeks to purchase existing and previously used LPG equipment from the incumbent supplier for the purposes of supplying a bulk customer.
- 14.15.3. The mandate of NERSA must be expanded to include the resolution of disputes relating to the interpretation and application of the valuation methodology of LPG equipment. In the event of a dispute in the interpretation and application of the valuation methodology for the transfer of LPG equipment, such disputes should be referred to NERSA.
- 14.16. Table 25 provides a comprehensive summary of all the Commission's findings and applicable recommendations. This table outlines the relevant regulatory bodies and market participants deemed responsible for implementing the recommendations.

Table 26: Detailed implementation plan for the recommendations

Sections	Commission's findings	Commission's recommendations	Who will implement	Timeline
Section 7: Non-Pricing Regulation	The overlap in mandates and misaligned regulatory between NERSA and TNPA creates uncertainty amongst market participants regarding approvals for constructing import and storage facilities at the ports.	NERSA and the TNPA's adjudication processes should be aligned. The MOU signed between the two regulators should be used as a mechanism to give effect to the recommendation. In addition, there should also be a sequencing of legal processes.	DoE in consultation with NERSA and TNPA	20 June 2018
	Lack of monitoring of wholesale licensees.	NERSA to undertake wholesale licensing activities.	DoE	20 March 2019
Section 8: Pricing regulation	MRGP and MRP methodology had not been periodically reviewed.	NERSA to undertake pricing and the monitoring of MRGP and MRP.	DoE	20 March 2019
	Lack of monitoring of adherence to the MRGP and MRP by the DoE.			
	Import efficiency and optimisation should be prioritised.	DoE to undertake a market study on how price deregulation can be achieved in the LPG industry.	DoE	20 March 2019
Section 9: Addressing the limited domestic supply of LPG	MRGP in its current form is not creating an incentive for refineries to expand their production and storage capacity of LPG.	Price deregulation once sufficient supplies of LPG in the domestic market are established.	DoE	To be implemented following the recommendations of the Market Study
	The significant bottlenecks are caused by the overlapping jurisdictions of NERSA and the TNPA in relation to approvals for constructing import and storage facilities at ports.	The Commission recommends a review of the applicable regulatory frameworks, relating to LPG construction and storage facilities at ports, as outlined in applicable legislation, including the Petroleum Pipelines Act and the National Ports Act.	DoE in consultation with the Department of Transport	20 June 2018

Sections	Commission's findings	Commission's recommendations	Who will implement	Timeline
Section 10: LPG supply agreements with refineries	Wholesalers with long-term contractual agreements have a competitive advantage over those that rely on short-term contracts or the spot market.	Existing evergreen agreements or agreements with over ten year duration should be capped to a maximum of ten years.	Refineries and wholesalers	30 September 2017
	There is evidence of contracts with some large wholesalers that included unlimited renewal clauses. These clauses have the effect of making them "evergreen contracts".	The automatic renewal clauses should be removed from all supply agreements.	Refineries and wholesalers	30 September 2017
	Smaller wholesalers are unable to attain economies of scale due to the existence of the long-term contractual agreements in place.	10% allocation should be made available through a supply agreement with at least two year duration.	Refineries and wholesalers	30 September 2017
Section 11: Possible co-ordinated behaviour	DoE had not reviewed the deposit fees since 2010 in terms of the MRP Working Rules (2010).	DoE to amend the MRP Working Rules to enable NERSA to undertake the determination of deposit fees. NERSA to undertake the determination of deposit fees and the subsequent annual reviews.	DoE and NERSA	20 March 2019
Section 12: The sale of LPG through cylinders	The cylinder exchange practice acts as a potential barrier to entry into the cylinder market as it is governed through bilateral agreements and participation by new entrants has been difficult.	The cylinder exchange practice should be more inclusive, any unjustifiable restrictions in place should be removed. No wholesaler should unreasonably be denied the opportunity by another party to enter a bilateral agreement to facilitate the exchange of cylinders.	Wholesalers and distributors	30 September 2017

Sections	Commission's findings	Commission's recommendations	Who will implement	Timeline
Section 13: The high cost of switching	<p>Bulk LPG supply agreements are structured in a vague manner regarding equipment ownership during and after the expiration of the initial supply agreement. There is limited disclosure of when the costs of the installed LPG equipment will be fully amortised and whether the end-user will ever own the installed equipment. The majority of cases, equipment ownership lies with the wholesale supplier and that equipment ownership is not transferred to the bulk end-user at the end of the term.</p>	<p>Recommends separating the LPG supply agreement from the LPG equipment agreement. The agreement pertaining to the cost and usage of LPG equipment should provide for the end-user to own the installed equipment after the costs have been fully amortised; or, alternatively, it should be clear that the equipment is subject to a rental agreement.</p>	Wholesalers and end-users	30 September 2017
	<p>Limited disclosure of the salient features of supply agreements creates an environment wherein end-users are unable to switch seamlessly at the end of a contractual period.</p>	<p>The mandate of NERSA must be expanded to include the resolution of disputes relating to the interpretation and application of the <i>valuation methodology of LPG equipment</i>.</p> <p>NERSA to develop and publish a bulk LPG equipment installation valuation methodology.</p> <p>NERSA to adjudicate on disputes in the valuation of bulk equipment and installations leading to switching impediments.</p>	NERSA	30 June 2018

15. Appendices

ANNEXURE A: MARKET STAKEHOLDERS (BY TYPE OF STAKEHOLDER)

- 15.1. Table 26 provides details on the various stakeholders contacted during the market inquiry.

Table 26: List of market stakeholders contacted

LPG producers	
BP Southern Africa (Pty) Limited	Engen Petroleum Limited
The Petroleum Oil and Gas Corporation of South Africa (Pty) Limited ("PetroSA")	National Petroleum Refiners of South Africa ("Natref")
Sasol Oil (Pty) Ltd	Chevron South Africa (Pty) Limited
SAPREF	Shell South Africa (Pty) Limited
Wholesalers/Resellers	
Easigas (Pty) Ltd	Reatile Gaz
Oryx Oil South Africa (Proprietary) Limited	TotalGaz
KayaGas (Pty) Ltd	Kulani Africa Gas
Sims Gas	Wasaa
Sizanani Gas	Vaal Gas
African Oxygen Limited	Laboh Gas
Three distributors wishing to remain anonymous	
Commercial and industrial end-users	
Five property owners (shopping centres)	12 industrial end-users
Airports	
Retailers	
14 retailers (including filling stations and hardware shops)	
Regulators	
Department of Energy	Department of Labour
The National Energy Regulator of South Africa	The National Ports Authority
Associations	
South African Petroleum Association ("SAPIA")	LPGSASA
SAQCC	
Other	
Sunrise Energy	Six municipalities
Department of Trade and Industry	Petredec Limited

- 15.2. Interactions with stakeholders occurred through (i) site visits; (ii) telephonic calls; and (iii) meetings at the Commission's offices. Tables 30 to 32 provide more details.

Table 30: Stakeholder meetings.

No.	Entity name	Date	Venue
1	PetroSA	02 December 2014	The Competition Commission Offices – Sunnyside, Pretoria
2	Liquefied Petroleum Gas Safety Association of Southern Africa (LPGSASA)	05 December 2014	The Competition Commission Offices – Sunnyside, Pretoria
3	The South African Petroleum Industry Association (SAPIA)	08 December 2014	The Competition Commission Offices – Sunnyside, Pretoria
4	SAPREF	05 February 2015	SAPREF Offices – Durban
5	KayaGas	09 February 2015	KayaGas Offices – Rosebank, Johannesburg
6	Department of Energy	12 February 2015 04 June 2016 11 November 2016	Department of Energy Offices – Pretoria Central, Pretoria
7	Oryx Energies South Africa	13 February 2015	Oryx Oil SA Offices – Bryanston, Johannesburg
8	Cavendish Square Ottawa Spur	16 February 2015	Ottawa Spur – Cavendish Square, Cape Town
9	TotalGaz Southern Africa	16 February 2015	TotalGaz Offices – Bellville, Cape Town
10	JB Rivers	16 February 2015	Cape Town
11	Chevron South Africa (Pty) Limited	17 February 2015	Chevron Offices – Century City, Cape Town
12	Engen Petroleum Ltd	17 February 2015	Engen Petroleum Ltd Offices – Cape Town
13	Distell	18 February 2015	Distell Offices – Stellenbosch
14	Laboh Gas	18 February 2015	Laboh Gas Offices – Atlantis Industrial, Cape Town
15	Sasol Limited (Sasol Oil)	20 February 2015	Sasol Offices – Randburg, Johannesburg
16	Easigas	26 February 2015	Easigas Offices – Alberton, Johannesburg
17	Afrox	04 March 2015 05 August 2016	The Competition Commission Offices – Sunnyside, Pretoria
18	Reatile Gaz	04 March 2015	Reatile Gaz Offices, Chamdor, Krugersdorp
19	National Energy Regulator of South Africa (NERSA)	08 April 2015 4 November 2016	NERSA Offices – Arcadia, Pretoria
20	Famous Brands Limited	12 May 2015	Famous Brands Limited Offices – Midrand, Johannesburg

21	Avedia Energy	31 August 2015	Avedia Energy Offices – Cape Town
22	Reatile Gaz	31 August 2015	The Competition Commission Offices – Sunnyside, Pretoria
23	Sunrise Energy	31 August 2015	Saldanha Bay
24	City of Cape Town Metropolitan Municipality	01 September 2015	City of Cape Town Metropolitan Municipality Offices – Civic Centre, Cape Town
25	KayaGas	01 September 2015	KayaGas Offices – Blackheath, Cape Town
26	Stargas	16 October 2015	The Competition Commission Offices – Sunnyside, Pretoria
27	Hulamin Limited	26 October 2015	Hulamin Procurement Offices – Camps Drift, Pietermaritzburg
28	Sizanani Group	26 October 2015	Sizanani Group Offices – Westmead, Durban
29	The South African Bureau of Standards	10 December 2015	The Competition Commission Offices – Sunnyside, Pretoria
30	Transnet National Ports Authority	11 December 2015	TNPA Head Office – Braamfontein, Johannesburg

Table 20: Site visits completed

No.	Entity name	Date	Venue
1	SAPREF	05 February 2015	SAPREF Refinery, Durban
2	Reatile Gaz	04 March 2015	Chamdor, Krugersdorp
3	Sunrise Energy	31 August 2015	Saldanha LPG Import Terminal, Western Cape
4	Avedia Energy	31 August 2015	Saldanha LPG Import Terminal, Western Cape
5	Hulamin Limited	26 October 2015	Hulamin Procurement Offices, Pietermaritzburg
6	Sasol Limited	17 November 2015	Sasol Oil Refinery, Secunda
7	Easigas	23 February 2016	Alrode, Alberton
8	Wasaa	24 February 2016	Kya Sands
9	Afrox	05 August 2016	Roodekop, Germiston

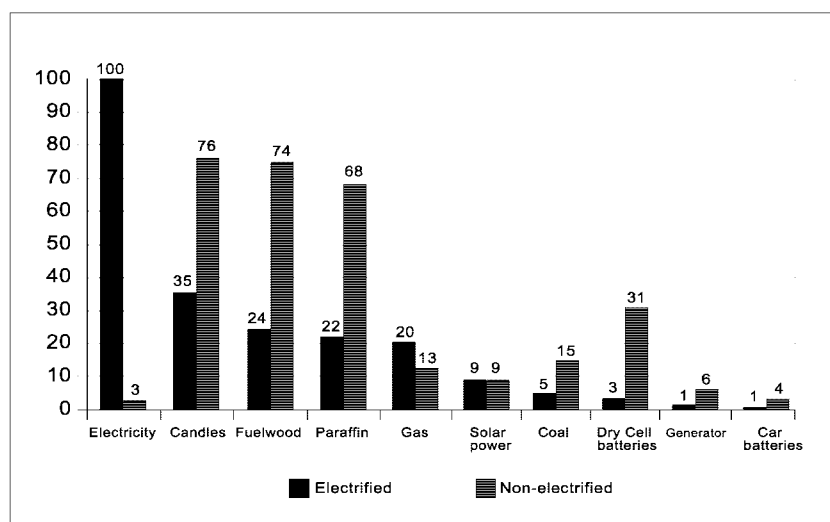
Table 29: Standalone contracts for the period 2014-2015

No.	Entity name	Date
1	Gas Piping Services	27 February 2015
2	Top Gas	27 February 2015
3	Eddlesgas	27 February 2015
4	Wasaa Gasses (Pty) Ltd	27 February 2015
5	Tiger Brands Limited	05 March 2015
6	Airports Company South Africa (ACSA)	02 March 2015
7	Vaal Gas Distributors (Pty) Ltd	13 March 2015
8	JB Rivers	02 June 2015
9	Famous Brands	12 May 2015
10	Oryx Energies South Africa	27 March 2015
11	Energy Exemplar Pty Ltd	22 September 2014

- Energy sources and energy mix in South African households
- ²⁷³

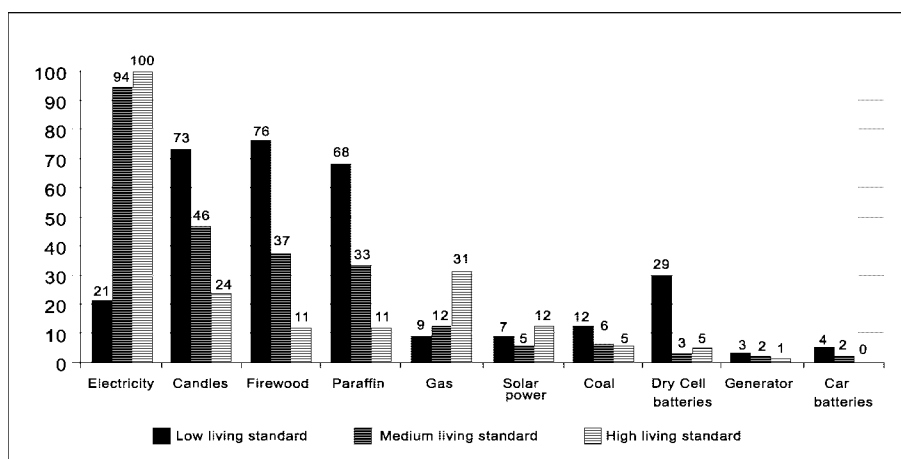
- Department of Energy. 2013. *A Survey of Energy Related Behaviour and Perceptions in South Africa: The Residential Sector*. Available from: <https://www.energy.gov.za/files/media/Public%20Surveys%20of%20Energy%20Related%20behaviour%20and%20perception%20in%20SA%20-%20Residential%20Sector%20-%20-%202012.pdf>.
- Department of Energy. 2013. *A Survey of Energy Related Behaviour and Perceptions in South Africa: The Residential Sector*. Available from: <https://www.energy.gov.za/files/media/Public%20Surveys%20of%20Energy%20Related%20behaviour%20and%20perception%20in%20SA%20-%20-%20Residential%20Sector%20-%20-%202012.pdf>.

Figure 29 Use of energy materials, 2012 (percentage of total)



15.6. In evaluating gas consumption amongst households with different *living standards*, it was observed that as households' living standard (and income) increases, the likelihood that gas will be selected as an energy source improves. From a multiple energy use perspective, it is observed that even households with a high living standard rely on a range of energy sources other than electricity, albeit to a lesser degree than those households with a greater material disadvantage.

Figure 30 Use of energy materials, 2012 (percentage of total) (percentage) 2012



- 15.7. In terms of **geographic area**, the domestic use of gas tends to have a greater presence on rural farms and in formal rural areas, especially amongst higher-income electrified households.

Table 30: Domestic energy use by geographic area, higher income and province, 2012

	Electricity	Candles	Firewood	Paraffin	Gas	Solar power	Coal	Dry cell batteries	Generator	Car batteries	Unweighted N
South Africa	92	38	28	26	20	9	6	6	1	1	2518
Geographic location											
Urban formal	99	26	11	18	24	11	4	4	1	1	1552
Urban informal	83	38	17	47	7	7	13	16	1	2	223
Rural trad. auth. areas	84	66	65	33	11	8	8	6	1	1	536
Farms	72	42	52	36	26	7	11	8	5	1	207

- 15.8. Over three-quarters (77%) of South African households use electricity as their main **energy source for cooking**, while 10% continue to depend on firewood. A marginal number of households use gas (5%), paraffin (4%), solar electricity (3%) and coal (1%). Only 6% of electrified households continue to rely on firewood as a main cooking source, closely followed by gas (5%). In non-electrified households, firewood (54%) and paraffin (38%) dominate as the energy sources for cooking, again followed by gas (5%).

Table 31: Main energy source for cooking, by electrification status, 2012

	Electricity	Firewood	Paraffin	Gas	Solar System	Coal	Generator	Other	Total	Base N
South Africa	77	10	4	5	3	1	0	0	100	2470
Electrified	84	6	1	5	3	1	0	0	100	2214
Non-electrified	1	54	38	5	0	2	0	0	100	244

- 15.9. Across geographic locations, gas is mostly used amongst urban formal households for cooking. This gas could comprise either piped natural gas or LPG. Gas usage in other geographic locations, likely to be LPG, is observed in between 2% to 3% of households.

Table 56: Kitchen energy sources for cooking – by geographic location

	Electricity	Firewood	Paraffin	Gas	Solar System	Coal	Generator	Other	Total	Base N
South Africa	77	10	4	5	3	1	0	0	100	2470
Geographic location										
Urban formal	88	0	1	6	4	0	0	0	100	1528
Urban informal	72	3	21	3	1	0	0	0	100	215
Rural trad. auth. Areas	59	33	4	3	1	0	0	0	100	524
Farms	64	20	8	2	2	5	0	0	100	203

- 15.10. Finally, in terms of the **energy mix in cooking**, it was found that 60% of South African households use a single energy source – typically electricity (47%) – for their cooking requirements. Of the remaining 40% using a range of energy sources, electricity and firewood (10%), gas and electricity (10%) and electricity and paraffin (9%) were found the most common energy source mixes. For energy combinations including gas, it was found, predominantly households with a high living standard include gas in their energy mix for cooking as a supplement to electricity.

Table 59: Energy source combinations for cooking – by living standard

Multiple energy sources for cooking	South Africa	Electrified	Non-electrified	Low	Medium	High
Single energy use	60	60	66	58	54	66
Electricity only	47	51	1	2	41	61
Firewood only	6	4	37	34	7	0
Paraffin only	2	0	23	21	2	0
Gas only	2	2	3	0	2	3
Solar system only	2	2	0	0	1	2
Coal only	0	0	2	1	1	0
Other source only	0	0	0	0	0	0
Multiple energy use	40	40	34	42	46	34
Firewood & electricity	10	11	0	2	15	6

Multiple energy sources for cooking	South Africa	Electrified	Non-electrified	Low	Medium	High
Gas & electricity	10	10	0	0	5	17
Paraffin & electricity	9	10	0	4	15	5
Paraffin, firewood & electricity	2	3	0	2	4	0
Paraffin & firewood	2	0	24	25	1	0
Paraffin, gas & electricity	1	1	0	0	1	1
Gas, firewood & electricity	1	1	0	0	1	1
Coal & electricity	1	1	0	0	1	0
Paraffin & gas	0	0	3	4	0	0
Paraffin, gas & firewood	0	0	2	2	0	0
Other energy combinations	4	4	5	3	4	4
Total	100	100	100	100	100	100

- 15.11. In terms of **energy sources used for heating**, it was observed that on aggregate, 61% of South African households use an energy source to heat spaces and to keep warm. More specifically, 41% of households use electricity as the main source for space heating, while 9% use firewood and 5% paraffin. Coal, gas and other sources are used in less than 5% of households.
- 15.12. Households with low living standards exhibit similar patterns as non-electrified households in terms of the main energy source for heating; 33% use firewood, 14% use paraffin, 3% use electricity, and 47% use no energy source. In contrast, households with medium and high living standards predominantly use electricity for space heating (37% and 50% respectively), followed by firewood (12%) and gas (5%).
- 15.13. Regarding the **energy mix used for heating** by households, the use of gas is only observed amongst electrified households with medium and high living standards. The energy combination of gas and electricity is most pronounced amongst households with a high living standard, and could include using either piped natural gas or LPG.

Table 64: Main energy source used for heating and cooking, by electrification status, living standard level and quintile

	Energy source														No energy source		Base N
	Electricity	Firewood	Paraffin	Coal	Gas	Dry cell batteries	Solar System	Generator	Warm clothing	Blankets	Hot water bottle	Other	None of the above	(Don't know)	Total		
South Africa	41	9	5	2	3	1	0	0	20	18	0	0	2	0	100		2451
Electrification status																	
Electrified	45	7	4	1	3	1	0	0	20	17	0	0	2	0	100		2193
Non-electrified	1	29	11	5	0	0	0	0	21	28	0	0	4	0	100		246
Living standard level																	
Low	3	33	14	3	0	0	1	0	19	23	0	0	5	0	100		197
Medium	37	12	7	2	1	1	0	0	20	18	1	0	2	0	100		1110
High	50	1	1	1	5	1	0	0	21	18	0	0	1	0	100		915
Per capita income quintiles																	
Poorest quintile	28	22	7	3	0	0	0	0	21	16	0	0	3	0	100		419
Quintile 2	34	11	6	3	2	1	0	0	25	17	0	0	1	0	100		448
Quintile 3	40	8	5	2	1	0	0	0	21	21	1	0	2	0	100		532
Quintile 4	46	3	4	0	1	1	0	0	17	26	1	0	1	0	100		523
Richest quintile	53	1	1	1	10	2	0	0	17	11	1	0	3	0	100		491
Geographic location																	
Urban formal	51	1	3	2	4	1	0	0	18	17	0	0	2	0	100		1508
Urban informal	28	6	15	4	1	1	0	1	29	11	2	0	3	0	100		218
Rural trad. auth. areas	25	25	6	1	0	1	0	0	24	17	0	0	1	0	100		521
Farms	31	18	2	3	0	0	0	0	13	31	0	0	1	0	100		204

Energy trends observed from the National Income Dynamics Survey ("NIDS")

- 15.14. Data from the NIDS survey evaluated households' choice of energy source for heating and cooking. Examination of the data found that in terms of households' **primary energy source for heating**, a large and increasing proportion of households use electricity for heating, followed by wood (which fluctuates within the 15%–25% range), paraffin and a decreasing share of coal. The portion of households that use gas remains limited, although there has been some marginal growth over the 2010 to 2012 period.

Table 68: Household electricity use by energy source

Primary source of energy used for heating						
	2008		2010		2012	
	Freq.	Per cent	Freq.	Per cent	Freq.	Per cent
Electricity from mains	3812	52,2%	4444	65,5%	5144	64,0%
Wood	1824	25,0%	1156	17,0%	1651	20,5%
Paraffin	518	7,1%	539	7,9%	464	5,8%
Coal	178	2,4%	146	2,2%	117	1,5%
Gas	60	0,8%	54	0,8%	88	1,1%
Other	904	12,4%	447	6,6%	576	7,2%
Total	7296	100%	6786	100%	8040	100%

15.15. The *primary energy source used for cooking* is electricity, the usage of which has increased by 10% over the period, as presented in Table 13. Using wood for cooking has remained stagnant, whilst paraffin usage has decreased by almost 6% over the period. Gas is the fourth most common energy source used for cooking, although it was used by only 2,6% of households according to the 2012 survey.

Table 69: Household electricity use by energy source

Primary source of energy used for cooking						
	2008		2010		2012	
	Freq.	Per cent	Freq.	Per cent	Freq.	Per cent
Electricity from mains	4696	64,4%	4929	72,6%	6021	74,9%
Wood	1386	19,0%	985	14,5%	1256	15,6%
Paraffin	837	11,5%	552	8,1%	457	5,7%
Gas	195	2,7%	107	1,6%	208	2,6%
Coal	75	1,0%	89	1,3%	60	0,7%
Other	201	1,5%	124	1,8%	69	0,5%
Total	7390	100,0%	6786	100,0%	8071	100,0%

ANNEXURE 1 – WOLDBANK – LPG – 2013 – 2014

15.16. The correct countries to use to compare LPG regulations and identify best practices were identified from the following criteria to minimise the influence of country-specific favourable conditions that cause better LPG pricing and consumption:

- 15.16.1. Similar GDP per capita as South Africa.
- 15.16.2. Countries with a higher per capita LPG consumption than South Africa by a factor of at least two.
- 15.16.3. Supply of LPG similar to that in South Africa, like inadequate local production with imports.
- 15.16.4. Climate similar to that of South Africa.
- 15.16.5. Urban communities can access LPG easily and cheaper than rural communities due to higher concentration of demand, higher income levels and lower distribution effort. The World Bank in 2013 defined South Africa as being 64% urbanised with a population density of 43,8/km².

Table 37. Regulatory agency involvement in LPG distribution

Country/ City	Region	Downstream petroleum law and/or regulations	Special LPG law or regulation	National standards issued	International/ Regional standards adopted	Coverage of LPG issues	Regulatory agency	
							Type	Capabilities/ efficiency
Ghana	AFR	good	good	none	good	good	Autonomous	good
Kenya	AFR	good	good	good	fair	good	Autonomous	fair
Senegal	AFR	good	none	fair	none	poor	Ministry	poor
S. Africa	AFR	good	good	good	none	good	Autonomous	good
Fiji	EAP	none	none	none	none	none	Ministry	poor
Thailand	EAP	fair	none	good	none	fair	Ministry	fair
Vietnam	EAP	none	none	good	fair	fair	Ministry	poor
Albania	ECA	poor	none	none	good	good	Ministry	fair
Moldova	ECA	good	none	none	good	good	Autonomous	fair
Turkey	ECA	good	good	good	good	good	Autonomous	good
Brazil	LAC	fair	good	fair	fair	fair	Autonomous	fair
Dom Rep	LAC	fair	fair	none	poor	good	Ministry	poor
Guatemala	LAC	good	fair	poor	fair	fair	Ministry	poor
Mexico	LAC	good	good	good	few	good	Ministry	fair
Peru	LAC	good	good	fair	fair	good	Autonomous	good
Jordan	MNA	none	none	fair	good	fair	Ministry	poor
Morocco	MNA	fair	good	none	good	good	Ministry	fair
Canada/ Ontario	NAm	fair	good	fair	good	good	Autonomous	good
USA/Texas	NAm	good	good	none	good	good	Autonomous	good
Afghanistan	SAR	none	none	none	none	poor	Ministry	poor
Pakistan	SAR	fair	good	none	good	good	Autonomous	fair
Sri Lanka	SAR	fair	none	none	good	fair	Autonomous	fair

15.17. Both the World Bank and the World LPG Association advise against general subsidies for LPG, as these often benefit the higher-income households and industry (e.g. Autogas) instead of the lower-income households. Once established, subsidies can be challenging to remove, resulting in a large drain on the fiscus. As seen in the country summaries, subsidies have played a crucial role in increasing LPG demand elsewhere in the world.

15.18. All costs shown in the country studies are based on 2010 values. For reference, the cost of South African LPG in cylinders in 2010 was US\$2,54/kg.

- 15.19. **Vietnam:** Cost of LPG was US\$1,37/kg, which included home delivery within 30 minutes in urban areas. Consumers own their own cylinders, and the country does not have well-developed LPG regulations. LPG prices are not regulated and there are no subsidies. LPG consumption grew from 220 000 tpa in 1999 to 874 000 tpa in 2008, with the majority of use occurring in households. Increased demand for LPG was met by LPG imports – 69% of supply came from imports in 2010. Vietnam has many import terminals, some of which are small, so a “spoke and hub” system allows large cargos to be offloaded cheaply in the few large terminals while small parcels are sent to nearby smaller terminals.
- 15.20. **Turkey:** Has the highest cost of LPG in the World Bank survey of US\$3,26/kg, but still has a per capita consumption of LPG three times higher than that of South Africa. The reason for the high cost is due to the following regulations to ensure safety and reliability of supply:
- 15.20.1. Licensed distributors must hold 20 days of supply in storage.
 - 15.20.2. Cylinders are required to be delivered to houses.
 - 15.20.3. In some cases, qualified installers connect cylinders in houses.
 - 15.20.4. Every cylinder is insured.
 - 15.20.5. High taxes on LPG: Special consumption tax of 32% (for autogas replacement of gasoline, which applies to cylinders to prevent cylinders being used with autogas) and 18% VAT. Thus Autogas, in spite of optimising the supply chain economics, has throttled the cylinder economics because of high taxes.
- 15.21. Turkey is singled out for having comprehensive LPG laws and regulations requiring:
- 15.21.1. Only trained and certified people may be employed.
 - 15.21.2. Fees are paid to support the regulator (0,1% of net sales to US\$2 million).
 - 15.21.3. Companies may only handle their own cylinders bearing their emblem or trademark unless they have prior agreements with other distributors.

- 15.22. There is effective enforcement of licensing and follow-up, aided by the Ministry of Interior (Police and Army) and LPG marketing companies (who inform the regulator).
- 15.23. The LPG Association is responsible for drafting legislation and creating the appropriate infrastructure to increase the use and penetration of LPG. The association shares best practices and contributes to the ethical behaviour of the industry.
- 15.23.1. Cross-filling is minimised – courts support this.
- 15.23.2. Pricing is deregulated but the regulator can periodically establish price ceilings for a maximum of two months.
- 15.23.3. Turkey imports product and brings in large parcel sizes into large terminals.
- 15.23.4. There is joint procurement of imports.
- 15.23.5. Hospitality arrangements exist at terminals.
- 15.23.6. Cylinders are filled in centralised areas and delivered to retail outlets.
- 15.23.7. LPG companies own their own cylinders. Deposits are 25% to 30% of the cylinder cost.
- 15.24. **Indonesia:** Paraffin was the main domestic fuel until 2007 and was supported with subsidies. The government launched and sponsored a paraffin-to-LPG conversion programme with the objective to switch 42 million domestic and SME users to LPG. As part of the switching initiative, the government provided a conversion package comprising a 3 kg cylinder, stove and free first fill. The conversion programme was initiated in 2007 and by 2010, LPG became the main cooking fuel. Subsequently the paraffin subsidy was reduced in 2011. In 2012, LPG storage had increased to 270 000 m³ from 10 000 mt.
- 15.25. **Morocco:** The cost of LPG is US\$0,4/kg due to heavy subsidies from the government. The industry is classified as being well regulated and has large import terminals (one is 110 000 mt).

15.26. **Senegal:** The cost of a subsidised 6 kg cylinder is US\$1,23/kg. The unsubsidised price of LPG is US\$1,45/kg. Senegal's conversion to LPG is characterised by:

15.26.1. The country incorporated UN funds to reduce deforestation.

15.26.2. It outlawed the selling of wood on streets and progressively taxed charcoal and kerosene.

15.26.3. An initial cross-subsidy made smaller cylinders more affordable. Subsidies account for 0,2 to 1,4% of GDP. Subsidies became so expensive in 2009 that crude imports could not be paid for, resulting in a prolonged LPG shortage.

15.26.4. Richer households use the subsidised smaller cylinders instead of the larger cylinders, while poorer households in rural areas cannot afford LPG.

15.26.5. The country relies heavily on imports, with plans to increase its import terminal capacity. Parcel sizes will increase from 4000 to 15 000 mt.

15.26.6. LPG marketing companies own and maintain cylinders.

15.27. **India:** The government introduced a cash subsidy (in the form of a direct benefit transfer scheme, or DBTS) for LPG to consumers instead of selling LPG to them below market price. This has reduced the leakage of subsidy funds. Cash subsidies are paid directly into consumers' bank accounts. Previously the subsidy was paid to oil companies who sold LPG at subsidised rates essentially only to households; but product found its way to hotels and restaurants. The DBTS is the world's largest cash transfer programme.

15.28. **Kenya:** The country has a small LPG market that has been challenged by an inadequate supply infrastructure and illegal filling which runs to 20%–30% of the cylinder market today. The lack of enforcement of a cross-filling prohibition has seen disinvestment from the LPG sector in Kenya. Regulations have been strengthened with increased inspections.

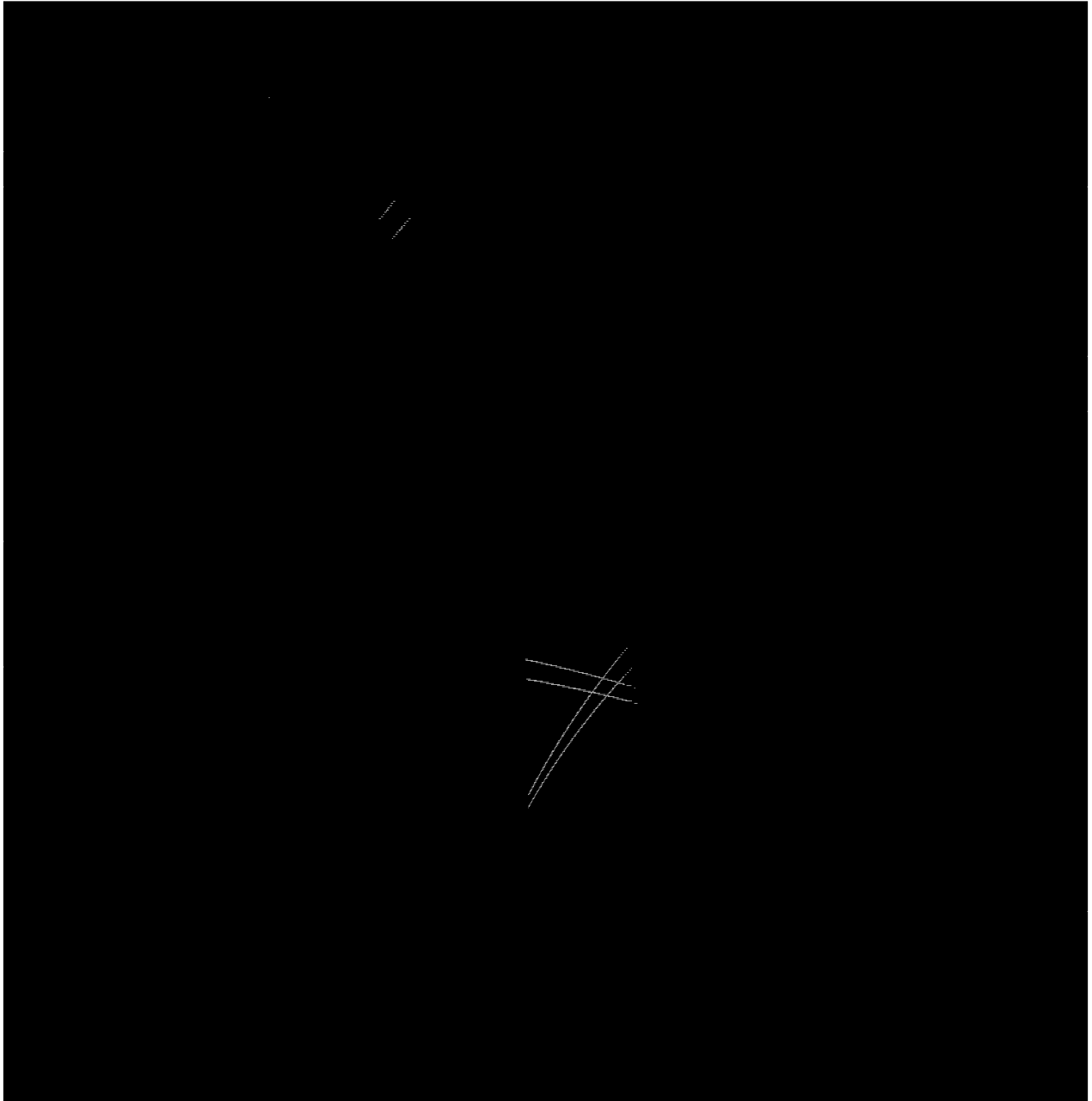
15.28.1. Key Kenyan LPG regulations were updated to return law and order to the industry and to attract investments.

15.28.2. The country has an LPG regulator devoted to LPG.

- 15.28.3. The Energy Act of 2008 is to be updated to particularly combat issues of illegal refilling, including penalties and enforcement.
- 15.28.4. Illegal filling LPG attracts a fine of 0-1M KES; this penalty will be updated with a minimum of 1M KES and a jail term.
- 15.29. An independent inspectorate, already been mandated by the regulator (and contracted to SGS Kenya Ltd) will be formalised to ensure the regulator has the monitoring and enforcement capacity to warrant adherence to LPG regulations. The inspectorate will have the regulatory power to seize and destroy illegal LPG equipment.

This image shows a full page of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for handwriting practice or general writing. There are no margins, text, or other markings on the page.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



T: +27(0) 12 394 3200 / 3320

F: +27(0) 12 394 0166

E: ccsa@compcom.co.za

W: www.compcom.co.za

The DTI Campus, Mulayo (Block C)
77 Meintjies Street, Sunnyside, Pretoria

Private Bag x23, Lynnwood Ridge
0040, South Africa

LPG MI/1/2017

DEPARTMENT OF HIGHER EDUCATION AND TRAINING

NO. 389

28 APRIL 2017

**CALL FOR PUBLIC COMMENTS ON THE DRAFT POLICY FRAMEWORK
FOR THE INTERNATIONALISATION OF HIGHER EDUCATION IN
SOUTH AFRICA**

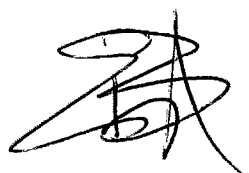
I, Bonginkosi Emmanuel Nzimande, Minister of Higher Education and Training, hereby publish the *Draft Policy Framework for the Internationalisation of Higher Education in South Africa* for public comments.

The full text of the *Draft Policy Framework for the Internationalisation of Higher Education in South Africa* (2017) can be downloaded from the Department's website at www.dhet.gov.za. All interested parties are invited to comment on the draft policy in writing, and direct their comments to:

The Director-General, Department of Higher Education and Training, Private Bag X174, Pretoria, 0001, for the attention of Mr Mahlubi Mabizela, email: Mabizela.C@dhet.gov.za.

The name, address, telephone number, and email address of the person or organization submitting the comments must be provided.

The comments on the Draft Policy Framework on Internationalisation of Higher Education in South Africa (2017) must be submitted not later than 30 days from the date of publication of this notice.



Dr BE Nzimande, MP
Minister of Higher Education and Training

Date:

07/04/2017

DEPARTMENT OF HUMAN SETTLEMENTS**NO. 390****28 APRIL 2017****RESTRUCTURING ZONES**

The Department of Human Settlements hereby publishes for public information the following Restructuring Zones in terms of Social Housing Policy, the Guidelines and the Social Housing Act, 2008 (Act no. 16 of 2008) :

Eastern Cape Province		
Municipality	Name of Town	Name of RZ area
Camdeboo Local Municipality	Graaff-Reinet	Sunnyside A & B
King Sabata Dalindyebo Local Municipality		Mhatha & Suburbia (Maydene Farm Extension, Zimbane Heights Extension and Transkei United Dairies, Zimbane Valley, New Brighton, Mqanduli, Silverton, De Coligny and Payne's Farm)
Kouga Local Municipality	Jeffrey's Bay	Jeffrey's Bay and suburbia
Nelson Mandela Bay Metropolitan Municipality	Port Elizabeth	Summerstrand
		Fairview
		2010 Stadium Precinct
		Newton Park
		Stanford Road
	Uitenhage (10km radius)	Uitenhage CBD
		Dispatch CBD
		Florida Farms
	Coega IDZ node (10km radius)	Coega Vulindlela
		Wells Estate
		Amsterdamhoek
	Baywest node (10km radius)	Bay West/N2 Hub
		Lorraine
		Hunters Retreat
		Kabega Park
		Parsons Vlei
Buffalo City Metro	King Williams Town	King Williams Town/ Bisho

Kwa Zulu Natal Province		
Municipality	Name of Town	Name of RZ area
Emnambithi Local Municipality	Ladysmith	Hospital Park
		Ladysmith Central
		Dunlop
Newcastle Local Municipality	Newcastle	Arbor Park
		Newcastle central
		Fernwood
Kwa-Dukuza Local Municipality	Stanger	Kwadukuza CBD
		Blythedale Beach
		Hyde Park
Mhlathuze Local Municipality	Richards Bay	Aquadene
	Empangeni	uMhlathuze Village
Hibiscus Coast Local Municipality/Ray Nkonyeni LM	Port Shepstone	Marburg
		Protea Park
		Uvongo
eThekweni Metropolitan Municipality	eThekweni/Durban	Comubia
		Bridge City
		Newlands
		Phoenix
		Charlsworth
		KwaMashu and surrounds

Western Cape Province		
Municipality	Name of Town	Name of RZ area
Oudtshoorn Local Municipality	Oudtshoorn	Oudtshoorn CBD
		Bridgton Development Precinct
Mossel Bay Local Municipality	Mossel Bay	Mossel Bay CBD (Schoeman Street, Louis Fourie Corridor) and Kwa-nongaba
		Kwa-nongaba
George Local Municipality	George	George Central (Central 1 & 2 and York Street)
Knysna Local Municipality	Knysna	Knysna CBD
		Lagoon
		Heidevallei
Bitou Local Municipality	Plettenberg Bay	Plettenberg Bay CBD
		Piesang Road
		Cape Nature
		Ladywood
Drakenstein Local Municipality	Paarl/Mbekweni	Paarl (Central & South)
	Wellington/Mbekweni	Wellington CBD / Botterberg
Overstrand Local Municipality	Hermanus	Hermanus (which includes Mount Pleasant 1, 2 & 3, West Cliff & Zwelihle)
	Hawston	Hawston
	Gansbaai	Gansbaai
Stellenbosch Local Municipality	Stellenbosch	Greater Stellenbosch
		Plankenburg
Saldhanah Bay Local Municipality	Vredenburg	Vredenburg CBD
	Saldanha	Saldanha CBD
Breede Valley Local Municipality	Worcester	Worcester CBD (Esselenpark, RouxPark)
		Transhex
Swartland Local Municipality	Malmesbury	Malmesbury CBD
		Abbotsdale
		New Claire/Garden Village
		Garden Village
		Suikerbakkie

Limpopo Province		
Municipality	Name of Town	Name of RZ area
Polokwane Local Municipality	Polokwane	Polokwane Extensions
		Annadale
		Bendor
		Polokwane CBD
Mpumalanga Province		
Municipality	Name of Town	Name of RZ area
Govan mbeki Local Municipality	Bethal	Secunda CBD
		Embalenhle
		Bethal/Mzinoni
		Lebogang Precinct
eMalahleni Local Municipality	eMalahleni/Witbank	Duvha Park Ext 1
		eMalahleni CBD
		Corridor Hill
		Spring Valley
		Klarinet
		Siyangoba
		Schoongezicht
Steve Tshwete Local Municipality	Middelburg	Steve Tshwete CBD
		Mhluzi Built Areas
		Rondobosch
Mbombela Local Municipality	Mbombela/Nelspruit	White River
		White River CBD
		Mbombela CBD
		Maggiesdal Built up Area
		Tekwane South
Umjindi Local Municipality	Barberton	Umjindi CBD
Nkomazi Local Municipality	Malelane	Malelane CBD
Thaba Chweu Local Municipality	Lydenburg	Mashishing Lydenburg CBD
Msukaligwa Local Municipality	Ermelo	Ermelo CBD
Lekwa Local Municipality	Standerton	Standerton CBD
		Sakhile
Victor Khanye Local Municipality	Delmas	Delmas CBD

Gauteng Province		
Municipality	Name of Town	Name of RZ area
Randfontein Local Municipality	Randfontein	Finsbury (RAND04)
		Toekomrus (RAND05)
		Randfontein CBD (RAND01)
		Uncle Harry's Precinct (RAND02)
		Aureus (RAND03)
		Mohlakeng (RAND06)
		Middelvlei, Droogeheuvel and Ridgeview Integrated Human Settlements (RAND07)
Mogale City Municipality	Krugersdorp	Leratong Mixed Development (MOGC04)
		Magaliesburg CBD (MOGC05)
		Nooitgedacht/ Rietfontien Integrated HS (MOGC06)
		Muldersdrif/ Pine Heaven (MOGC07)
		West Krugersdorp (MOGC02)
		Krugersdorp CBD including the UDF Precinct (MOGC01)
		Chief Mogale Integrated HS (MOGC03)
Merafong Local Municipality	Welverdiend	Welverdiend and Varkenslaagte Integrated Human Settlements (MERC03)
	Khutsong	Khutsong South Integrated Human Settlements (MERC04)
	Fochville	Fochville CBD (MERC01)
	Carletonville	Carletonville CBD (MERC02)
Westonaria Local Municipality	Simunye	Simunye (Including Simunye Civic Precinct) (WEST 02)
		Bekkersdal (WEST 03)
		Thusanang (WEST04)
		Westonaria CBD (WEST01)
		Westonaria Borwa Integrated HS (WEST05)

Gauteng Province		
Municipality	Name of Town	Name of RZ area
Ekurhuleni Metropolitan Municipality	Tembisa	Tembisa CBD
		Leralla Node
		Essellen Park
		Clayville
		Oakmoore
	Katorus	Mayberry Park
		Airode
		Vosloorus CBD
		Vosloorus Hospital Node
		Kwesine - Palm Ridge
	Boksburg	Boksburg Mining Belt
		Boksburg CBD
		Boksburg North

DEPARTMENT OF JUSTICE AND CONSTITUTIONAL DEVELOPMENT

NO. 391

28 APRIL 2017

PROMOTION OF ACCESS TO INFORMATION ACT, 2000**DESCRIPTION SUBMITTED IN TERMS OF SECTION 15(1)**

I, Tshililo Michael Masutha, 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 SERVICES

As set out in the Schedule

**TSHILILO MICHAEL MASUTHA, MP (ADV)****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
--	-----------------------------

7.1 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR INSPECTION IN TERMS OF SECTION 15(1)(a)(i)	
ALL DIVISIONS AND COMPONENTS	
<p>National Instructions (The following records are excluded:</p> <ul style="list-style-type: none"> • training material; • training guidelines; • training manuals; or • 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. <p>The normal request procedure in terms of the Act is applicable when access to such records are requested.)</p>	<p>The records may be inspected at the relevant sub-section head on request in writing to the relevant divisional commissioner.</p>
CORPORATE COMMUNICATION HERITAGE SERVICES	
<p>(1) All displays at the SAPS Heritage Services</p> <p>(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)</p>	<p>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.</p>
DIVISION: FINANCIAL MANAGEMENT AND ADMINISTRATION	
ADMINISTRATION SERVICES: ARCHIVES AND REGISTRY	
Master Copy of the Filing System	<p>The records may be inspected at the office of the National Records Manager, Document Centre Management on request in writing to the National Records Manager, Document Centre Management: SAPS: Private Bag X 94, PRETORIA, 0001.</p>
FINANCIAL MANAGEMENT: BUDGETS	
Estimates of National Expenditure — Department of Police	<p>The records may be inspected at the office of the Section Head: Budgets on request in writing to Financial Management: Section Head: Budgets, Private Bag X 94, PRETORIA, 0001.</p>

DIVISION: HUMAN RESOURCE UTILISATION	
EMPLOYMENT EQUITY	
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.
PERFORMANCE MANAGEMENT	
(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.
DIVISION : OPERATIONAL RESPONSE SERVICES	
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.
COMPONENT: ORGANISATIONAL DEVELOPMENT	
Job Evaluation (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act): • Job evaluation reports • Panel results	The records may be inspected at the office of the Section Head: Organizational Corporate and Design, Organisational Development on request in writing to the Head: Organizational Development, Private Bag X 94, PRETORIA, 0001.
DIVISION: HUMAN RESOURCE MANAGEMENT	
PROMOTION SERVICES AND REWARD SYSTEMS	
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: Human Resource Management, Private Bag X 94, PRETORIA, 0001.
PSYCHOLOGICAL SERVICES DEVELOPMENT	
Records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to — (1) Psychological Interventions All the different types of training offered by Psychological Services, the reason for and methods of such training and the places where it occurs	The records may be inspected at the office of the Sub-section Head: Psychological Services Development on request in writing to the Divisional Commissioner: Human Resource Management, Private Bag X 94, PRETORIA, 0001.

<p>(2) Trauma debriefing</p> <p>(3) Number of employees psychometrically evaluated for specialized units</p> <p>(4) Number of applicants for entry level: constables evaluated</p> <p>(5) Different sports and recreation events accordingly the number of employees participating in different events including sports and recreation for disabled employees</p> <p>(6) International sporting events. Total of employees participating and results</p>	
DIVISION: SUPPLY CHAIN MANAGEMENT	
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.
DIVISION: VISIBLE POLICING	
FIREARMS, LIQUOR AND SECOND-HAND GOODS CONTROL	
Consideration Policy 1994	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.
PARTNERSHIP POLICING SECTOR POLICING	
<p>Records relating to —</p> <p>(1) Partnership Policing</p> <ul style="list-style-type: none"> • Police Community Projects • Policy Framework and Guidelines on Community Policing <p>(2) Sector Policing</p> <ul style="list-style-type: none"> • Pilot Projects 	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.
VISIBLE POLICING	
<p>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:</p> <p>(1) Police Emergency Services</p> <ul style="list-style-type: none"> • Flying Squad or Highway Patrol • 10111 Centres 	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.

CONTINUES ON PAGE 258 - PART 3

Vol. 622

28 April
April 2017

No. 40815

PART 3 OF 3

(2) Community Services (3) Accident Combating (4) Specialised Uniform Support <ul style="list-style-type: none"> • Hostage Negotiation • Divers • Water Wing • Disaster Management (5) Equestrian (6) Dogs	
7.2 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR PURCHASING IN TERMS OF SECTION 15(1)(a)(ii)	
ALL DIVISIONS	
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.
DIVISION: SUPPLY CHAIN MANAGEMENT	
PROCUREMENT AND INVENTORY MANAGEMENT	
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.
7.3 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FOR COPYING IN TERMS OF SECTION 15(1)(a)(ii) (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)	
ALL DIVISIONS AND COMPONENTS	
(1) Policy Documents and National Instructions (The following records are excluded: <ul style="list-style-type: none"> • training material; • training guidelines; • training manuals; or • 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. The normal request procedure in terms of the Act is applicable when access to such records is requested.)	(1) The records may be obtained on request in writing addressed to the relevant section head or the relevant divisional commissioner.
(2) Collective Agreements	(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>(3) ACCIDENT REPORT (NEW OR OLD REPORTS): COPY OR PHOTOCOPY</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> <ul style="list-style-type: none"> (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; (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 (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).
CORPORATE COMMUNICATION: HERITAGE SERVICES	
<p>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)</p>	<p>The records may be obtained on request in writing addressed to the Curator, SAPS Heritage Services, PO Box 4866, Pretoria, 0001.</p>
COMPONENT : STRATEGIC MANAGEMENT	
<p>Although the following records are available free of charge on the Web page of the Service, it may be photocopied on request:</p> <ul style="list-style-type: none"> (1) Annual Report for the South African Police Service (2) Strategic Plan for the South African Police Service (3) Annual Performance Plan for the South African Police Service (4) Component Crime Registrar 	<p>The records may be obtained on request in writing addressed to the Head: Crime Registrar, Strategic Management, Private Bag X 94, Pretoria, 0001.</p>

DIVISION: FINANCIAL MANAGEMENT AND ADMINISTRATION	
DOCUMENT CENTRE MANAGEMENT: ARCHIVES AND REGISTRY	
Master Copy of the Filing System	The records may be obtained from the office of the National Records Manager, Document Centre Management in writing addressed to the National Records Manager: Administration Services, SAPS, Private Bag X 94, PRETORIA, 0001.
FINANCIAL MANAGEMENT : BUDGETS	
Estimates of National Expenditure — Department of Police	The records may be obtained on request in writing addressed to Financial and Administration Services, Section Head: Budgets, Private Bag X 94, PRETORIA, 0001.
DIVISION: FORENSIC SERVICES	
MANAGEMENT AND ADMINISTRATIVE SUPPORT	
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.
DIVISION: HUMAN RESOURCE UTILISATION	
EMPLOYMENT EQUITY	
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.
COMPENSATION MANAGEMENT	
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.
PERFORMANCE MANAGEMENT	
<p>(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 —</p> <p>Performance management systems:</p> <ul style="list-style-type: none"> • Projects • Project names • Project plans • Project budgets • Project status reports • Project and programme operating manuals • Project and programme functions and activities • Programme Management Board activities 	<p>(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.</p>

<ul style="list-style-type: none"> • Project and programme registered users • Number of registered project centres 	
DIVISION: OPERATIONAL RESPONSE SERVICES	
AIR WING HEADQUARTERS	
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: Operational Response Services, Private Bag X30, SUNNYSIDE, 0132
OPERATIONAL INFORMATION MANAGEMENT CENTRE	
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"> • Crowd Management • National Intervention Unit • Borderline Police • Air Wing • Specialized Skills Development • Special Task Force (2) Crowd Management Incidents (3) Successes of: <ul style="list-style-type: none"> • Crowd Management • National Intervention Unit • Borderline Police • Air Wing • Specialized Skills Development • Special Task Force (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.
DIVISION: ORGANIZATIONAL DEVELOPMENT	
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"> • Pre-interview questionnaire • Results of Job evaluation • Panel results 	The records may be obtained from the office of the Section Head: Organizational Corporate and Design, Organizational Development on request in writing to the Head: Organizational Development, Private Bag X 94, PRETORIA, 0001.
DIVISION: HUMAN RESOURCE MANAGEMENT	
PSYCHOLOGICAL SERVICES DEVELOPMENT	
Records (excluding personal information of persons and information that may be refused on the grounds of refusal provided for in the Act) relating to — (1) Psychological Interventions All the different types of training offered by the section: Psychological Services, the reason and methods of for such training and the place where it occurs (2) Trauma debriefing	The records may be obtained from the office of the Sub-section Head: Psychological Services on request in writing addressed to the Divisional Commissioner: Human Resource Management, SAPS Head Office, Private Bag X 94, PRETORIA, 0001.

<p>(3) Number of employees psychometrically evaluated for specialized units</p> <p>(4) Number of applicants for entry level: constables evaluated</p> <p>(5) Different sports and recreation events accordingly the amounts of employees participating in different events including sports and recreation for disabled employees</p> <p>(6) International sporting events. Total of employees participating and results</p>	
RECRUITMENT AND STAFFING	
<p>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</p>	<p>The records may be obtained on request in writing addressed to the Section Head: Recruitment And Staffing, Private Bag X 94, PRETORIA, 0001.</p>
SENIOR MANAGEMENT APPOINTMENTS	
<p>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</p>	<p>The records may be obtained on request in writing addressed to the Sub-section Head: Senior Management Appointments, Private Bag X 986, PRETORIA, 0001.</p>
DIVISION: SUPPLY CHAIN MANAGEMENT	
<p>General conditions and procedures</p>	<p>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.</p>
DIVISION: VISIBLE POLICING	
<p align="center">PARTNERSHIP POLICING</p> <p align="center">SECTOR POLICING</p>	
<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"> • Police Community Projects • Policy Framework and Guidelines on Community Policing <p>(2) Sector Policing</p> <ul style="list-style-type: none"> • Pilot Projects 	<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>

SOCIAL CRIME PREVENTION	
(1) Making South Africa Safe Manual (2) Environmental Design Manual (3) Communication Materials on Domestic Violence (4) Communication Materials on Victim Empowerment	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.
(5) Communication Materials on rape and Sexual offences (6) Promising Crime Prevention Practices in South Africa (7) National Rural Victims of Crime Survey (8) Guidelines: Drug and Substance Abuse	
VISIBLE POLICING	
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: (1) Police Emergency Services <ul style="list-style-type: none"> • Flying Squad or Highway Patrol • 10111 Centres (2) Community Services (3) Accident Combating (4) Specialised Uniform Support <ul style="list-style-type: none"> • Hostage Negotiation • Divers • Water Wing • Disaster Management 	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.
7.4 DESCRIPTION OF CATEGORIES OF RECORDS AUTOMATICALLY AVAILABLE FREE OF CHARGE IN TERMS OF SECTION 15(1)(a)(iii)	
All Divisions	
(1) A copy of a — (a) suspect's own statement contained in an open docket; or (b) victim's or complainant's own statement contained in an open docket.	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. <u>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).</u>
(2) The information or topics as available on the Web site of the Service	(2) Available on the Web page of the Service at www.saps.gov.za

DEPARTEMENT VAN JUSTISIE EN STAATKUNDIGE ONTWIKKELING

NO. 391

28 APRIL 2017

KATEGORIEË VAN REKORDS WAT OUTOMATIES BESKIKBAAR IS

BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1) VAN DIE WET OP DIE BEVORDERING VAN TOEGANG TOT INLIGTING, 2000 OUTOMATIES BESKIKBAAR IS	WYSE WAAROP TOEGANG TOT REKORDS VERKRY KAN WORD
--	--

7.1 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1)(a)(i) OUTOMATIES VIR INSPEKSIE BESKIKBAAR IS	
ALLE AFDELINGS EN KOMPONENTE	
<p>Nasionale Instruksies (Die volgende rekords is uitgesluit:</p> <ul style="list-style-type: none"> • 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. <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.
KORPORATIEWE KOMMUNIKASIE: ERFENISDIENSTE	
<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 verstrek 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, PRETORIA, 0001.
AFDELING: FINANSIËLE BESTUUR EN ADMINISTRASIE	
DOKUMENT SENTRUM BESTUUR: ARGIEWE REGISTRASIE EN REKORDS	
Meesterkopie van die Lêerstelsel	Die rekords kan by die kantoor van die Nasionale Rekordsbestuurder, Dokument Sentrum Bestuur, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Nasionale Rekordsbestuurder, Administrasiedienste, SAPD, Privaatsak X 94, PRETORIA, 0001.

FINANSIËLE DIENSTE: BEGROTINGS	
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 Seksiehoof: Begrotings, Finansiële en Administrasiedienste, Privaatsak X 94, PRETORIA, 0001.
AFDELING: MENSLIKE HULPBRON BENUTTING	
GELYKHEIDSBESTUUR	
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.
PRESTASIEBESTUUR	
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.
AFDELING: OPERASIONELE REAKSIEDIENSTE	
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.
KOMPONENT: ORGANISATORIESE ONTWIKKELING	
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): <ul style="list-style-type: none"> • Posevalueringsverslae • Paneelbeslissings 	Die rekords kan by die kantoor van die Seksiehoof: Organisasoriese Korporatief en Ontwerp, Organisasoriese Ontwikkeling geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Die Hoof: Organisasoriese Ontwikkeling, Privaatsak X94, PRETORIA, 0001.
AFDELING: MENSLIKE HULPBRONBESTUUR	
BEVORDERINGSDIENSTE EN VERGOEDINGSSISTEME	
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 Seksiehoof: Bevorderingsdienste en Vergoedingssisteme, geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Menslike Hulpbronbestuur, Privaatsak X 94, PRETORIA, 0001.

SELKUNDIGE DIENSTE ONTWIKKELING	
<p>Rekords (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) oor —</p> <p>(1) Sielkundige intervensies Al die verskillende soorte opleiding wat Sielkundige Dienste verskaf, die redes vir opleiding van hierdie aard en die metodes wat aangewend word, sowel as die plekke waar dit plaasvind</p> <p>(2) Trauma-ontlonting</p> <p>(3) Getal werknemers wat psigometries vir aanstelling by spesialiseenhede geëvalueer is</p> <p>(4) Getal aansoekers wat as konstabels op toetreevlak geëvalueer is</p> <p>(5) Verskillende sportsoorte en ontspanningsbyeenkomste, na gelang van die getal werknemers wat aan die onderskeie items deelneem, met inbegrip van sport en ontspanning vir gestremde werknemers</p> <p>(6) Internasionale sportbyeenkomste: Totale getal werknemers wat deelneem en uitslae</p>	<p>Die rekords kan by die kantoor van die Subseksiehoof: Sielkundige Dienste Ontwikkeling geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Menslike Hulpbronbestuur, Privaatsak X 94, PRETORIA, 0001.</p>
AFDELING: VOORSIENINGSLYNBESTUUR	
Algemene voorwaardes en prosedures	<p>Die rekords kan by Voorsieningslynbestuur geïnspekteer word deur skriftelik daarvoor aansoek te doen by die Afdelingskommissaris: Voorsieningslynbestuur, Privaatsak X 254, PRETORIA, 0001.</p>
AFDELING: SIGBARE POLISIËRING	
VUURWAPENS, DRANK EN TWEEDEHANDSE GOEDERE KONTROLE	
Beleid oor die oorweging van aansoeke om vuurwapenlisensies, 1994	<p>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.</p>
VENNOOTSKAPSPOLISIËRING SEKTORPOLISIËRING	
<p>Rekords ten opsigte van —</p> <p>(1) Vennootskapspolisiëring</p> <ul style="list-style-type: none"> • Die Polisie se Gemeenskapsprojekte • Beleidsraamwerk en riglyne vir gemeenskaps-polisiëring <p>(2) Sektorpolisiëring</p> <ul style="list-style-type: none"> • Loodsprojekte 	<p>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.</p>

SIGBARE POLISIËRING	
<p>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:</p> <p>(1) Die Polisie se Nooddienste</p> <ul style="list-style-type: none"> • Blitspatrolie of Hoofwegpatrolie • 1 0111-sentrums <p>(2) Gemeenskapsdienste</p> <p>(3) Ongelukvoorkoming</p> <p>(4) Gespesialiseerde Uniform-ondersteuning</p> <ul style="list-style-type: none"> • Gyselaaronderhandelaars • Duikers • Die Watervleuel • Rampbestuur <p>(5) Berede eenheid</p> <p>(6) Honde-eenheid</p>	<p>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.</p>
7.2 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT OUTOMATIES INGEVOLGE ARTIKEL 15(i)(a)(ii) TE KOOP BESKIKBAAR IS	
ALLE AFDELINGS	
Wetgewing (wetsontwerpe, wette, regulasies, proklamasies en Goewermentskennisgewings)	Afskrifte van wetgewing is by die Staatsdrukker verkrygbaar teen die prys wat deur die Staatsdrukker bepaal word.
AFDELING: VOORSIENINGSLYNBESTUUR	
VERKRYGINGSBESTUUR	
Staatstenderbulletins	Word weekliks deur die Staatstenderraad gepubliseer en is by die Staatstenderraad verkrygbaar teen die prys wat deur die Staatstenderraad bepaal word.
7.3 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT INGEVOLGE ARTIKEL 15(1)(a)(ii) OUTOMATIES VIR FOTOKOPIËRING BESKIKBAAR IS	
(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)	
ALLE AFDELINGS	
<p>(1) Dokumente rakende beleid en Nasionale Instruksies</p> <p>(Die volgende rekords is uitgesluit:</p> <ul style="list-style-type: none"> • 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 - 	<p>(1) Die rekords kan verkry word deur skriftelik aansoek te rig aan die betrokke seksiehoof of afdelingskommissaris.</p>

<p>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.)</p>	
<p>(2) Kollektiewe ooreenkomste</p>	<p>(2) Die rekords kan verkry word deur skriftelik aansoek te rig aan die Seksiehoof: Arbeidsverhoudinge, Menslike Hulpbronbenutting, Privaatsak X 94, PRETORIA, 0001, gerig word.</p>
<p>(3) VERSLAE OOR ONGELUKKE (NUWE OF OU VERSLAE): KOPIEË OF FOTOKOPIEË</p> <p><i>Let wel — met die term "afskrif" word bedoel dat die reproduksie met die hand gedoen word;</i> <i>'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 gemagtigde 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><i>Let wel — Die volgende persone word geag gemagtigde persone te wees:</i></p> <ul style="list-style-type: none"> (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; (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 (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 style="text-align: center;">KORPORATIEWE KOMMUNIKASIE: ERFENISDIENSTE</p>	
<p>Argiefrekords en foto's 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>

KOMPONENT : STRATEGIESE BESTUUR	
Alhoewel die volgende rekords gratis op die Diens se webtuiste verkrygbaar is, kan daar op versoek fotostate van sodanige rekords gemaak word: (1) Jaarverslag vir die Suid-Afrikaanse Polisiediens (2) Strategiese Plan vir die Suid-Afrikaanse Polisiediens (3) Jaarlikse Prestasie Plan vir die Suid-Afrikaanse Polisiediens (4) Komponent Misdaad Register	Die rekords kan verkry word deur skriftelik aansoek te rig aan die Hoof: Misdaad Register, Strategie, Navorsingsmonitering en Evaluasie, Privaatsak X 94, PRETORIA, 0001.
AFDELING: FINANSIËLE BESTUUR EN ADMINISTRASIE	
DOKUMENT SENTRUM BESTUUR : ARGIEWE REGISTRASIE EN REKORDS	
Meesterkopie van die Lêerstelsel	Die rekords kan verkry word by die kantoor van die Nasionale Rekordsbestuurder, Dokument Sentrum Bestuur deur skriftelik aansoek te rig aan die Nasionale Rekordsbestuurder, Dokument Sentrum Bestuur, SAPD, Privaatsak X 94, PRETORIA, 0001.
FINANSIËLE BESTUUR: BEGROTINGS	
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.
AFDELING: FORENSIESEDIENSTE	
BESTUUR EN ADMINISTRATIEWE ONDERSTEUNING	
Slegs foto's en Identikits wat deur die Polisiediens vrygestel en deur die media gepubliseer word	Die rekords kan verkry word by Forensiesedienste deur skriftelik aansoek te rig aan die Hoof: Forensiesedienste, Hoofkantoor, SAPD, Privaatsak X 322, PRETORIA, 0001.
AFDELING: MENSLIKE HULPBRON BENUTTING	
DIENSBILLIKHEID	
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 Hulpbron Benutting, Diensbillikheid, Privaatsak X 94, PRETORIA, 0001.
VERGOEDINGSBESTUUR	
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.

PRESTASIEBESTUUR	
<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) oor Prestasiebestuurstelsels:</p> <ul style="list-style-type: none"> • Projekte • Die name van projekte • Projekplanne • Die begrotings van projekte • Verslae oor die stand van projekte • Operasionele handleidings oor projekte en programme • Projek- en programfunksies en -aktiwiteite • Aktiwiteite van die Programbestuursraad • Geregistreeerde gebruikers van projekte en programme • Die getal geregistreeerde projeksentrums 	<p>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</p>
AFDELING: OPERASIONELE REAKSIEDIENSTE	
OPERASIONELE INLIGTING BESTUUR SENTRUM	
<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"> • Skarebestuur • Nasionale Intervensie-eenheid • Grenslyn • Lugvleuel • Gespesialiseerde Vaardigheidsontwikkeling • Spesiale Taakmag <p>(2) Skarebestuursinsidente</p> <p>(3) Suksesse behaal:</p> <ul style="list-style-type: none"> • Skarebestuur • Nasionale Intervensie-eenheid • Grenslyn • Lugvleuel • Gespesialiseerde Vaardigheidsontwikkeling • Spesiale Taakmag <p>(4) Vredeshandhawing</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Adjunk-inligtingsbeampte: Operasionele Reaksiedienste, Privaatsak X 30, SUNNYSIDE. 0132</p>
AFDELING: ORGANISATORIESE ONTWIKKELING	
<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"> • Voorafonderhoudvraelys • Resultate van die posevaluering • Die paneel se beslissing 	<p>Die rekords kan verkry word by die kantoor van die Seksiehoof: Organisasoriese Korporatief en Ontwerp, Organisasoriese Ontwikkeling deur skriftelik aansoek te rig aan die Hoof: Organisasoriese Ontwikkeling, Privaatsak X 94, PRETORIA, 0001</p>

AFDELING: MENSLIKE HULPBRONNE BESTUUR	
SELKUNDIGE DIENSTE ONTWIKKELING	
<p>Rekords (behalwe persoonlike inligting van persone en toegang tot inligting wat ingevolge die Wet geweier kan word), ten opsigte van —</p> <ol style="list-style-type: none"> (1) Sielkundige intervensies (Al die verskillende soorte opleiding wat deur die Seksie: Sielkundige Dienste verskaf word, redes vir en die metode wat tydens sodanige opleiding aangewend word en die plekke waar opleiding van hierdie aard geskied) (2) Trauma-ontlonting (3) Getal werknemers wat psigo-metries vir aanstelling by spesialiseenhede geëvalueer is. (4) Getal aansoekers wat geëvalueer is vir aanstelling as konstabels op (4) Getal aansoekers wat geëvalueer is vir aanstelling as konstabels op toetreevlak. (5) Verskillende sport-en ontspanningsbyeenkomste dienooreenkomstig die getal werknemers wat aan die onderskeie items deelneem (met inbegrip van sport- ontspanningsbyeenkomste vir gestremde werknemers) (6) Internasionale sportbyeenkomste : Total getal werknemers wat deelneem, sowel as uitslae. 	<p>Die rekords kan verkry word by die kantoor van die Subseksiehoof: Sielkundige Dienste deur skriftelik aansoek te rig aan die Afdelingskommissaris: Menslike Hulpbronne bestuur: Hoofkantoor, SAPD, Privaatsak X 94, PRETORIA, 0001.</p>
WERWING EN PERSONEELVOORSIENING	
<p>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"</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Seksiehoof, Werwing en Personeelvoorsiening, Privaatsak X 94, PRETORIA, 0001.</p>
SENIOR BESTUURSAANSTELLINGS	
<p>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"</p>	<p>Die rekords kan verkry word deur skriftelik aansoek te rig aan die Sub-seksiehoof, Senior Bestuur Aanstellings, Privaatsak X 986, PRETORIA, 0001.</p>
AFDELING: VOORSIENINGSLYNBESTUUR	
<p>Algemene voorwaardes en prosedures</p>	<p>Die rekords kan verkry word by Voorsieningslynbestuur deur skriftelik aansoek te rig aan die Afdelingskommissaris: Voorsieningslynbestuur, Privaatsak X 254, PRETORIA, 0001.</p>

AFDELING: SIGBARE POLISIËRING	
VENNOOTSKAPSPOLISIËRING SEKTORPOLISIËRING	
<p>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) -</p> <p>(1) Vennootskapspolisiëring</p> <ul style="list-style-type: none"> • Die Polisie se Gemeenskapsprojekte • Beleidsraamwerk en riglyne vir Gemeenskaps-polisiëring <p>(2) Sektorepolisiëring</p> <ul style="list-style-type: none"> • Loodsprojekte 	<p>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.</p>
SOSIALE MISDAADVOORKOMING	
<p>(1) "Maak Suid-Afrika Veilig"-handleiding</p> <p>(2) Handleiding oor Omgewingsontwerp</p> <p>(3) Kommunikasiemateriaal oor Gesinsgeweld</p> <p>(4) Kommunikasiemateriaal oor Slagofferbemaatting</p> <p>(5) Kommunikasiemateriaal oor verkragting en seksuele oortredings.</p> <p>(6) Belowende Misdaadvoorkoming</p> <p>(7) Praktiese in Suid-Afrika</p> <p>(8) Nasionale landelike slagoffers van Misdaad opnames</p> <p>(9) Riglyne: Misbruik van dwelms</p>	<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>
SIGBARE POLISIËRING	
<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"> • Blitspatrolie of Hoofwegpatrolie • 1 0111-sentrums <p>(2) Gemeenskapsdienste</p> <p>(3) Ongelukvoorkoming</p> <p>(4) Gespesialiseerde uniformtakke</p> <ul style="list-style-type: none"> • Gyselaaronderhandelars • Duikers • Die Watervleuel • Rampbestuur 	<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>

7.4 BESKRYWING VAN KATEGORIEË VAN REKORDS WAT AUTOMATIES GRATIS INGEVOLGE ARTIKEL 15(1)(a)(iii) BESKIKBAAR IS
ALLE AFDELINGS

<p>(1) 'n Afskrif van die —</p> <p>(a) verdagte se eie verklaring wat in 'n oop dossier vervat is; of</p> <p>(b) slagoffer of klaer se eie verklaring wat in 'n oop dossier vervat is.</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><u>Let wel:</u> 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).</p>
<p>(2) Die onderwerpe of inligting soos beskikbaar op die Diens se webtuiste</p>	<p>(2) Op die Diens se webtuiste by www.saps.gov.za beskikbaar.</p>

GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**NOTICE 314 OF 2017**

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

**PROPOSED AMENDMENTS TO THE REGULATIONS RELATING TO THE GRADING,
PACKING AND MARKING OF PEACHES AND NECTARINES INTENDED FOR SALE IN THE
REPUBLIC OF SOUTH AFRICA**

INVITATION FOR PUBLIC COMMENTS

The Executive Officer: Agricultural Product Standards hereby invite all interested institutions, organizations and individuals to submit written comments and representations on the proposed amendments to the Regulations relating to the grading, packing and marking of peaches and nectarines intended for sale in the Republic of South Africa.

The proposed amendments to the regulations are available for inspection at the office of the Executive Officer: Agricultural Product Standards, Harvest House, 30 Hamilton Street, Arcadia, Pretoria; or copies can be obtained from the Executive Officer: Agricultural Product Standards, Department of Agriculture, Forestry and Fisheries, Private Bag X343, Pretoria, 0001, tel. no. 012 319 6070, fax no. 012 319 6265 or 6055, e-mail TebogoC@daff.gov.za or is available on the Department's website at <http://www.daff.gov.za>

All interested parties who wish to comment or make representations regarding the proposed regulations are invited to furnish such comments or representations in writing to the Executive Officer: Agricultural Product Standards at the above contact information within **30 days** from the date of publication of this Notice.

B.M. MAKHAFOLA
EXECUTIVE OFFICER: AGRICULTURAL PRODUCT STANDARDS

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

NOTICE 315 OF 2017

**NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004
(ACT NO. 10 OF 2004)****BIODIVERSITY MANAGEMENT PLAN FOR ELEVEN CRITICALLY ENDANGERED AND FOUR
ENDANGERED *ENCEPHALARTORS* CYCAD SPECIES**

I, Bomo Edith Edna Molewa, Minister of Environmental Affairs, hereby publish the Biodiversity Management Plan for 11 critically endangered and four endangered *Encephalartors* Cycad species, in terms of section 43(1)(b)(i) read with 43(3) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), set out in the Schedule hereto.



**BOMO EDITH EDNA MOLEWA
MINISTER OF ENVIRONMENTAL AFFAIRS**

BIODIVERSITY MANAGEMENT PLAN - SPECIES FOR

**11 CRITICALLY ENDANGERED AND 4 ENDANGERED
ENCEPHALARTOS SPECIES**

Prepared for:

The South African National Biodiversity Institute (SANBI)

Private Bag X101

Silverton

0184

Tel: (012) 843 5025



Compiled by



S · E · F

STRATEGIC ENVIRONMENTAL FOCUS

P O Box 74785
Lynnwood Ridge
0040

Tel: +27 12 349 1307
Fax: +27 12 349 1229
Email: karin@sefsa.co.za

www.sefsa.co.za

Date: April 2016

SEF Project Code: 505747

SEF Contact Person: Byron Grant

Leading Sustainability through Innovation



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



SCHEDULE

BIODIVERSITY MANAGEMENT PLAN FOR 11 CRITICALLY ENDANGERED AND 4 ENDANGERED *ENCEPHALARTOS* SPECIES



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

EXECUTIVE SUMMARY

Encephalartos species (or cycads as they are more commonly known as) are collectively the most threatened plant group in South Africa today. Twelve of the 37 (32%) *Encephalartos* species that occur in South Africa are regarded as Critically Endangered, while an additional three are already considered Extinct in the Wild. There are less than 100 plants left in the wild for seven of the Critically Endangered species, four species of which are on the brink of extinction. A further four *Encephalartos* species are regarded as Endangered. The predominant threat facing *Encephalartos* species is the ongoing illegal removal of adult plants from wild populations to meet the current demand for large *Encephalartos* species for private collections and for landscaping purposes. Recently, *Encephalartos* species have also been poached for use in *muthi*-markets where these plants are used for traditional purposes. Adult plants are also highly valued as parental stock for seedling propagation for both the domestic and international cycad trade.

The Department of Environmental Affairs (DEA) requested the South African National Biodiversity Institute (SANBI) to develop, by 15 January 2015, a generic Biodiversity Management Plan (BMP) for key *Encephalartos* species in accordance with Section 43 of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA) and the NEM:BA Norms and Standards for Biodiversity Management Plans for Species (BMP-S).

The aim of the BMP-S is to ensure the long-term survival in nature of the 15 *Encephalartos* species. For the purpose of this BMP long-term survival is interpreted as halting the decline of the *in situ* populations and thereafter attaining a population growth which will result in a down-listing of the species in terms of its conservation status in the IUCN Red List. The 15 *Encephalartos* included in the BMP-S are *Encephalartos aemulans*, *E. arenarius*, *E. cerinus*, *E. cupidus*, *E. dolomiticus*, *E. dyerianus*, *E. eugene-maraisii*, *E. heenanii*, *E. hirsutus*, *E. horridus*, *E. inopinus*, *E. laevifolius*, *E. lebomboensis*, *E. middelburgensis*, and *E. msinganus*.

Stakeholders were identified through a literature review as well as in consultation with the SANBI, the BMP-S Project Steering Committee and several members of the public with an interest in *Encephalartos* species. During the stakeholder identification process, the names and contact details of stakeholders were registered on a database of interested and affected parties. A total of 246 stakeholders were registered in the stakeholder database, which included the following stakeholder groups:

- National Stakeholders (DEA, SANParks, SANBI, etc.) (33);
- Provincial Stakeholders (e.g. provincial conservation agencies) (57);
- Municipal Stakeholders (e.g. Nelson Mandela Metropolitan Municipality) (15);
- Private Conservation Stakeholders (SA Hunters and Game Conservation Association, Endangered Wildlife Trust, Private Nature Reserves, etc.) (26);
- Cycad Society of South Africa (CSSA), Growers, Collectors (39);
- National Botanical Gardens/ Botanical Society Stakeholders (18);
- Academic or Research Stakeholders (12);
- Landowners (24);
- Industry (Transnet, Coega IDZ, etc.) (7); and
- Other Stakeholders (15).

Overarching principles and operational guidelines were identified to govern the successful implementation of the overall BMP-S, including the establishment of a Cycad Steering Committee consisting of a collaboration between the Department of Environmental Affairs, the South African

National Biodiversity Institute, provincial conservation agencies and the private sector represented by the CSSA.

Generic aspects of the BMP-S which are applicable to all 15 *Encephalartos* species include an increase in protection of wild cycads, essential research, and effective management of confiscated cycads and *ex situ* collections. Specific objectives, actions and recovery targets were established for all 15 *Encephalartos* species ranging from surveys to determine current population status, identification of secure sites for reintroduction, proclamation of areas as Specially Protected Areas in terms of the National Environmental Management: Protected Areas Act (NEM:PAA) (Act 57 of 2003) to recovery objectives such as reintroduction of seed and / or seedlings into secure localities.

DEFINITIONS

Aichi Targets	Aichi Targets of the Convention of Biological Diversity includes a Strategic Plan which is comprised of a shared vision, a mission, strategic goals and 20 targets, collectively known as the Aichi Targets. The Strategic Plan serves as a flexible framework for the establishment of national and regional targets and it promotes the coherent and effective implementation of the three objectives of the CBD (https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf)
Alien species	A species that is not an indigenous species. Or an indigenous species translocated or intended to be translocated to a location outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.
Biodiversity	Biodiversity is the variability among living organisms from all sources including <i>inter alia</i> terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.
Community	Assemblage of populations living in a prescribed area or physical habitat, inhabiting some common environment.
Conservation	The management of the biosphere so that it may yield the greatest sustainable benefit to the present generation while maintaining its potential to meet the needs and aspirations of future generations. The wise use of natural resources to prevent loss of ecosystem function and integrity.
Conservation concern	Species of conservation concern are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity and include not only threatened species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD) (http://redlist.sanbi.org/redcat.php).
Conservation status	An indicator of the likelihood of that species remaining extant either in the present day or the near future, or a measure of its extinction risk denoted by the species' Red List status. Many factors are taken into account when assessing the conservation status of a species: not simply the number of individuals remaining, but the overall increase or decrease in the population over time, breeding success rates, known threats, and so on.
Critically Endangered	A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five International Union for the Conservation of Nature (IUCN) Red List criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction (http://redlist.sanbi.org/redcat.php).
Data Deficient	There is inadequate information to make a direct, or indirect, assessment of a taxon's risk of extinction based on its distribution and/or population status. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that a threatened classification is appropriate.
Endangered	A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN Red List criteria for Endangered, indicating that the species is facing a very high risk of extinction (http://redlist.sanbi.org/redcat.php).
Ex situ	Off-site or outside a species' natural habitat.
Flora	The plant life of a region.
Forb	An herbaceous plant other than grasses.

Genebank	A biorepository which preserves genetic material of plant species, and includes seed banks and living plant collections.
Habitat	Type of natural environment in which plants and animals live.
In situ	Within a species' natural habitat.
Indigenous	A species that occurs naturally in South Africa
Invasive species	Naturalised alien plants that have the ability to reproduce, often in large numbers. Aggressive invaders can spread and invade large areas.
IUCN Red List	The IUCN Red List is set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world.
Least Concern	A species is Least Concern when it has been evaluated against the IUCN Red List criteria and does not qualify for any other Red List category. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category (http://redlist.sanbi.org/redcat.php).
Mitigation	The implementation of practical measures to reduce adverse impacts.
Natural Distribution range	The spatial extent of the historical occurrence in the wild as can be determined through all available records and publications
Near Threatened	A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN Red List criteria for Vulnerable, and is therefore likely to become at risk of extinction in the near future (http://redlist.sanbi.org/redcat.php).
Protected Plant	These plants are protected by the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA) and other provincial legislation. No person may sell, buy, transport, or harvest this plant without a permit from the relevant authority.
Stakeholder	Natural or juristic person(s) that has an interest in, or may be affected by, a particular obligation or decision or activity, relating to or resulting from a management plan, either as individuals or representative of a group, and include landowners
Threat	Any action that causes a decline in populations and compromises the future survival of a species or anything that has a detrimental effect on a species.
Threatened	Threatened species are species that are facing a high risk of extinction. Any species classified in the IUCN Red List categories Critically Endangered, Endangered or Vulnerable is a threatened species (http://redlist.sanbi.org/redcat.php).
Viable	The ability of a species or population to survive or persist and reproduce over multiple generations or a long time period.
Vulnerable	A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction (http://redlist.sanbi.org/redcat.php).

ABBREVIATIONS

BMA	Biodiversity Management Agreement
AFLPs	Amplified Fragment Length Polymorphism
BMP	Biodiversity Management Plan
BMP-S	Biodiversity Management Plan for Species
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSSA	Cycad Society of South Africa
CR	Critically Endangered
DEA	Department of Environmental Affairs
EC DEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism
EKZNW	Ezemvelo KZN Wildlife
EN	Endangered
EPWP	Expanded Public Works Programme
GCS	Garden Conservation Strategy
GDARD	Gauteng Department of Agriculture and Rural Development
GSPC	Global Strategy for Plant Conservation
IUCN	International Union for the Conservation of Nature
IUCN-SSC	International Union for the Conservation of Nature – Species Survival Commission
KNP	Kruger National Park
KZN	KwaZulu-Natal
LC	Least Concern
LEDET	Limpopo Department of Economic Development, Environment and Tourism
MTPA	Mpumalanga Tourism and Parks Agency
NBG	National Botanical Garden
NEM:BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NT	Near Threatened
RAPD	Random Amplified Polymorphic DNA
RFID	Radio Frequency Identification
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SEF	Strategic Environmental Focus (Pty) Ltd
TOPS	Threatened or Protected Species
UCT	University of Cape Town
UP	University of Pretoria
VU	Vulnerable
WfW	Working for Water
WoF	Working on Fire

ACKNOWLEDGEMENTS

Numerous people have contributed to the process of compiling this Biodiversity Management Plan by participating in key stakeholder meetings, reviewing and commenting on draft documents and finalization of the draft document. People and/or organizations that made invaluable contributions to the BMP included, but was not limited to: Ezemvelo KZN Wildlife, Mpumalanga Tourism and Parks Agency, Limpopo Department of Economic Development, Environment and Tourism, Eastern Cape Department of Economic Development, Environmental Affairs and Tourism, Department of Environmental Affairs, the South African National Biodiversity Institute, the Department of Plant Pathology and Microbiology at the University of Pretoria, South African National Parks, and the CSSA. All the members of the public that participated in the stakeholder engagement workshops are acknowledged for their contributions.

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Project Description	1
1.2	Aim of the BMP-S	2
1.3	Terms of Reference.....	2
1.4	Methods.....	2
1.4.1	Project Steering Committee	2
1.4.2	Stakeholder identification and compilation of an interested and affected parties database.....	2
1.4.3	Stakeholder Workshops	3
1.4.4	Additional meetings	4
1.5	Limitations	4
2	BACKGROUND	5
2.1	Overview	5
2.2	Identified threats to wild populations	5
2.2.1	The illegal removal and trade in mature specimens from the wild	5
2.2.2	Habitat transformation and current land-use practises.....	5
2.2.3	Alien invasive plants.....	5
2.2.4	Diseases.....	6
2.3	Applicable International Agreements.....	6
2.3.1	Convention on Biological Diversity	6
2.3.2	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	6
2.3.3	Global Strategy for Plant Conservation (GSPC)	6
2.4	Applicable National Legislation	7
2.4.1	National Environmental Management: Biodiversity Act (Act 10 of 2004).....	7
2.4.2	Threatened or Protected Species (TOPS) Regulations - 2007	7
2.4.3	National Environmental Management: Protected Areas Act (Act 57 of 2003).....	7
2.5	International processes	8
2.5.1	The International Union for Conservation of Nature (IUCN).....	8
3	GENERIC BIODIVERSITY MANAGEMENT PLAN	9
3.1	Overarching Principles and operational guidelines	9
3.2	Increase protection of wild <i>Encephalartos</i> populations from poaching	11
3.3	Conduct essential research to ensure effective implementation of this BMP.....	13
3.3.1	Pollinators.....	13
3.3.2	Sex identification of <i>Encephalartos</i> species	14
3.3.3	Species Recovery	14
3.3.4	Maintenance and restoration of essential mutualisms	15
3.3.5	Diseases.....	15
3.3.6	Species identification through DNA.....	16
3.3.7	Genetic variation within subpopulations/localities	17
3.3.8	Ex situ collections and maintenance of genetic integrity	17

3.3.9	Climate change	18
3.4	Effective management of confiscated <i>Encephalartos</i> species	19
3.5	Establish, maintain and secure <i>ex situ</i> genebank collections of all the CR and EN <i>Encephalartos</i> species	20
4	SPECIES-SPECIFIC ACTION PLANS	23
4.1	<i>Encephalartos aemulans</i>	23
4.2	<i>Encephalartos arenarius</i>	25
4.3	<i>Encephalartos cerinus</i>	27
4.4	<i>Encephalartos cupidus</i>	28
4.5	<i>Encephalartos dolomiticus</i>	29
4.6	<i>Encephalartos dyerianus</i>	32
4.7	<i>Encephalartos eugene-maraisii</i>	33
4.8	<i>Encephalartos heenanii</i>	34
4.9	<i>Encephalartos hirsutus</i>	35
4.10	<i>Encephalartos horridus</i>	37
4.11	<i>Encephalartos inopinus</i>	38
4.12	<i>Encephalartos laevifolius</i>	40
4.13	<i>Encephalartos lebomboensis</i>	41
4.14	<i>Encephalartos middelburgensis</i>	43
4.15	<i>Encephalartos msinganus</i>	45
5	REFERENCES	49
	APPENDIX A: GENERIC OBJECTIVES, ACTIONS AND CHAMPIONS	51
	APPENDIX B: SPECIES-SPECIFIC OBJECTIVES, ACTIONS AND CHAMPIONS	55

LIST OF TABLES

Table 1-1: *Encephalartos* species included in the BMP-S as well as the province in which they occur 1

Table 1-2: List of stakeholder workshops conducted by SEF as part of the BMP-S process 3

1 INTRODUCTION

1.1 Project Description

Cycads (*Encephalartos* species) are collectively the most threatened plant group in South Africa today. Twelve of the 37 (32%) *Encephalartos* species that occur in South Africa are regarded as Critically Endangered, while an additional three are already considered Extinct in the Wild. There are less than 100 plants left in the wild for seven of the Critically Endangered species, four species of which are on the brink of extinction. A further four *Encephalartos* species are regarded as Endangered. The predominant threat facing cycads is the on-going illegal removal of adult plants from wild populations to meet the current demand for large cycads for private collections and for landscaping purposes. Recently, cycads have also been poached for use in *muthi*-markets where these plants are used for traditional purposes. Adult plants are also highly valued as parental stock for seedling propagation for both the domestic and international cycad trade.

The Department of Environmental Affairs (DEA) requested the South African National Biodiversity Institute (SANBI) to develop, by 15 January 2015, a generic Biodiversity Management Plan (BMP) for key *Encephalartos* species in accordance with Section 43 of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA) and the NEM:BA Norms and Standards for Biodiversity Management Plans for Species (BMP-S) (gazetted in March 2009). The NEM:BA Norms and Standards provide for a national approach and minimum standards for the development of a BMP-S. A BMP-S can be developed for one or more species, population or meta-population, and for any indigenous or migratory species. A BMP-S must aim to provide for the long-term survival of species in the wild and also provide the platform for an implementing organization or responsible entity as appointed by the Minister of Environmental Affairs (the "Minister") to monitor and report on the progress regarding implementation. Strategic Environmental Focus (Pty) Ltd (SEF), as independent environmental consultants and ecological specialists, was appointed by the SANBI to develop a generic BMP for 11 Critically Endangered (CR) and four Endangered (EN) *Encephalartos* species as well as specific details for each species. Table 1-1 summarizes the *Encephalartos* species included in this BMP, as well as the provinces in which they occur.

Table 1-1: *Encephalartos* species included in the BMP-S as well as the province in which they occur

Species	Province	Red List Status
<i>Encephalartos aemulans</i>	KwaZulu-Natal (KZN)	CR
<i>Encephalartos arenarius</i>	Eastern Cape	EN
<i>Encephalartos cerinus</i>	KZN	CR
<i>Encephalartos cupidus</i>	Limpopo & Mpumalanga	CR
<i>Encephalartos dolomiticus</i>	Limpopo	CR
<i>Encephalartos dyerianus</i>	Limpopo	CR
<i>Encephalartos eugene-maraisii</i>	Limpopo	EN
<i>Encephalartos heenanii</i>	Mpumalanga	CR
<i>Encephalartos hirsutus</i>	Limpopo	CR
<i>Encephalartos horridus</i>	Eastern Cape	EN
<i>Encephalartos inopinus</i>	Limpopo	CR
<i>Encephalartos laevifolius</i>	Eastern Cape, KZN, Limpopo, Mpumalanga	CR
<i>Encephalartos lebomboensis</i>	KZN & Mpumalanga	EN
<i>Encephalartos middelburgensis</i>	Mpumalanga & Gauteng	CR

Species	Province	Red List Status
<i>Encephalartos msinganus</i>	KZN	CR

1.2 Aim of the BMP-S

The aim of the BMP-S is to ensure the long-term survival in nature of the 15 *Encephalartos* species. For the purpose of this BMP, long-term survival is interpreted as halting the decline of the *in situ* populations and thereafter attaining a population growth which will result in a down-listing of the species in terms of its conservation status in the IUCN Red List.

1.3 Terms of Reference

In addition to all requirements specified in the NEM:BA Norms and Standards for BMP-S, the BMP-S must include the following for each *Encephalartos* species listed in Table 1-1:

- A recovery plan with recovery targets;
- Economic incentives for *in situ* conservation; and
- Recommended stewardship initiatives.

1.4 Methods

The methods for developing a generic BMP for the identified 11 Critically Endangered and 4 Endangered *Encephalartos* species were developed in accordance with Section 43 of the NEM:BA as well as the NEM:BA Norms and Standards for BMP-S.

According to the NEM:BA Norms and Standards for BMP-S, this plan must –

- be aimed at ensuring the long-term survival in nature of the species to which the plan relates;
- provide for the responsible person, organisation or organ of state to monitor and report on progress with implementation of the plan; and
- be consistent with:
 - a) The Act;
 - b) The national environmental management principles;
 - c) The national biodiversity framework;
 - d) Any applicable bioregional plan;
 - e) Any plans issued in terms of Chapter 3 of the National Environmental Management Act (Act No. 107 of 1998);
 - f) Any municipal integrated development plans;
 - g) Any plans prepared in terms of national or provincial legislation that is affected; or
 - h) Any relevant international agreements binding on the Republic.

1.4.1 Project Steering Committee

A BMP-S Project Steering Committee was established to guide and facilitate the development of the BMP-S. A Steering Committee meeting was convened on 24 March 2014 in order to establish the generic objectives of the BMP-S. A final steering committee meeting was held on the 27 October 2014 to discuss the outcomes of the BMP-S. These steering committee meetings were attended by representatives from national and provincial conservation and environmental agencies, as well as representatives from SEF.

1.4.2 Stakeholder identification and compilation of an interested and affected parties database

Stakeholders were identified through a literature review as well as in consultation with the SANBI, the BMP-S Project Steering Committee and several members of the public with an interest in cycads.

During the stakeholder identification process, the names and contact details of stakeholders were registered on a database of interested and affected parties. The database was used to:

- Capture all details pertaining to identified stakeholders (names, contact details, etc.) so that they could be notified of the proposed project,
- Invite stakeholders to scheduled stakeholder workshops; and
- Update stakeholder details as the process proceeded.

A total of 246 stakeholders were included in the stakeholder database, which included the following stakeholder groups:

- National Stakeholders (DEA, SANParks, SANBI, etc.) (33);
- Provincial Stakeholders (e.g. provincial conservation agencies) (57);
- Municipal Stakeholders (e.g. Nelson Mandela Metropolitan Municipality) (15);
- Private Conservation Stakeholders (SA Hunters and Game Conservation Association, The Endangered Wildlife Trust, Private Nature Reserves, etc.) (26);
- CSSA, Growers, Collectors (39);
- National Botanical Gardens/ Botanical Society Stakeholders (18);
- Academic or Research Stakeholders (12);
- Landowners (24);
- Industry (Transnet, Coega IDZ, etc.) (7); and
- Other Stakeholders (15).

In addition to the above, a notification was posted on an online cycad forum, namely "CYCADfriends" at <http://cycadfriends.co.za>, to inform over 1200 users of the BMP-S process.

1.4.3 Stakeholder Workshops

During the course of the project, SEF convened regional workshops in the various provinces in order to allow stakeholders an opportunity to provide input into the BMP-S process. Workshops were scheduled from 10:00 to 15:00 with a registration period from 09:00 to 10:00. Details of the workshops held as part of the BMP-S process are provided in Table 1-2.

Table 1-2: List of stakeholder workshops conducted by SEF as part of the BMP-S process

Province	Date	Venue	Number of attendees
KwaZulu-Natal	18 June 2014	Ezemvelo KwaZulu-Natal Wildlife, Queen Elizabeth Park, 1 Peter Brown Drive, Montrose, Pietermaritzburg	29
Eastern Cape	3 July 2014	Collegiate Provincial Building, Corner of Belmont Terrace and Castle Hill, Central, Port Elizabeth	29
Mpumalanga	22 July 2014	Mpumalanga Tourism and Parks Agency (MTPA) Auditorium, N4 National Road, Halls Gateway, Matlafin, Nelspruit	17
Limpopo	24 July 2014	Limpopo Department of Economic Development, Environment and Tourism Auditorium, Corner of Dorp and Suid Streets, Polokwane	14
Gauteng	6 August 2014	SANBI, Pretoria NBG, 2 Cussonia Avenue, Brummeria, Pretoria	37

The purpose of these workshops was to obtain comments or suggestions from stakeholders on targets and action items for inclusion in the BMP-S. Landowners (or their designated managers) and community leaders who were not able to attend the workshops were consulted in person.

Due to the sensitive nature of the information associated with cycads in the wild, the identity of landowners is omitted from this public document.

A PowerPoint Presentation was provided at each of the meetings, describing the following main items:

- Introduction to the Project and Project Team;
- Overview of the BMP-S process;
- Aim and objectives of the BMP-S and workshop;
- Generic aspects for the BMP-S; and
- Specific details regarding identified *Encephalartos* species for the purpose of the BMP-S.

At each of the provincial workshops the list of generic aspects that was discussed at previous workshops was presented to the next round of workshop attendees. At the national workshop held in Gauteng Province, all the proposed actions arising from the Provincial Workshops were presented for comment.

In order to ensure that all comments and/ or concerns regarding the BMP-S process and all proposed actions and targets were recorded accurately, digital voice recordings were taken during all workshops proceedings.

1.4.4 Additional meetings

Given that the Cycad Society of South Africa (CSSA) have expertise or interests in several or all the identified *Encephalartos* species, SEF invited the representatives of the CSSA to an initial introductory meeting before the stakeholder engagement process was rolled-out. The objective of this meeting was to introduce the project team leading the process and to obtain suggestions in terms of how the CSSA could contribute to the process.

The meeting took place on 24 April 2014 at SEF's offices at the CSIR campus in Pretoria and was attended by Mr Mark Crooks (private capacity), Mr Byron Grant (SEF), Ms Karin van der Walt (SEF) and Ms Jessica de Beer (SEF).

In addition to the above, SEF also attended the "Round Table Discussion on Cycads" on 9 June 2014, which was hosted by the South African Hunters and Game Conservation Association. The purpose of this meeting was not to discuss the BMP-S, although the meeting was used as an opportunity to introduce the BMP-S process to a wide range of stakeholders.

On 10 June 2014 SEF scheduled a meeting with the DEA's Directorate Bio-prospecting and Biodiversity Economy at the DEA's offices. A second meeting was scheduled with the Gauteng Department of Rural Development's (GDARD) enforcement officers and representatives from the University of Pretoria.

1.5 Limitations

Information on which the BMP-S is based was obtained through comprehensive literature reviews and consultation with provincial and national conservation agencies, stakeholders and landowners. No fieldwork or population verification studies were conducted as part of this BMP-S.

2 BACKGROUND

2.1 Overview

All living *Encephalartos* species can be divided into three families; Cycadaceae, Stangeriaceae and Zamiaceae which altogether are represented as 10 general and 331 species and subspecies (Osborne *et al.*, 2012). Two of these, Stangeriaceae (containing the genus *Stangeria*) and Zamiaceae (which includes all *Encephalartos* species) occur in South Africa.

South Africa is considered to be one of the centres of cycad *Encephalartos* species diversity, hosting more than half of the known *Encephalartos* species in Africa, with 76% of the *Encephalartos* species occurring in South Africa considered to be endemic. However, 78% of the South African *Encephalartos* species are threatened with extinction, with twelve *Encephalartos* species classified as Critically Endangered (CR), four classified as Endangered, and ten classified as Vulnerable (Raimondo *et al.*, 2009). In addition, three of the four *Encephalartos* species which are classified as Extinct in the Wild (EW), namely *Encephalartos brevifoliolatus*, *E. nubimontanus* and *E. woodii*, used to occur in South Africa. It should be noted that there are unconfirmed reports of additional populations of *E. nubimontanus*, but until these reports have been verified, the official listing remains EW and, therefore, the *Encephalartos* species is not included in this BMP-S.

2.2 Identified threats to wild populations

2.2.1 The illegal removal and trade in mature specimens from the wild

The illegal collection of wild *Encephalartos* species for horticultural and medicinal purposes affects all *Encephalartos* species in South Africa and is considered the primary threat for all 15 *Encephalartos* species included in this BMP-S. *Encephalartos* species are used for traditional medicine across South Africa, with some *Encephalartos* species such as *E. ferox* (NT), *E. ghellincki* (VU), *E. natalensis* (NT), *E. senticosus* (VU) and *E. villosus* (LC) also traded in traditional medicine markets. In recent years bark harvesting for the medicinal trade has increased and this has resulted in declines in wild populations with complete loss of some populations in KZN and the Eastern Cape (Cousins *et al.*, 2012).

Due to their slow growth rate, *Encephalartos* populations are very sensitive to harvesting, and it is estimated that some populations can take up to 70 years to recover from the removal of only five adult plants (Raimondo and Donaldson, 2003).

2.2.2 Habitat transformation and current land-use practises

Habitat transformation affects only some of the *Encephalartos* species in South Africa. *Encephalartos* species such as *E. horridus* and *E. arenarius* have been directly affected by habitat loss through urban expansion and coastal resort developments.

2.2.3 Alien invasive plants

In general, the threat posed by the invasion of alien plant species is not considered to be significant for most South African *Encephalartos* species. It should however be noted that alien plants have invaded many regions where *Encephalartos* species occur naturally. For example, there are dense stands of *Lantana camara* and *Chromolaena odorata* on the lower slopes of the Lebombo Mountain Range in Mpumalanga Province where *E. lebomboensis* is known to occur (Tommie Steyn, pers. comm.). It is probable that the primary impact from the dense stands of alien plants will be on the recruitment of *Encephalartos* species due to the altered environment for germination.

2.2.4 Diseases

Many plant species are affected by invasive pests and pathogens in their natural habitat mostly as a result of introduction of non-native pests and pathogens in their natural habitats. Increasing changes in climate may also lead to currently harmless pathogens and pests becoming problems. Non-native pathogens such as *Aulacaspis yasumatsui* (Cycad Aulacaspis Scale/CAS) has been identified by the IUCN as possibly the single most important threat to wild *Encephalartos* populations and conservation collections around the world (IUCN SSC, 2006). This *Aulacaspis yasumatsui* (Cycad Aulacaspis Scale/CAS) has been identified in Pretoria, Durban and Richards Bay in South Africa (Prof Jolanda Roux, DST/NRF Centre of Excellence in Tree Health Biotechnology; the University of Pretoria, pers. comm. November 2014).

2.3 Applicable International Agreements

2.3.1 Convention on Biological Diversity

South Africa ratified the Convention on Biological Diversity (CBD) in 1995. The objectives of this convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the use of genetic resources.

The CBD in 2010 adopted the Strategic Plan for Biodiversity 2011-2020 at the 10th Meeting of the Parties (COP) Nagoya, Japan. The plan outlines 20 Aichi Targets to achieve global biodiversity conservation. Amongst others, these include the following which is relevant for the purposes of the BMP-S:

- Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

2.3.2 The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement of which South Africa became a signatory in 1975. More than 180 countries are currently party to this Convention which is the largest wildlife conservation agreement in existence. The trade in wild animals and plants is a major threat to the survival of some species. The contracting Parties therefore recognize that international co-operation is essential for the protection of certain species of wild fauna and flora against over-exploitation for international trade. All *Encephalartos* species are included on Appendix I to CITES, and international exports for commercial purposes are therefore prohibited, although specimens artificially propagated for commercial purposes may be exported. A notice published in the Government Gazette in May 2012 prohibits the export of large artificially propagated *Encephalartos* specimens. International trade in *Encephalartos* species are regulated in South Africa by the CITES Regulations which came into force on 5 March 2010.

2.3.3 Global Strategy for Plant Conservation (GSPC)

The CBD described above has also adopted the Global Strategy for Plant Conservation (GSPC), which is a program of the United Nations' Convention on Biological Diversity. The GSPC aims to slow the pace of plant extinction around the world. The GSPC has five objectives with 16 targets which respond to the objectives of the GSPC. In this regard, South Africa is in the process of developing the National Strategy for Plant Conservation (NSPC) to fit into the global strategy.

2.4 Applicable National Legislation

2.4.1 National Environmental Management: Biodiversity Act (Act 10 of 2004)

NEM:BA provides for the management and conservation of biological diversity within South Africa, as well as the use of indigenous biological resources in a sustainable manner, the fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources; and gives effect to ratified international agreements relating to biodiversity which are binding on South Africa.

The Minister may, in terms of Section 56 of NEM:BA and by notice in the Government Gazette, publish a list of species that are threatened or in need of national protection – (TOPS). Currently, with the exception of one or two species, all indigenous *Encephalartos* species are listed as Critically Endangered, Endangered, Vulnerable or Protected. NEM:BA regulates restricted activities involving listed threatened or protected species through a permit system. Section 57(1) of NEM:BA provides that a person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7 of the NEM:BA.

Section 57(2) makes provision that the Minister may, by notice in the Government Gazette, prohibit the carrying out of a restricted activity if such activity may have a negative impact on the survival of a listed threatened or protected species. On 14 May 2012 the Minister published under section 57(2) the prohibition of certain restricted activities involving certain *Encephalartos* species in Government Gazette No. 35344 for immediate implementation. The notice stipulates that, unless required for conservation or enforcement purposes, the following restricted activities involving wild specimens of listed threatened or protected *Encephalartos* species are prohibited:

- Collect, pluck, uproot, destroy;
- Export from the South Africa, sell, trade, buy;
- Receive, give, donate, accept, acquire, dispose;
- Import into South Africa, convey, move, translocate; and
- Possess, exercise physical control (except where permits have been issued, prior to the publication of this notice, for plants that form part of legally obtained parental stock).

Section 43 of NEM:BA also makes provision for the development of Biodiversity Management Plans for Species (BMP-S) as a tool to manage species such as *Encephalartos*.

2.4.2 Threatened or Protected Species (TOPS) Regulations - 2007

In terms of Section 89 of NEM:BA and Regulation 11 of the TOPS regulations, a risk assessment in accordance with Regulation 15 may be required by the issuing authority before a restricted activity involving a wild population of a listed critically endangered species can be approved. Regulation 27 of the TOPS regulations also require the registration of a facility where specimens of plant species that are listed as threatened or protected are grown and/ or sold for commercial purposes.

2.4.3 National Environmental Management: Protected Areas Act (Act 57 of 2003)

Specially protected areas can be declared by the Minister in terms of the National Environmental Management: Protected Areas Act (NEM:PAA) (Act 57 of 2003). These specially protected areas are declared in order to protect highly sensitive, outstanding ecosystems, species, geological or physical features. The focus of these areas is not on tourism or sustainable use but rather on scientific research or environmental monitoring. Special Nature Reserves have the highest level of protection and are even more important than a National Park, and therefore offences in these areas are dealt with more seriously than in other protected areas.

2.5 International processes

2.5.1 *The International Union for Conservation of Nature (IUCN)*

The International Union for Conservation of Nature (IUCN) was established in France in 1948 as the "International Union for the Protection of Nature". The IUCN brings together states, government agencies and a diverse range of non-governmental organisations (NGOs) working at field and policy levels, together with scientists and experts to protect nature. The IUCN Red List is a tool to determine the risk of extinction to species and plays an important role in guiding conservation activities of government, NGOs and scientific institutions. South Africa became a State Member of the IUCN on 23 July 1993. The IUCN is increasingly playing a prominent role in guiding conservation activities of governments, NGOs and scientific institutions with a goal of providing information and analyses on the status, trends and threats to species in order to inform and catalyse action for biodiversity conservation.

3 GENERIC BIODIVERSITY MANAGEMENT PLAN

3.1 Overarching Principles and operational guidelines

It is expected that the BMP-S will be implemented in a complex and dynamic environment. It is therefore considered important to identify over-arching principles which will govern the successful implementation of the overall BMP-S and provide context within which the planning components have been derived. The following principles have been identified and discussed with key role players and stakeholders and are considered to be relevant in providing an important framework for the successful implementation of the BMP for the identified *Encephalartos* species:

- 1) The focus of this BMP is the long term survival of the *Encephalartos* species in the wild. It should however be noted that this process forms part of a holistic approach described in the draft "National Management Strategy and Action Plan for Cycads" (2014);
- 2) The only way to guarantee the long-term survival and evolution of plant species, and their associated ecological links, is to ensure plants are maintained in vigorous populations in the wild – or *in situ* conservation;
- 3) Although it is recognized that *in situ* (on-site) conservation is the best biological approach for the long term conservation of biological diversity, many *Encephalartos* species have declined to the point where an integrated approach, including *in situ* and *ex situ* (off-site) actions is required to prevent extinction;
- 4) Information relating to known localities of *Encephalartos* populations in the wild will be handled as confidential to minimize the threat of illegal harvesting of these populations. Objectives and actions relating to sensitive data will be coordinated by the implementing agent (SANBI in consultation with provincial conservation agencies);
- 5) It is recommended that a *Encephalartos* species BMP Implementation Committee consisting of a collaborative partnership between DEA, SANBI and the private sector represented by the CSSA is established to oversee the implementation of the BMP;
- 6) It is recommended that seed and seedlings be utilized for species recovery. In specific instances, the use of mature plants can be considered;
- 7) The seed to be utilized for species recovery may be sourced from (in order of preference): a) wild plants; b) NBGs and other state owned nurseries; or c) willing private growers or nurseries. It should however be considered that there is a significant risk of introducing pathogens/pests into wild populations of *Encephalartos* species in South Africa (Prof Jolanda Roux, pers. comm. November 2014). The trade in plants has been shown to be one of the most important mechanisms of spread of pests and pathogens globally, with tree health experts considering the problem so important that the Montesclaros Declaration was drawn up to advocate for an end in the trade of live plants (<http://www.iufro.org/science/divisions/division7/70000/publications/montesclaros-declaration/>);
- 8) Risk of diseases. Pathogens can spread in many ways and through various pathways which include soil, plant material, equipment, shoes, water, and air. The use of seedlings and mature plants to establish new populations in the wild or to augment existing populations should therefore be undertaken with extreme care so as not to introduce non-native pathogens/pests into these areas. Pathogens can spread on plant associated soil/growth media, soil in vehicle tyres or on the shoes and planting equipment of people conducting the transplants. Great care should be taken by the teams that transplant the *Encephalartos* species to ensure that insects and pathogens are not hiding beneath plant bracts, on roots etc. In addition to this, the following measures are recommended (Prof Jolanda Roux, pers. comm. November 2014):

- Staff undertaking the augmentation of natural *Encephalartos* populations should be carefully trained in pest and disease recognition and all plants should be examined in details before release for transplanting;
 - Nurseries growing plants should be inspected regularly;
 - Care should be taken in the application of chemicals in the nurseries, as these may mask infection/infestations, resulting in diseased/infected plants being sent to the field;
 - Any observations of possible disease/pest occurrences on plants should be reported to plant health experts for further investigation.
- 9) Where the long term goal for a species is to recreate a self-sustaining population, it must be ensured that required ecological processes such as pollination and dispersal are intact or can be re-established (Da Silva *et al.*, 2011);
 - 10) Where plants in the wild do not produce seed/ do not produce sufficient seed to meet recovery targets, plants in *ex situ* collections can be used provided that the purity of parental stock is confirmed through DNA barcoding (to be conducted by the University of Johannesburg). In instances where plants in *ex situ* collections are used to propagate seed for augmentation/reintroduction purposes, extensive measures should be taken to prevent any hybridization with other species and to ensure that the seed is disease and pest free;
 - 11) Where an *Encephalartos* species is known from more than one locality, recovery will be effected with seed sourced from a specific locality as far as possible, in order to keep localities/ forms separate until further research has been undertaken regarding the evolutionary significance of the localities/ forms and the conservation genetics of the *Encephalartos* species;
 - 12) Species recovery will only be conducted if areas into which recoveries are effected can be secured against poaching;
 - 13) Recovery actions, including the establishment of *ex situ* collections from wild-sourced seed, would involve restricted activities stipulated in terms of Section 57 of NEM:BA. Therefore, a TOPS permit must be obtained before any such activities are conducted;
 - 14) Although the intent is to save plants in the wild, it is recognized that *ex situ* collections can play an important role provided that these collections are managed to ensure genetic purity and health of specimens (disease and pest free). *Ex situ* collections at NBGs will only be expanded if current security systems can be upgraded to prevent theft of valuable specimens;
 - 15) Harvesting of *Encephalartos* species for medicinal purposes is included under the definition of poaching or illegal removal;
 - 16) Recovery plans must:
 - Comply with all legal requirements for conducting a restricted activity in terms of Section 57 of NEM:BA;
 - Identify optimal sites for recovery through a combination of desktop mapping, habitat modelling and field verifications;
 - Include a protocol of procedures which should stipulate how plants/seeds will be collected, who will collect plants/seeds, artificial pollination etc.
 - Include a protocol of procedures for preventing the introduction of pathogens and pests (refer to principle 8)
 - 17) It is accepted that landowners may participate in breeding programmes that fit within the context of this management plan, and that subject to all legal requirements being met, seedlings can be produced from wild populations to meet the demand for plants in the trade and to provide income to cover management and protection costs.

3.2 Increase protection of wild *Encephalartos* populations from poaching

Background

The provincial conservation agencies that are mandated to protect wild *Encephalartos* populations from poaching are experiencing severe capacity constraints such as shortages of human resources and budget. Thus, the enforcement of strict protection measures which have been developed for *Encephalartos* species in the wild is hampered. In addition to the challenges of securing wild populations, it is difficult to prove the origin of wild plants once present in the horticultural market. Although the use of microchips to mark wild plants is useful for monitoring of wild populations, microchips are less successful as a deterrent against poaching since they can be removed from poached plants.

Based on updated research and technology, improved unique microchips have been procured by the DEA to mark priority wild *Encephalartos* populations. At the same time, pilot studies will be conducted on marking wild plants with microdots. These data microdots are microscopic discs that contain unique information linked to *Encephalartos* species and locality and the laser-etched code can be stored on a national verification database (Xaba and Bosenberg, 2012). An additional method which is being investigated to secure plants in the wild is the use of transponders or tag devices which will immediately alert law enforcement authorities when marked plants are poached or when the tag devices are tampered with.

Research is also being conducted on the use of stable isotopes to determine the origin of *Encephalartos* species. Stable isotopes are chemical tracers that record the characteristics of the environment such as geology and rainfall and these tracers are fixed in the plant tissue. Two research phases have already been conducted and the results are promising. The growing histories of two specimens within the NBGs were successfully reconstructed using stable isotope ratios and radio carbon dating (Retief *et al.*, 2014). The use of stable isotopes and radio carbon dating is already being piloted in an *Encephalartos* species investigation, while the required forensic procedures are being devised. The next phase of this research will involve the development of a forensic stable isotope reference database for wild *Encephalartos* populations that can be used in future investigations and prosecutions.

Objective 1

To incentivize the *in situ* protection of wild *Encephalartos* populations through increasing the economic value of wild *Encephalartos* species.

Action 1: Develop a protocol for the approval of wild seed harvest for seedling production programmes for trade purposes in accordance with the CITES ¹ Resolution Conf. 11.11 (Rev.CoP15).	
Champions/ Responsibility	SANBI, DEA and provincial conservation agencies
Funding	SANBI
Timeline	Within one year of publication of this BMP
Deliverable	Protocol for the approval of wild seed harvest for seedling production programmes for trade purposes

¹ Convention on International Trade in Endangered Species of Wild Fauna and Flora

Objective 2

To improve provincial capacity for implementation of protection measures for wild plants.

Action 1: Design and implement a security plan that deals with adequate anti-poaching personnel for priority plants, adequate equipment etc.

Champions/ Responsibility	DEA to co-ordinate in collaboration with provincial conservation agencies and relevant departments within the South African Polices Services
Funding	Provincial conservation agency annual budgets
Timeline	Within three years of publication of this BMP
Deliverable	All essential anti-poaching posts filled and essential equipment available

Objective 3

To mark priority wild *Encephalartos* populations with new super unique microchips.

Action 1: Mark all priority wild *Encephalartos* populations with new microchips

Champions/ Responsibility	DEA to purchase microchips. Provincial conservation agencies to insert microchips. The SANBI to advise on selection of priority populations. DEA to co-ordinate.
Funding	Purchase: DEA Application: Provincial budgets
Timeline	Within one year of publication of BMP
Deliverable	All priority wild populations marked

Objective 4

To pilot studies on the use of microdots for marking of wild *Encephalartos* populations.

Action 1: Identify one priority population per province and apply uniquely coded microdots in accordance with an agreed protocol

Champions/ Responsibility	SANBI/ Provincial conservation agencies
Funding	Purchase of microdots: SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP) Application: Provincial budgets
Timeline	Within one year of publication of BMP
Deliverable	At least one population per province marked according to agreed protocol

Action 2: Monitor the presence of microdots on marked plants

Champions/ Responsibility	SANBI/ Provincial conservation agencies
Funding	Provincial budgets
Timeline	Annually
Deliverable	Monitoring report

Objective 5

To develop a forensic stable isotope reference database for wild *Encephalartos* populations for use in *Encephalartos* species investigations and prosecutions.

Action 1: Develop a forensic stable isotope reference database for wild <i>Encephalartos</i> populations	
Champions/ Responsibility	SANBI/ the University of Cape Town/ DEA/ SAPS
Funding	SANBI to source (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Five years
Deliverable	A stable isotope reference database to provide forensic evidence in court for <i>Encephalartos</i> species investigations and prosecutions

3.3 Conduct essential research to ensure effective implementation of this BMP**Background**

Many of the essential research fields described below have been initiated with various universities such as the University of KwaZulu-Natal, the University of Pretoria, the University of Cape Town, the University of Johannesburg, Rhodes University and the Nelson Mandela Metropolitan University and collaborations should be formed with these universities to continue future efforts.

Objective 1

To formulate a research plan that prioritizes research documented below.

Action 1: Formulate a research plan.	
Champions/ Responsibility	SANBI in collaboration with provincial conservation authorities
Funding	None required
Timeline	Within six months of publication of this BMP
Deliverable	A research priority list

3.3.1 Pollinators

Beetle species such as *Porthetes*, *Metacucujus* and *Xenoscelus* are important pollinators of *Encephalartos* species in South Africa. A lower diversity of insects has been observed on *Encephalartos* species in the northern parts of the country (Mpumalanga and Limpopo provinces) than on *Encephalartos* species in the south-eastern parts (Eastern Cape and KZN Provinces) (Donaldson, 1997; 1999). It is possible that insect pollinators are absent from small *Encephalartos* populations, with specialised weevils becoming locally extinct as these populations decline (Daly *et al.*, 2006), although recent studies found that potential pollinators exist in male cones within small populations (Carin Swart, pers. comm., September 2014). The successful recovery of *Encephalartos* species as specified in this BMP will depend on the presence or reintroduction of pollinators.

Objective 1

To determine whether cucujid pollinators can be transferred between *Encephalartos* species.

Action 1: Conduct research to determine if cucujid pollinators can be transferred between <i>Encephalartos</i> species and can therefore be released into populations where they have become locally extinct.	
Champions/ Responsibility	SANBI
Funding	SANBI to source funding
Timeline	Five years
Deliverable	Published research papers on the species-specificity of cucujid pollinators

3.3.2 Sex identification of *Encephalartos* species

Prakash and Van Staden from the University of KwaZulu-Natal (pers. comm. 2006) made use of RAPD markers to identify the sex in *Encephalartos* seedlings which was based on the assumption that there is a single genetic system across all *Encephalartos* species. It is thought that more sensitive methods such as AFLPs or next generation restriction-site-associated DNA (RAD) sequencing approaches are needed for sex determination in *Encephalartos* species (Prof Nigel Barker, Rhodes University, pers. comm. September 2014). The sex determination of *Encephalartos* species will have valuable applications for recovery efforts during which sex ratios can be re-established in wild populations as well as determining the sex of adult non-coning plants in wild populations. This application could also prove to be useful for trade purposes, as female plants are considered more valuable than male plants.

Objective 1

To explore various molecular techniques to determine the sex of *Encephalartos* species.

Action 1: Continue research into molecular methods for determining the sex of <i>Encephalartos</i> species (adults and seedlings).	
Champions/ Responsibility	Universities
Funding	To be determined
Timeline	Five years
Deliverable	Published research papers on sex identification techniques for <i>Encephalartos</i> species

3.3.3 Species Recovery

Species recovery includes the manipulation, enhancing or restoration of *Encephalartos* species populations and for the purpose of this report also refers to restoration and reintroduction. Techniques used for recovery of *Encephalartos* species should be researched to ensure results are available for future recovery plans. Recovery techniques should be scientifically based and should address essential research questions such as survival rates of plants where the method of introduction involved seed, seedlings or adult plants, as well as comparisons between various replanting methods to determine the role of crowding and/or density dependant mortalities, nurse plants and land-use on germination and establishment. This research could also be conducted on more common *Encephalartos* species for which seed and seedlings are more readily available.

Objective 1

To conduct research into species recovery techniques.

Action 1: Initiate research projects in collaboration with recognized universities to increase knowledge on the restoration ecology of *Encephalartos* species.

Champions/ Responsibility	SANBI, Mpumalanga Tourism and Parks Agency (MTPA), the Tshwane University of Technology (TUT), other universities
Funding	SANBI and/or universities to source funding
Timeline	Five years
Deliverable	Published research papers on the restoration ecology of <i>Encephalartos</i> species

3.3.4 Maintenance and restoration of essential mutualisms

Encephalartos species are the only known gymnosperms that fix nitrogen symbiotically through an association with cyanobacteria which are located in the coralloid roots (dichotomously branched structures arising from the lateral roots) (Peters *et al.*, 1986 in Zheng *et al.*, 2002). Studies conducted by Zheng *et al.* (2002) demonstrated that individual coralloid roots as well as the developmental stages of the individual root clusters can host multiple cyanobacteria. The role of cyanobacteria in the survival and growth of South African *Encephalartos* species is not clearly understood and research into these and other essential mutualisms should be determined.

Objective 1

To determine the role of *Encephalartos* species mutualisms and the importance of maintaining and restoring these mutualisms.

Action 1: Explore the role and importance of mutualisms such as cyanobacteria in *Encephalartos* species.

Champions/ Responsibility	SANBI to coordinate
Funding	SANBI to source funding
Timeline	Five years
Deliverable	Published research papers on essential <i>Encephalartos</i> specie mutualisms

3.3.5 Diseases

According to Prof Jolanda Roux from the University of Pretoria (pers. comm. October 2014), virtually no scientific research into diseases of *Encephalartos* species has been conducted in Africa (including South Africa) to date. Research conducted by the DST/NRF Centre of Excellence in Tree Health Biotechnology (FABI) in 2013 confirmed the presence of a microbial disease on *E. transvenosus* in the Modjadji Nature Reserve. In 2014 samples from the Durban Botanical Garden (DBG) were submitted to FABI for the identification of a white, scaly growth on the cones of *Cycas thouarsii* and *Encephalartos* species. The non-native *Aulacaspis yasumatsui* (Hemiptera: Coccoidea: Diaspididae) or commonly known as Cycad Aulacaspis Acale (CAS) was identified. Further investigations revealed that the scale (CAS) was killing *C. thouarsii* plants in gardens in Richards Bay and several gardens in Pretoria, with low level infestations also recorded on garden specimens of *Encephalartos* species. The presence of this non-native scale is of grave concern since CAS is not native to Africa and has been identified by the IUCN as one of the biggest threats to the survival of native *Encephalartos* species. Based on these preliminary studies it is considered essential that pest and disease studies are undertaken for all the *Encephalartos* species on the BMP. It is crucial that plant experts,

conservation staff and cycad enthusiasts monitor, photograph and report to FABI all observations of possible disease and pest occurrences on *Encephalartos* in South Africa, both *in situ* and *ex situ*.

Objective 1

To increase research efforts into *Encephalartos* diseases in wild populations and *ex situ* collections.

Action 1: Document the occurrence of the non-native Cycad Aulacaspis Scale (CAS) in South Africa.	
Champions/ Responsibility	The University of Pretoria, NBGs, CSSA, provincial conservation agencies
Funding	UP and SANBI to source
Timeline	Five years
Deliverable	Atlas on the occurrence of CAS in South Africa

Action 2: Document the occurrence of pests and diseases affecting <i>Encephalartos</i> species in South Africa, with special reference to the 15 <i>Encephalartos</i> species in the BMP.	
Champions/ Responsibility	The University of Pretoria, NBGs, CSSA, provincial conservation agencies
Funding	UP and SANBI to source
Timeline	Five years
Deliverable	Atlas on the occurrence of pests and diseases affecting <i>Encephalartos</i> species in South Africa

Objective 2

To communicate research findings on cycad pests and diseases on a continuous basis to collectors and nurseries.

Action 1: Communicate research findings on cycad pests and diseases to all nurseries and collectors through the BMP Implementation Committee and CSSA.	
Champions/ Responsibility	BMP Implementation Committee, CSSA, SANBI and the University of Pretoria
Funding	No funding required
Timeline	Five years
Deliverable	Articles and other communication materials on cycad pests and diseases

3.3.6 Species identification through DNA

The use of nuclear ribosomal internal transcribed spacer regions 1 and 2 (ITS 1&2), the chloroplast encoded *rbcl* gene, ISSR genomic fingerprinting, allozyme and random amplified polymorphic DNA (RAPD) techniques have been used to try and resolve the molecular history and the relationship within the genus *Encephalartos* with limited success in the past (Treutlein *et al.*, 2005; Chaiprasongsuk *et al.*, 2007), however new advancements in these DNA techniques are developing rapidly.

At the University of Johannesburg DNA barcoding was initially performed by using two gene regions *rbcl* & *matK* which was able to discriminate only around 50% of South Africa's *Encephalartos* species. However, researchers have now completed a sequencing matrix for *Encephalartos* species using three additional genes, *trnH-psbA*, ITS and *Needly*, and all of Africa's *Encephalartos* species can now be identified using DNA barcoding techniques (Prof Michelle van der Bank, pers. comm., November 2014). In 2015 the University of Johannesburg will also start to build a genetic profile of *Encephalartos* species using microsatellites and AFLPs which will allow researchers to trace the

origin of the *Encephalartos* species and thereby distinguish between very closely related *Encephalartos* species (Prof Michelle van der Bank, pers. comm., November 2014).

Objective 1

To use DNA barcoding techniques to identify closely related *Encephalartos* species and to resolve their taxonomy (e.g. *E. heenanii* and *E. paucidentatus*).

Action 1: Identify closely related <i>Encephalartos</i> species using DNA barcoding techniques and resolve their taxonomy.	
Champions/ Responsibility	University of Johannesburg and SANBI Biosystematics
Funding	University of Johannesburg
Timeline	Five years
Deliverable	Taxonomic publication

3.3.7 Genetic variation within subpopulations/localities

Encephalartos species such as *E. laevifolius*, *E. hirsutus* and to some extent *E. middelburgensis* and *E. arenarius* were historically recorded from more than one subpopulation or locality which were often widely separated. Most of these subpopulations/localities no longer contain a functional population and in many cases the *Encephalartos* species is considered extinct from the locality. Although plants from these localities are considered to be more valuable in trade, there is still uncertainty if the subpopulations are genetically distinct. Species recovery as described in this BMP-S will take the cautious approach and only recover *Encephalartos* species in various subpopulations/localities using parental stock from the same subpopulation/locality. However this could result in inbreeding and a loss of genetic fitness. It is, therefore, important to determine if there is genetic variation and assess its role in the genetic fitness and adaptability of the *Encephalartos* species. Although the reasons for variations could be complex, the aim should be to determine principles for recovery when dealing with subpopulations or different localities.

Objective 1

To conduct conservation genetics research on different subpopulations / localities of *E. laevifolius* and *E. hirsutus* in order to inform species recovery.

Action 1: Determine if there is genetic variation between subpopulations / localities of <i>E. laevifolius</i> and <i>E. hirsutus</i> .	
Champions/ Responsibility	To be determined
Funding	To be determined
Timeline	Five years
Deliverable	Recommendations for species recovery at different localities / subpopulations based on genetic considerations

3.3.8 Ex situ collections and maintenance of genetic integrity

Ex situ conservation is considered to be a tool to ensure the survival of a wild population and should preferably be established within the distribution range or region of the taxa. However the option of locating an *ex situ* collection outside the taxa's natural range can be considered if the taxa is threatened by natural catastrophes, political and social disruptions, or if further research, isolation or germplasm banking is required. Irrespective of the locality of the *ex situ* collection it should be managed in ways that minimize the loss of capacity for expression of natural behaviours and loss of ability to later again thrive in natural habitats (IUCN SSC, 2002). The management of *ex situ*

populations must minimize any deleterious effects associated with *ex situ* conservation such as loss of genetic diversity, artificial selection, pathogen transfer and hybridization. There are various *ex situ* conservation methods (Laliberte, 1997), some of these are already in use for some of the *Encephalartos* species in this BMP-S:

- **Field genebanks:** Field genebanks (also known as living collections) are usually established for long-lived, recalcitrant species. The disadvantage of field genebanks is that they usually require a great deal of space and are susceptible to natural disasters, the spread of diseases and may suffer from neglect. Hybridization between *Encephalartos* species is an important aspect which needs to be managed through strict controlled pollination programmes. In South Africa, field genebanks have been established as various NBGs and further research is needed to ensure that these collections are managed to maintain genetic integrity;
- **In vitro storage methods:** Is the storage of germplasm in laboratory conditions and is also suited for long-term conservation of recalcitrant *Encephalartos* species or *Encephalartos* species which are vegetatively propagated. The germplasm is stored at low temperatures under slow growth conditions or cryopreserved in liquid nitrogen at -196°C . The main limitation of cryopreservation is the need for special equipment, techniques and trained staff. More research is needed to define the mechanisms of desiccation and chilling injury (Eberhart *et al.*, 1991 in Laliberte, 1997). Preliminary studies conducted by the Kew Millennium Seed Bank Project on *E. middelburgensis*, *E. altensteinii* and *E. latifrons* showed recovery of 85% germination rate on Murashige and Skoog (MS) basal culture media supplemented with activated charcoal (Jayanthi Nadarajan, pers. comm.); and
- **Pollen Banks:** Pollen preservation requires little space but some cytoplasmic genes might be lost during the storage process. Information about the storage characteristics of pollen from the wild is limited and further research is required.

Objective 1

To continue research into the use of in vitro storage techniques to establish *ex situ* conservation collections.

Action 1: Investigate the possibility of using in vitro storage for <i>ex situ</i> conservation.	
Champions/ Responsibility	SANBI/Kew Millennium Seed Bank Project
Funding	To be determined
Timeline	Five years
Deliverable	Documented methods for in vitro storage of <i>Encephalartos</i> species

3.3.9 Climate change

The uptake of carbon dioxide (CO_2), which is one of the principle greenhouse gases, during photosynthesis make plants major regulators of global climate change (Hawkins *et al.*, 2008). Over the past 30 years, climate change has produced numerous shifts in the distributions and abundances of *Encephalartos* species (Prof Nigel Barker, Rhodes University, pers. comm. September 2014). Physiological responses of plants to climate change include responses to rising CO_2 levels, temperature changes, available water, light levels and levels of methane, while there could also be a significant change in plant community interactions such as competition, plant/pollinator and plant/pathogen interactions (Hawkins *et al.*, 2008). There is a concern that if biome shifts occur and the climate envelope of *Encephalartos* species is no longer compatible with their geographic position, then extinction is unavoidable (Prof Nigel Barker, Rhodes University, pers. comm. September 2014). Research into climate modelling for *Encephalartos* species could be based on available distribution data, but warrants further research.

Objective 1

To investigate the potential impact of climate change on South African *Encephalartos* species.

Action 1: Conduct climate modelling to assess the potential impact of climate change on South African <i>Encephalartos</i> species.	
Champions/ Responsibility	Rhodes University
Funding	To be determined
Timeline	Five years
Deliverable	Publications on the predicted impact of climate change on South African <i>Encephalartos</i> species

3.4 Effective management of confiscated *Encephalartos* species**Background**

Confiscated *Encephalartos* species are illegally harvested wild plants which have been seized during law enforcement operations. Large numbers of confiscated *Encephalartos* species are now present in local and national government controlled facilities and nurseries, some of which may have the potential to be used as parental stock for species recovery. There is no national database that records the confiscated *Encephalartos* species present in government nurseries and facilities and in private custodianship.

Encephalartos species are usually damaged when they are removed from the wild. When these damaged plants are confiscated, law enforcement officials often do not have the knowledge, experience and/ or resources to effectively treat and manage the damaged plants, resulting in high mortalities of the confiscated plants. Many private growers and collectors have extensive knowledge and experience in *Encephalartos* specie maintenance and have access to the resources required to ensure the survival of the plants. The private sector has expressed their willingness to develop guidelines for the management of confiscated *Encephalartos* species, with important steps and methods to deal with confiscated plants described.

Objective 1

To develop guidelines for law enforcement officials for the care of confiscated and damaged *Encephalartos* species.

Action 1: Develop a guideline describing the recommended methods for the caring of confiscated and damaged <i>Encephalartos</i> species, inclusive of a list of relevant experts to contact	
Champions/ Responsibility	CSSA – Xander de Kock
Funding	Not required
Timeline	Within one year of publication of this BMP
Deliverable	Recommended steps for the caring of confiscated and damaged <i>Encephalartos</i> species

Objective 2

To identify key growers and horticulturists in all provinces who will assist law enforcement officials when damaged *Encephalartos* species need to be treated.

Action 1: Identify key growers and horticulturists who will care for confiscated plants	
Champions/ Responsibility	CSSA in collaboration with NBGs and provincial conservation agencies
Funding	Not required
Timeline	Within one year of publication of this BMP
Deliverable	List of relevant experts to contact for advice on the caring of confiscated and treatment of damaged <i>Encephalartos</i> species

Objective 3

To formalize private custodianships of confiscated plants.

Action 1: Formalize custodianship of confiscated plants in private collections and nurseries	
Champions/ Responsibility	Provincial conservation agencies in collaboration with SANBI
Funding	Not required
Timeline	Within one year of publication of this BMP
Deliverable	Custodianship agreements formalized

3.5 Establish, maintain and secure *ex situ* genebank collections of all the CR and EN *Encephalartos* species

Background

As a signatory to the Convention on Biological Diversity (CBD), South Africa is required to develop a National Strategy for Plant Conservation (NSPC) which is aligned to the Global Strategy for Plant Conservation (GSPC) 2011-2020. The GSPC consists of 16 targets and is applied through the International Agenda for Botanical Gardens (BGCI, 2012). Further, Section 11(1)(h) of NEM:BA requires the SANBI to establish, maintain, protect and preserve collections of plants in NBGs and in herbaria. The SANBI through its Garden Conservation Strategy (GCS) is currently developing a strategy for *Encephalartos* specie collections in National Botanical Gardens, to be aligned with this BMP.

With the increased demand within the trade for various rare *Encephalartos* species, the collections at NBGs have been the target of theft in the past 10 years. Upgrades to the current security systems are urgently needed to ensure the safe-keeping of these *ex situ* collections. In instances where individual plants which are of conservation value as defined in this BMP are currently in private or state-owned custodianship, it is recommended that these plants remain at the current locality provided such a locality is secure. This will decrease the risk of losing valuable *Encephalartos* species through relocation or a single theft event in NBGs. In this regard, it is strongly recommended that the BMP Implementation Committee support the "Cycad Saviours" initiative of the Cycad Society of South Africa so as to facilitate collaborative participation between private collectors and conservation departments.

Ex situ collections which have been established for conservation purposes should furthermore aim to maintain the genetic integrity of the collection and maintain the insect assemblages associated with conservation collections. In order to maintain the insect assemblages associated with *Encephalartos* collections, the use of pesticides should be limited especially on indigenous *Encephalartos* species.

Objective 1

To compile a confidential database for *ex situ* *Encephalartos* species of potential conservation value.

Action 1: Establish a database for <i>ex situ</i> <i>Encephalartos</i> species of potential conservation value located within private collections through the Cycad Saviours initiative	
Champions/ Responsibility	CSSA (CSSA) – Japie Steenkamp
Funding	CSSA
Timeline	Within one year of the publication of this BMP
Deliverable	Database for <i>Encephalartos</i> species of potential conservation value located within private collections.

Action 2: Confirm conservation value of <i>ex situ</i> <i>Encephalartos</i> species on database through DNA barcoding and stable isotope analysis	
Champions/ Responsibility	SANBI
Funding	SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Within one year of the publication of this BMP
Deliverable	Validated database for <i>Encephalartos</i> species of conservation value located within private collections

Action 3: Establish a database for <i>ex situ</i> <i>Encephalartos</i> species of potential conservation value located within national and international government facilities	
Champions/ Responsibility	SANBI
Funding	SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Within one year of the publication of this BMP
Deliverable	Database for <i>Encephalartos</i> species of potential conservation value located within national and international government facilities

Objective 2

To establish, maintain and secure *ex situ* genebank collections of all the CR and EN *Encephalartos* species in NBGs.

Action 1: Upgrade security of valuable <i>Encephalartos</i> species collections at NBGs to prevent theft of <i>Encephalartos</i> species	
Champions/ Responsibility	SANBI through its NBGs
Funding	SANBI (NBGs)
Timeline	Within one year of publication of this BMP
Deliverable	Secure <i>Encephalartos</i> collections at NBGs

Action 2: Following agreement with owners of private collections, mark confirmed <i>ex situ</i> <i>Encephalartos</i> species of conservation value located within private collections with microdots	
Champions/ Responsibility	SANBI
Funding	SANBI
Timeline	Within one year of publication of this BMP
Deliverable	Confirmed <i>Encephalartos</i> species of conservation

	value located within private collections marked with microdots
--	--

Action 3: Manage and coordinate *ex situ* conservation collections (including private collections where possible) for all the *Encephalartos* species in this BMP

Champions/ Responsibility	SANBI (NBGs) in collaboration with private growers and collectors
Funding	SANBI (NBGs)
Timeline	Within one year of publication of this BMP
Deliverable	Strategy for <i>Encephalartos</i> collections in National Botanical Gardens

Action 4: Develop a protocol for duplicate collections and material exchange between NBG *Encephalartos* genebanks.

Champions/ Responsibility	SANBI (NBGs)
Funding	Not required
Timeline	Protocol developed within one year of publication of this BMP and implemented within the 5 year timeframe of this BMP
Deliverable	Protocol for duplicate collections and material exchange developed and implemented

Action 5: Pilot the RFID *Encephalartos* species theft detection system at Lowveld NBG

Champions/ Responsibility	SANBI
Funding	SANBI and the University of Kent to source funding
Timeline	Pilot project to commence within one year of publication of this BMP
Deliverable	Analysis of the effectiveness of the RFID <i>Encephalartos</i> species theft detection system

Action 6: Train key personnel in the maintenance of *ex situ* conservation collections for *Encephalartos* species to ensure genetic purity (by preventing hybridization) and retention of important insect assemblages.

Champions/ Responsibility	SANBI through NBGs
Funding	SANBI (NBGs)
Timeline	Within one year of publication of the BMP
Deliverable	Key personnel managing the conservation collections for <i>Encephalartos</i> species trained to prevent hybridization of important collections and to maintain important insect assemblages

4 SPECIES-SPECIFIC ACTION PLANS

4.1 *Encephalartos aemulans*

Background

Encephalartos aemulans occurs in a single locality in the Vryheid district of KZN where it grows on south-facing sandstone cliffs and in short grassland. The latest aerial counts conducted by EKZNW indicated that there are less than 600 plants in the population. In the past, poaching was considered to be severe and the *Encephalartos* species was therefore listed as CR under the Red List criteria B1ab(v)+2ab(v); C2a(ii) (IUCN version 3.1). The remaining plants in the *E. aemulans* population are actively protected by the landowners who have expressed little interest in benefiting from any economic incentives at this stage.

Encephalartos aemulans is represented in a small *ex situ* collection at one of the NBGs and seedlings are fairly common in trade.

Objective 1

To create and maintain an enabling environment for the community on whose land the *E. aemulans* plants occur, to carry out appropriate management actions and to provide the level of security necessary to prevent further poaching of plants from the wild.

Action 1: Inform and educate all landowners and custodians of the conservation value of *E. aemulans* and of current legislative regulations pertaining to the destruction and/or harvesting of plants, plant parts and seed.

Champions/ Responsibility	EKZNW District Conservation Officer and EKZNW Scientific Services
Funding	Resources are available in EKZNW annual operational budget with cost estimation for this action around R500.00
Timeline	Within one year of publication of this BMP
Deliverable	Informed landowners and custodians

Action 2: Finalize stewardship agreements with the landowners to secure the known population of *E. aemulans*

Champions/ Responsibility	EKZNW Stewardship Division
Funding	Resources are available in EKZNW annual operational budget (R5600.00 travel and R12 880.00 personnel hours)
Timeline	Within one year of publication of this BMP
Deliverable	Signed stewardship agreements

Action 3: Present and discuss all management recommendations for the *E. aemulans* population and obtain buy-in from the landowners

Champions/ Responsibility	EKZNW Stewardship Division
Funding	Resources are available in EKZNW annual operational budget (R5600.00 travel and R1 840.00 personnel hours)
Timeline	Within one year of publication of this BMP
Deliverable	Stewardship agreements implemented

Objective 2

To reduce the loss of individuals, populations, pollinators and habitat critical for the survival of *E. aemulans* in the wild.

Action 1: Undertake ground surveys to determine the current population size and assess threats to the <i>E. aemulans</i> population	
Champions/ Responsibility	EKZNW Scientific Services EKZNW Stewardship Division
Funding	Resources are available in EKZNW annual operational budget (R5600.00 travel and R16 560.00 personnel hours)
Timeline	Within two years of publication of this BMP
Deliverable	Report on the size of and threats to the <i>E. aemulans</i> population with recommended actions for addressing the threats

Recovery Targets

Encephalartos aemulans is listed as CR since it is confined to one locality, and although this population has been targeted by poachers, the remaining plants are considered to be largely secure. One neighbouring property where *E. aemulans* has been depleted is not considered suitable and secure for recovery at this stage. The remaining population is recruiting well and conservation interventions such as artificial pollination or population augmentation are not needed. The long term target for *E. aemulans* is to increase the total population size to 3500 individuals (at 4 sites with at least 500 adults each) and thereby achieving a population status of Least Concern (LC).

Recovery Objective 1

To increase the size of the population of *E. aemulans* through seed augmentation at three extant sites by a minimum of 200 plants (>5 years) by 2030.

Action 1: Collect seed from wild plants and plant them at three extant sites within the existing population	
Champions/ Responsibility	EKZNW Scientific Services
Funding	Resources are available in annual EKZNW operational budget which requires R2300.00 for personnel costs
Timeline	Annually or when seeds are available for five years
Deliverable	Progress report on seed augmentation at three extant sites

Recovery Objective 2

To develop a monitoring plan to acquire information required to evaluate the effectiveness of management and to identify where objectives are not being met and/or interventions are required.

Action 1: Develop a monitoring plan for <i>E. aemulans</i>	
Champions/ Responsibility	EKZNW Scientific Services
Funding	Resources are available in annual EKZNW operational budget which requires R2300.00 for personnel costs.
Timeline	Within five years of publication of this BMP.
Deliverable	A monitoring plan in accordance with EKZNW norms and standards for monitoring.

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.2 *Encephalartos arenarius***Background**

Encephalartos arenarius occurs in a small area in the Eastern Cape Province between the towns of Nanaga in the west and Canon Rocks in the east. In 2010 it was estimated that the total population size was between 850 and 1500 mature individuals, although it is very difficult to obtain an accurate estimation since the plants grow in densely wooded coastal dune forests (Donaldson, 2010). Repeat photographs have indicated a 50% decline in the past 60 years, and with its restricted distribution it is listed as EN under the Red List criteria A2acd; B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v); C1 (IUCN version 3.1). The Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (EC DEDEAT) has a database of the localities of all the *E. arenarius* populations, but no recent surveys have been undertaken and it is unknown whether these populations are still extant. *E. arenarius* is present in formally protected areas managed by SANParks, although there is uncertainty about the exact numbers, and monitoring of these plants is currently not taking place.

Encephalartos arenarius is represented in a small *ex situ* collection at a NBG which requires enhancement to ensure better genetic representation. Private growers have expressed concern for approximately 85 plants at a farmhouse close to Alexandria. However, the wild origin of these plants is not clear and they are therefore not at this stage considered to be suitable parental stock for species recovery.

Objective 1

To determine the current population status of *E. arenarius* on both private land and within areas formally protected by SANParks.

Action 1: Resurvey all known populations of <i>E. arenarius</i>	
Champions/ Responsibility	EC DEDEAT, SANBI, SANParks, the Nelson Mandela Metropolitan University, Rhodes University
Resources/Funding	EC DEDEAT, SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP) and SANParks
Timeline	Within one year of the publication of this BMP
Deliverable	Report on current population status of <i>E. arenarius</i>

Objective 2

To determine the status of suitable habitat for *E. arenarius* within its distribution range.

Action 1: Determine the habitat status of <i>E. arenarius</i> through GIS modelling of suitable habitat and then ground truthing of areas deemed suitable.	
Champions/ Responsibility	DEDEAT, SANBI, SANParks, the Nelson Mandela Metropolitan University, Rhodes University
Resources/Funding	DEDEAT and SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Within two years of the publication of this BMP
Deliverable	Report on current habitat status of <i>E. arenarius</i> with suitable sites for species recovery identified

Recovery Targets

Due to a lack of information on the current population, it is not possible to set realistic recovery targets for this *Encephalartos* species. In addition to this, it is unclear how much of the habitat considered suitable for *E. arenarius* has been transformed and will therefore be suitable for species recovery. It is therefore recommended that recovery targets are only determined upon completion of the population and habitat survey.

Recovery Objective 1

To set recovery targets for *E. arenarius* once objectives 1 and 2 above have been achieved.

Action 1: Set recovery targets for <i>E. arenarius</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. arenarius</i>

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.3 *Encephalartos cerinus*

Background

Encephalartos cerinus is a rare *Encephalartos* species from KZN and within six months after its description in 1989, most of the known population was illegally harvested for horticultural purposes. This *Encephalartos* species is currently listed as CR under the Red List criteria A2acd; B1ab(i,ii,iv,v)+2ab(i,ii,iv,v);C2a(ii) (IUCN version 3.1).

While this *Encephalartos* species is now thought to be extinct in the wild, there have been unconfirmed reports of four or five individual plants still present in the wild. Although recent surveys conducted by EKZNW failed to locate any plants, possible additional localities still need to be verified. It is however likely that if any additional plants are still present in the wild, these populations will be very small and unlikely to support essential ecosystem processes or viable populations of pollinators. Closely related *Encephalartos* species such as *E. villosus* and *E. aplanatus* are pollinated by a *Porthetes* species (weevil) and it is thus probable that *E. cerinus* would have had the same pollinator (Prof John Donaldson, SANBI, pers. comm.).

Objective 1

To determine if any *E. cerinus* plants still remain in the wild.

Action 1: Survey all known localities for <i>E. cerinus</i> plants	
Champions/ Responsibility	EKZNW through collaboration with private collectors who reportedly know of additional localities
Resources/Funding	EKZNW annual survey budget which includes R3000.00 for travel and R7260.00 for personnel
Timeline	Within two years of publication of this BMP
Deliverable	Report documenting results of survey of known <i>E. cerinus</i> localities

Objective 2

To identify at least two secure sites within the natural distribution range of *E. cerinus* that can be used for species reintroduction.

Action 1: Identify two secure sites within the historic distribution range for species reintroduction	
Champions/ Responsibility	EKZNW through collaboration with the SANBI/ NBGs
Resources/Funding	EKZNW annual budget which include R920.00 for personnel to map and model
Timeline	Within five years of publication of this BMP
Deliverable	Map showing location of at least two suitable sites for species reintroduction

Objective 3

To conduct research on potential *Encephalartos* species-specific pollinators.

Action 1: Undertake pollinator research on large <i>ex situ</i> collections of <i>E. cerinus</i> with a specific emphasis on <i>Porthetes</i> species (weevil)	
Champions/ Responsibility	SANBI
Resources/Funding	SANBI to source
Timeline	Studies initiated within five years of publication of this BMP
Deliverable	Research project registered at a recognized University

Recovery Targets

Recovery targets should be determined after all possible localities for the *Encephalartos* species have been surveyed and should be based on the number of plants remaining in the wild. Should surveys fail to locate any plants remaining in the wild, two suitable recovery sites within the historic distribution range should be identified and research should be conducted to determine if processes essential for a natural functioning population can be re-established.

Recovery Objective 1

To set recovery targets for *E. cerinus* once objectives 1 and 2 above have been achieved.

Action 1: Set recovery targets for <i>E. cerinus</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. cerinus</i> .

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.4 *Encephalartos cupidus***Background**

Encephalartos cupidus is restricted to a small area in the Drakensberg in Mpumalanga and Limpopo where it mainly occurs in open grassland in between large boulders and cliff ledges (Grobelaar, 2004). Although this *Encephalartos* species occurs in provincial nature reserves, severe declines have been observed during which numbers plummeted from more than 1100 plants in 1984 to less than 50 plants today (Government Gazette, 2013). *Encephalartos cupidus* has therefore been listed as CR under the Red List criteria A2acd; B1ab(ii, iv,v)+2ab(ii, iv,v) (IUCN version 3.1).

There are unconfirmed reports of a relatively large *E. cupidus* population within the species' historic distribution range within Limpopo. The area is, however, very mountainous and very difficult to traverse or survey. Since *E. cupidus* plants are relatively small, it is difficult to observe them during aerial surveys. In cultivation, *E. cupidus* cones frequently and this has resulted in hundreds of seedlings being produced. Accordingly, this *Encephalartos* species is considered to be relatively common and inexpensive in trade.

Objective 1

To verify reports of a large *E. cupidus* population in Limpopo.

Action 1: Conduct ground survey to determine if <i>E. cupidus</i> is present in Limpopo	
Champions/ Responsibility	LEDET
Resources/Funding	LEDET
Timeline	Within two years of publication of this BMP
Deliverable	Report confirming absence / presence of <i>E. cupidus</i> population in Limpopo

Recovery Targets

The recovery targets for *E. cupidus* are based on recovery actions already underway in the province of Mpumalanga. The availability of resources and seed for recovery actions were also considered. There is a viable *ex situ* collection of *E. cupidus* within the NBGs which can be used as a source of seed for reintroductions. Mr Fanie Vermaak and Mr Jan Joubert from the CSSA (CSSA) have also volunteered to donate at least 200 seed towards the achievement of recovery targets. The long term recovery target for *E. cupidus* is to increase the population to 1000 plants. To obtain the long term recovery target the following short term objective (5 years) is recommended.

Recovery Objective 1

To plant a total of 500 *E. cupidus* seed back into the species' historic distribution range.

Action 1: Plant 500 <i>E. cupidus</i> seed back into secure locations in previously occupied areas	
Champions/ Responsibility	Mpumalanga Tourism and Parks Agency (MTPA) with seed sourced from NBGs and Mr Fanie Vermaak and Jan Joubert from the CSSA.
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	Records and report on germination results Monitoring report on the survival and growth of seedlings

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.5 *Encephalartos dolomiticus***Background**

Encephalartos dolomiticus is a rare *Encephalartos* species restricted to the south eastern region of Limpopo. An aerial survey in 2012 indicated that there are approximately 130 plants remaining in the wild. It is, however, possible that stems rather than individual plants were counted during the survey. To date, all the surveys for this *Encephalartos* species were conducted from the air and essential information such as sex of individuals and age structure of the population, as well as data on recruitment and pollinators are vague or unknown. It is furthermore unknown whether the current land use practises such as burning cycles or grazing have a detrimental effect on recruitment of *E. dolomiticus* seedlings.

It is presumed that the *E. dolomiticus* population is declining, and the threat of illegal harvesting for horticultural and medicinal purposes is severe. *E. dolomiticus* is highly sought after and expensive in the horticultural trade and no viable *ex situ* genebanks currently exist for this *Encephalartos* species. *Encephalartos dolomiticus* is currently listed as CR under the Red List criteria A2d; C1 (IUCN version 3.1).

The demand for *E. dolomiticus* seedlings is higher than what the commercial nurseries can currently produce, but despite this, landowners currently show no interest in propagating and selling seedlings grown from wild harvested seed. In order to rather explore tax incentives for the conservation of this *Encephalartos* species, it is recommended that a Biodiversity Management Agreement (BMA) is entered into with these landowners in accordance with Section 44 of NEM:BA and Section 37C of the Income Tax Act, (Act 58 of 1962).

Objective 1

To conduct a ground-based population survey for *E. dolomiticus* in order to obtain a more accurate assessment of the population size and structure.

Action 1: Conduct a ground-based population survey for <i>E. dolomiticus</i>	
Champions/ Responsibility	LEDET
Resources/Funding	LEDET annual survey budget
Timeline	Within one year of publication of this BMP
Deliverable	Report on the size and structure of the <i>E. dolomiticus</i> population Recommendation on the feasibility of removing suckers from wild populations for the establishment of <i>ex situ</i> conservation collections / genebanks

Objective 2

Upon completion of the population survey, to investigate the effect of current land use practises on *E. dolomiticus* with the aim of advising on management actions at each locality.

Action 1: Investigate the effect of current land use practices on <i>E. dolomiticus</i>	
Champions/ Responsibility	SANBI
Resources/Funding	SANBI to source
Timeline	Within five years of publication of this BMP
Deliverable	Ecological management plan for each locality

Objective 3

To enter into a BMA with landowners on whose properties *E. dolomiticus* occurs.

Action 1: Initiate a BMA with landowners on whose properties <i>E. dolomiticus</i> occurs	
Champions/ Responsibility	LEDET (stewardship programme), DEA
Resources/Funding	None required
Timeline	Within five years of publication of this BMP
Deliverable	BMAs between landowners and the Minister in accordance with section 44 of NEM:BA

Objective 4

To explore and advise on tax incentives relating to the BMA.

Action 1: Advise on tax incentives for landowners who have entered into the BMA	
Champions/ Responsibility	SANBI, DEA
Resources/Funding	None required
Timeline	Within five years of publication of this BMP
Deliverable	Summary of tax incentives available to landowners who have entered into the BMA

Objective 5

To establish an *ex situ* conservation collection / genebank for *E. dolomiticus*.

Action 1: If found to be feasible, selectively remove suckers from <i>E. dolomiticus</i> plants.	
Champions/ Responsibility	SANBI through NBGs and LEDET
Resources/Funding	Internal resources – NBGs
Timeline	Within two years of publication of this BMP
Deliverable	Curation records of suckers removed from wild population

Action 2: Establish <i>ex situ</i> conservation genebank at identified NBG	
Champions/ Responsibility	SANBI through NBGs and LEDET
Resources/Funding	Internal resources – NBGs
Timeline	Within two years of publication of this BMP
Deliverable	<i>Ex situ</i> genebank at identified NBG

Recovery Targets

Due to the incomplete information regarding the population size and other ecological aspects (such as sex of individual plants, coning frequencies, pollination and recruitment) of *E. dolomiticus*, it is not possible to set realistic short term recovery targets for this *Encephalartos* species. It is therefore recommended that recovery targets are determined during the five years revision of this BMP.

Recovery Objective 1

To set recovery targets for *E. dolomiticus* once objective 1 above has been achieved.

Action 1: Set recovery targets for <i>E. dolomiticus</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. dolomiticus</i>

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.6 *Encephalartos dyerianus*

Background

Encephalartos dyerianus is known from a single granite mountain in Limpopo where it occupies an area of less than 10 ha (Government Gazette, 2013). Although most of the population occurs within a Provincial Nature Reserve, the *Encephalartos* species was until recently still affected by poaching, resulting in a continued decline. Armed guards based at the population have, however, virtually eliminated poaching. *E. dyerianus* is currently listed as CR under the Red List criteria B1ab(v)+2ab(v) (IUCN version 3.1). There are viable *ex situ* collections of this *Encephalartos* species in NBGs. An ecological management plan has been compiled for the Nature Reserve; however it does not address the management of *E. dyerianus* specifically.

Objective 1

To proclaim the Lilly Nature Reserve as a specially protected area in terms of the NEM:PAA.

Action 1: Declare Lilly Nature Reserve as a specially protected area	
Champions/ Responsibility	LEDET in collaboration with DEA
Resources/Funding	None required
Timeline	Within five years of publication of this BMP
Deliverable	Lilly Nature Reserve declared as a Specially protected area in terms Section 18 of the NEM:PAA

Objective 2

To adapt the current ecological management plan for Lilly Nature Reserve to focus on management and monitoring of the *E. dyerianus* population.

Action 1: Include management and monitoring actions for <i>E. dyerianus</i> in the management plan for Lilly Nature Reserve	
Champions/ Responsibility	LEDET
Resources/Funding	No funding required
Timeline	Within five years of publication of this BMP
Deliverable	Management and monitoring actions for <i>E. dyerianus</i> in Lilly Nature Reserve management plan, including recommendations on time of year and parameters (e.g. seedlings, numbers of cones, sex ratios, size classes) for monitoring

Objective 3

To conduct a pilot study on the use of microdots and the University of Kent's *Encephalartos* species theft detection system in the *E. dyerianus* population.

Action 1: Establish a pilot study at the <i>E. dyerianus</i> population to test the effectiveness of microdots and the University of Kent's <i>Encephalartos</i> species theft detection system as a security measure	
Champions/ Responsibility	SANBI/ the University of Kent
Resources/Funding	SANBI/ the University of Kent to source
Timeline	Within one year of publication of this BMP
Deliverable	Monitoring and evaluation plan for RFID tags

	deployed and microdots applied to <i>E. dyerianus</i> population
--	--

Objective 4

To establish breeding colonies for *E. dyerianus* around Lilly Nature Reserve in collaboration with private landowners.

Action 1: Consult with private landowners neighbouring Lilly Nature Reserve on the establishment of breeding colonies for <i>E. dyerianus</i>	
Champions/ Responsibility	LEDET
Resources/Funding	No funding required
Timeline	Within five years of publication this BMP
Deliverable	List of interested landowners

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

Recovery Targets

Encephalartos dyerianus is listed as CR since it is confined to one locality of less than 10ha and although this population has been targeted by poachers, the overall decline was not considered to be significant. The population is reportedly recruiting well and is therefore not in need of human intervention such as artificial pollination or population augmentation.

4.7 *Encephalartos eugene-maraisii***Background**

Encephalartos eugene-maraisii occurs on rocky hills and steep slopes in grassland and savanna in small scattered sub-populations in the Waterberg and adjacent areas (Grobelaar, 2004). There has been significant poaching of this *Encephalartos* species over the past 30 years and it is estimated that the population has declined by more than 50% over this period, with between 900 and 1000 plants remaining in the wild. Most of the remaining sub-populations are located on private Nature Reserves and in formally protected areas managed by SANParks. *Encephalartos eugene-maraisii* is currently listed as EN under the Red List criteria A2d; C1 (IUCN version 3.1).

Plants in formally protected areas are monitored regularly with individual plants marked, measured and GPS referenced and although complete population surveys are not conducted on the private Nature Reserves, monitoring is conducted on portions of the sub-population. This *Encephalartos* species is not currently represented in a viable *ex situ* collection at the NBGs.

Objective 1

To establish an *ex situ* genebank for *E. eugene-maraisii* at the Lowveld NBG.

Action 1: Source seed from stable wild subpopulations of <i>E. eugene-maraisii</i>	
Champions/ Responsibility	SANBI in collaboration with private Nature Reserves and landowners
Resources/Funding	SANBI through NBGs
Timeline	Within one year of publication of this BMP
Deliverable	An <i>ex situ</i> genebank for <i>E. eugene-maraisii</i> comprised of at least 100 seedlings

Objective 2

To establish an *in situ* genebank for *E. eugene-maraisii* on a private Nature Reserve located within the current species' distribution range.

Action 1: Plant <i>Encephalartos</i> species recovered from poaching incidences in a designated area on a private Nature Reserve to form an <i>in situ</i> genebank	
Champions/ Responsibility	Private landowners in collaboration with SANBI
Resources/Funding	Private landowner
Timeline	Within one year of publication of this BMP
Deliverable	A secure <i>in situ</i> genebank for <i>E. eugene-maraisii</i> comprising of plants recovered from poaching incidences

Recovery Targets

Since the subpopulation within the protected area managed by SANParks is comprised of reproductive male and female plants and natural recruitment is present, no artificial pollination or augmentation is considered necessary for this subpopulation at this stage. It is estimated that up to 500 plants have recently been poached from one of the private Nature Reserves and it is therefore recommended that recovery efforts are focussed within the affected portion of the private Nature Reserve with the long term target to replace the 500 plants lost to poachers. Seed or seedlings needed for the recovery can be sourced from the *in situ* genebank (as per Objective 2 above).

Recovery Objective 1

To replace the 500 *E. eugene-maraisii* plants illegally harvested from the private Nature Reserve within the last few years.

Action 1: Plant 500 seed or seedlings into depleted areas in the private Nature Reserve recently affected by poaching	
Champions/ Responsibility	Private landowners in collaboration with SANBI
Resources/Funding	SANBI to source funding for monitoring
Timeline	Within five years of publication of this BMP
Deliverable	Monitoring plan for planted seed or seedlings

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.8 *Encephalartos heenanii***Background**

Encephalartos heenanii occurs on a provincial nature reserve in Mpumalanga and in Swaziland where it grows on very steep slopes in short grassland. According to surveys conducted in 1995 the population historically consisted of approximately 115 plants but poaching has resulted in a rapid decline with less than 24 plants recorded in 2009 (Government Gazette, 2013). Recent surveys have failed to locate any plants and reproductive failure is anticipated for any remaining wild plants. *Encephalartos heenanii* is currently listed as CR under the Red List criteria B1ab(ii,iv,v)+2ab(ii,iv,v) (IUCN version 3.1).

Viable *ex situ* collections of *E. heenanii* do not exist either within the NBGs or other government nurseries. *E. heenanii* plants tend to cone infrequently and it appears that artificial pollination success

and seedling survival is relatively low. Members from the CSSA have volunteered to donate seed and/or seedlings for species recovery on condition that they can monitor the recovery process.

Objective 1

To establish a confidential database of genetically pure *E. heenanii* in private possession that can be used as parental stock.

Action 1: Create a confidential database containing records of genetically pure <i>E. heenanii</i> plants and source seedlings in private possession	
Champions/ Responsibility	SANBI, CSSA
Resources/Funding	No funding required
Timeline	Within one year of the publication of this BMP
Deliverable	Confidential database of genetically pure <i>E. heenanii</i> plants (national and international)

Recovery Targets

The recovery of *E. heenanii* will depend on the number of seed and / or seedlings which can be sourced for recovery processes. This *Encephalartos* species is currently not represented in a viable *ex situ* conservation collection at any of the NGBs. Due to absence of cones or low coning rates of *E. heenanii* plants in some NGBs, it is recommended that efforts are placed into species recovery rather than focussing on establishing *ex situ* genebanks. Since there is currently no database for privately owned *E. heenanii* plants, and it is not known how many seed/seedlings will be available for recovery, it is recommended that the recovery target for *E. heenanii* be determined once objectives 1 and 2 above have been achieved.

Recovery Objective 1

To set recovery targets for *E. heenanii* once objective 1 above has been achieved.

Action 1: Set recovery targets for <i>E. heenanii</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. heenanii</i> .

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.9 *Encephalartos hirsutus*

Background

Encephalartos hirsutus historically occurred in three widely separated localities, but due to extreme pressure from poachers, only one individual remains in an inaccessible locality. Helicopter surveys conducted in 2012 located no additional plants in the wild (Government Gazette, 2013). There are unconfirmed reports that *E. hirsutus* used to occur in formally protected areas managed by SANParks. This *Encephalartos* species is facing an extremely high risk of extinction and is listed as CR under the Red List criteria A4acd; B2ab(iii,iv,v); C1 (IUCN version 3.1). At present, there are no viable *ex situ* genebanks under state control for this *Encephalartos* species. A small number of confiscated plants are however held in a secure, privately-owned locality.

Objective 1

To establish/ formalize *ex situ* genebanks for *E. hirsutus* in two secure localities.

Action 1: Formalise a memorandum of understanding with custodians of confiscated plants and establish these plants in two secure genebanks	
Champions/ Responsibility	SANBI & LEDET
Resources/Funding	None
Timeline	Within one year of publication of this BMP
Deliverable	Two secure genebanks for <i>E. hirsutus</i> Memoranda of understanding formalizing current custodianship of confiscated <i>E. hirsutus</i> plants

Objective 2

To establish a database of genetically pure parental stock under state or private control (national and international) that can be used to source seed for additional genebanks.

Action 1: Create a confidential database containing records of privately owned and state owned <i>E. hirsutus</i> plants	
Champions/ Responsibility	SANBI, CSSA
Resources/Funding	None required
Timeline	Within one year of publication of this BMP
Deliverable	Confidential database of genetically pure <i>E. hirsutus</i> parental stock (national and international)

Objective 3

To identify three potential sites suitable for *E. hirsutus* species reintroduction.

Action 1: Conduct habitat suitability modelling to identify three potential sites for future <i>E. hirsutus</i> species reintroduction	
Champions/ Responsibility	LEDET (biodiversity planning programme)
Resources/Funding	No funding required
Timeline	Within five years of publication of this BMP
Deliverable	Map indicating the location of three potential sites for <i>E. hirsutus</i> species reintroduction

Objective 4

To determine whether *E. hirsutus* historically occurred in the Kruger National Park (KNP).

Action 1: Conduct extensive surveys to determine presence of <i>E. hirsutus</i> in the KNP	
Champions/ Responsibility	SANParks
Resources/Funding	SANParks
Timeline	Within five years of publication of this BMP
Deliverable	Survey report

Action 2: Conduct stable isotope tests of <i>ex situ</i> plants purported to originate from KNP	
Champions/ Responsibility	UCT
Resources/Funding	SANParks
Timeline	Within five years of publication of this BMP
Deliverable	Research report

Recovery Targets

Recovery is not considered a viable short- to medium-term option for this *Encephalartos* species since only one individual of *E. hirsutus* currently remains in the wild and no formal *ex situ* genebanks currently exist. In addition to this, it is highly unlikely that essential natural ecosystem processes such as pollination are still present in the wild. Since the pollinator for this *Encephalartos* species was never known and no other *Encephalartos* species is considered to be a close relative, extensive research is required to determine if *Porthetes* species can be used as pollinators in recovered populations (Prof John Donaldson, SANBI, pers. comm.).

Recovery Objective 1

To set recovery targets for *E. hirsutus* once the above mentioned objectives have been achieved.

Action 1: Set recovery targets for <i>E. hirsutus</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. hirsutus</i>

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.10 *Encephalartos horridus*

Background

Encephalartos horridus occurs in xeric thicket vegetation between Port Elizabeth and Uitenhage in the Eastern Cape. This *Encephalartos* species has declined by more than 50% due to habitat destruction (urban settlements) and collecting for horticultural purposes and is now considered extinct from some localities. *Encephalartos horridus* is currently listed as EN under the Red List criteria A2acd (IUCN version 3.1). According to Eastern Cape DEDEAT and SANParks, the exact extent of the species' distribution as well as subpopulation sizes are unknown since a complete population survey has never been conducted.

Landowners who were consulted as part of this BMP did not express any interest in economic incentives for the conservation of *E. horridus* and it is therefore recommended that BMAs are entered into with these landowners in accordance with Section 44 of NEM:BA. The option of tax incentives can subsequently be explored. It should however be noted that since the complete distribution of *E. horridus* is unknown, not all landowners could be consulted during this BMP.

Encephalartos horridus is represented in *ex situ* collections at the NBGs, however, a recent increase in the theft of this *Encephalartos* species has resulted in a significant reduction in the number of plants within these collections. Therefore, it is crucial that these *ex situ* collections are secured and restored (see 3.3.8 objective 1).

Objective 1

To determine the current distribution and size of *E. horridus* populations.

Action 1: Conduct a population survey for <i>E. horridus</i>	
Champions/ Responsibility	EC DEDEAT, SANBI, SANParks, the Nelson Mandela Metropolitan University, Rhodes University
Resources/Funding	SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Within five years of the publication of this BMP
Deliverable	Report on the current population status of <i>E. horridus</i>

Objective 2

To enter into a BMA with landowners on whose properties *E. horridus* occurs.

Action 1: Initiate a BMA with landowners on whose properties <i>E. horridus</i> occurs	
Champions/ Responsibility	EC DEDEAT (stewardship programme) in collaboration with the SANBI
Resources/Funding	EC DEDEAT
Timeline	Within five years of publication of this BMP
Deliverable	BMAs between landowners and the Minister in accordance with section 44 of NEM:BA

Recovery Targets

Due to a lack of current population information, it is not possible to set realistic recovery targets for this *Encephalartos* species. It is therefore recommended that recovery targets are only determined upon completion of the population survey.

Recovery Objective 1

To set recovery targets for *E. horridus* once objective 1 above has been achieved.

Action 1: Set recovery targets for <i>E. horridus</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. horridus</i>

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.11 *Encephalartos inopinus***Background**

Encephalartos inopinus is restricted to a small area in Limpopo where it grows on dolomite cliffs and in dense scrub (Grobelaar, 2004). During initial surveys conducted in 1992, more than 670 plants were counted. However, subsequent aerial surveys indicated that the population declined to 81

individuals in 2004. Surveys conducted in 2008 and 2012 failed to locate any plants and it is thus possible that the species may be extinct in the wild (Government Gazette, 2013). *E.inopinus* is currently listed as CR under the Red List criteria A2acd; B1ab(i,ii,iv,v)+B2ab(i,ii,iv,v);C1+2a(i) (IUCN version 3.1).

A small number of *E. inopinus* plants are currently established in government nurseries, however these plants cone infrequently and subsequently very few seedlings are produced. Private growers and members of the CSSA (CSSA) in Mpumalanga and Limpopo have volunteered to donate seedlings to the Lowveld NGB to establish a viable genebank for *E. inopinus*.

The locality where *E. inopinus* historically occurred is located on communal land, and although it is at this stage not considered to be a secure site for recovery, the community has expressed interest in proclaiming the area as nature reserve.

Objective 1

To establish a genebank for *E. inopinus* at the Lowveld NGB.

Action 1: Source seedlings from private growers and members of the CSSA	
Champions/ Responsibility	SANBI (Lowveld NGB), private growers and members of the CSSA
Resources/Funding	None required
Timeline	Within one year of publication of this BMP
Deliverable	A secure genebank for <i>E. inopinus</i> at the Lowveld NGB

Objective 2

To proclaim the area where *E. inopinus* historically occurred as a Nature Reserve in terms of the NEM:PAA.

Action 1: Investigate and formalize the proclamation of the communal area around Penge as a Nature Reserve	
Champions/ Responsibility	LEDET
Resources/Funding	LEDET
Timeline	Within five years of publication of this BMP
Deliverable	Declaration of the Penge area as a Special Nature Reserve in terms of Section 18 of NEM:PAA

Recovery Targets

Recovery is not considered a viable short to medium term option for this *Encephalartos* species since the area where *E. inopinus* used to occur is not currently considered to be a secure location. In addition to this, it is highly unlikely that essential natural ecosystem processes such as pollination are still present in the wild. Since the pollinator for this *Encephalartos* species was never known and no other *Encephalartos* species is considered to be a close relative, extensive research is required to determine if *Porthetes* species can be used as pollinators in recovered populations (Prof John Donaldson, SANBI, pers. comm.). Due to the lack of a suitable recovery area, it is recommended that recovery objectives are determined once objectives 1 and 2 above have been achieved.

Recovery Objective 1

To set recovery targets for *E. inopinus* once the above mentioned objectives have been achieved.

Action 1: Set recovery targets for <i>E. inopinus</i>	
Champions/ Responsibility	<i>Encephalartos</i> species BMP Implementation Committee
Resources/Funding	To be determined
Timeline	After five years or once necessary information has been obtained
Deliverable	Recovery targets for <i>E. inopinus</i>

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.12 *Encephalartos laevifolius***Background**

Historically, *Encephalartos laevifolius* used to occur in Mpumalanga, KZN, and the Eastern Cape as well as in Swaziland, but today it predominantly occurs in Mpumalanga within the Kaapsehoop mountain range with an isolated colony occurring further north. The population in the Kaapsehoop area initially numbered 1700 plants but severe poaching has resulted in less than five plants remaining. The subpopulations in Blyderivierspoort Nature Reserve in Mpumalanga as well as the subpopulations in KZN and the Eastern Cape are all extinct due to poaching. *Encephalartos laevifolius* is currently listed as CR under the Red List criteria A2acde (IUCN version 3.1).

The Kaapsehoop subpopulation of *E. laevifolius* is represented in viable *ex situ* collections in NBGs, while three plants from the Blyderivierspoort Nature Reserve were recovered from poachers and planted at a secure site.

Objective 1

To identify an additional three secure sites within the species' historic distribution range where *E. laevifolius* can be reintroduced in Mpumalanga.

Action 1: Identify three secure sites within the historic distribution range of <i>E. laevifolius</i> for species recovery	
Champions/ Responsibility	MTPA
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00 (not for procurement of land)
Timeline	Within one year of the publication of this BMP
Deliverable	Map indicating three suitable sites for species recovery

Objective 2

To establish a viable genebank for *E. laevifolius* in a secure locality using the Blyderivierspoort Nature Reserve plants recovered from poachers.

Action 1: Establish a viable genebank for <i>E. laevifolius</i> with seed sourced from the recovered Blyderivierspoort Nature Reserve plants	
Champions/ Responsibility	MTPA in collaboration with LEDET
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00 / LEDET
Timeline	Within five years of publication of this BMP
Deliverable	Viable genebank for <i>E. laevifolius</i> at a secure location

Recovery Targets

The recovery targets for *E. laevifolius* are based on recovery actions already underway. The availability of resources and seed for recovery actions were taken into consideration.

Due to expanding human settlements, habitat destruction and free access to the area, the locality at Kaapsehoop where the five remaining adult plants grow is not considered suitable for species recovery. There is a viable *ex situ* collection of *E. laevifolius* within the NBGs which can be used to supply seed for species recovery for the subpopulation occurring in the Kaapsehoop Mountain Range.

Recovery Objective 1

To undertake species recovery for *E. laevifolius* within the three identified localities.

Action 1: Plant 2000 <i>E. laevifolius</i> seed within the three identified localities	
Champions/ Responsibility	MTPA
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	A report documenting the progress and success of species recovery for <i>E. laevifolius</i> in three localities

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.13 *Encephalartos lebomboensis***Background**

Encephalartos lebomboensis occurs in northern KZN and in the Mananga area of eastern Mpumalanga, as well as in the adjacent areas in Mozambique and Swaziland. This *Encephalartos* species is threatened by poaching for horticultural and traditional medicine purposes, with unconfirmed reports indicating increased harvesting of mature plants for the medicinal plant market, while expanding agricultural activities are threatening the habitat. Invasion by alien plant species such as *Lantana camara* (Lantana) and *Chromolaena odorata* (Triffid Weed) is an additional threat.

It is estimated that there are approximately 5000 plants remaining in the wild, although no recent surveys have been conducted in Mpumalanga or KZN. *Encephalartos lebomboensis* is currently listed as EN under the Red List criteria A2acd; B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v) (IUCN version 3.1).

Encephalartos lebomboensis is a popular *Encephalartos* species among horticultural collectors with both forms (Mananga and Piet Retief) common in cultivation and easily obtainable at nurseries. This *Encephalartos* species also exists in viable *ex situ* collections at the NBGs with numerous seed already donated to MTPA for species recovery and to the community nursery at Mananga when it was still operating.

Objective 1

To establish the present population size of *E. lebomboensis* and quantify poaching impacts for both horticultural and medicinal purposes.

Action 1: Conduct ground-based surveys of <i>E. lebomboensis</i>	
Champions/ Responsibility	MTPA/ EKZNW/ SANBI
Resources/Funding	MTPA/ EKZNW/ SANBI (25% of Scientific Authority budget to be allocated to actions in this BMP)
Timeline	Within two years of the publication of this BMP
Deliverable	Report of survey conducted in KZN and Mpumalanga indicating present population size of <i>E. lebomboensis</i> and poaching impacts

Objective 2

To clear alien plant infestations such as *Lantana camara* and *Chromolaena odorata* within the *E. lebomboensis* population at Mananga.

Action 1: Collaborate with Working on Fire (WoF), Working for Water (WfW) and/ or Expanded Public Works Programme (EPWP) on the removal of alien invasive plants from the Lebombo Mountain at Mananga	
Champions/ Responsibility	MTPA in collaboration with WoF, WfW and/ or EPWP
Resources/Funding	WoF, WfW and EPWP budgets
Timeline	Within five years of publication of this BMP
Deliverable	Report indicating results of alien plant clearance on the Lebombo Mountain at Mananga

Objective 3

To ascertain whether *E. lebomboensis* currently occurs in formally protected areas managed by SANParks.

Action 1: Conduct extensive surveys for <i>E. lebomboensis</i> in SANParks formally protected areas	
Champions/ Responsibility	SANParks
Resources/Funding	SANParks
Timeline	Within five years of publication of this BMP
Deliverable	Report indicating results of surveys for <i>E. lebomboensis</i> in SANParks formally protected areas

Recovery Targets

The recovery targets for this *Encephalartos* species are applicable to the plants occurring in Mpumalanga. Recovery should be undertaken with seed sourced from NBGs and other government

nurseries. A genebank (breeding colony) has been established close to Piet Retief within the species' historic distribution range and these plants are currently producing cones. Recovery targets for KZN could not be determined since the current subpopulation size is only an estimate.

Recovery Objective 1

To establish an *in situ* genebank for *E. lebomboensis* at various ranger outposts at Mananga.

Action 1: Plant 2000 <i>E. lebomboensis</i> seed at various ranger outposts at Mananga	
Champions/ Responsibility	MTPA in collaboration with NBGs
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	Report on the germination success of 2000 seed planted at ranger outposts at Mananga

Recovery Objective 2

To augment subpopulations of *E. lebomboensis* growing within the species' historic distribution range at Piet Retief.

Action 1: Plant 1000 seed in secure localities within the historic distribution range at Piet Retief	
Champions/ Responsibility	MTPA
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	Report documenting the germination success of 1000 seed of <i>E. lebomboensis</i> planted at secure localities within the historic distribution at Piet Retief

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.14 *Encephalartos middelburgensis*

Background

Encephalartos middelburgensis has a fragmented distribution and is confined to the Witbank, Middelburg and Bronkhorstspuit areas of Mpumalanga and Gauteng. It is estimated that the total population currently consists of less than 350 plants, most of these confined to a single Nature Reserve in Mpumalanga. Total population decline is currently estimated at approximately 60% with the threat of poaching still present. *Encephalartos middelburgensis* is currently listed as CR under the Red List criteria A2acd+4acd; C1 (IUCN version 3.1).

Outside of the Nature Reserve, the high amount of poaching has resulted in a severely fragmented population with many of the individuals now occurring in isolation. Mpumalanga Tourism and Parks Agency (MTPA) is currently involved with numerous restoration projects for this *Encephalartos* species, both inside and outside of protected areas. A small number of plants occur within a private Nature Reserve in Gauteng and an *Encephalartos* Species Management Plan has been submitted by the landowner to the GDARD. In this *Encephalartos* Species Management Plan, it is proposed that the population be artificially pollinated and seed and/ or seedlings used for restoration on the same property. Future goals of this management plan are to expand the project to neighbouring properties.

Encephalartos middelburgensis is currently represented in one viable *ex situ* collection within the NBGs.

Objective 1

To investigate the ecology and restoration of *E. middelburgensis*, including restoration success with seed compared to seedlings.

Action 1: Register and undertake a research project on the ecology and restoration of <i>E. middelburgensis</i>	
Champions/ Responsibility	MTPA and the Tshwane University of Technology
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	Research report on the ecology and restoration of <i>E. middelburgensis</i>

Recovery Targets

The recovery targets for *E. middelburgensis* are based on recovery actions already underway. The availability of resources and seed for recovery actions were also considered.

Recovery Objective 1

To augment *E. middelburgensis* subpopulations in Mpumalanga with an additional 140 seed or seedlings.

Action 1: Plant an additional 140 <i>E. middelburgensis</i> seed/ seedlings in secure wild locations, sourcing seed from a) wild populations or b) the NBG genebank	
Champions/ Responsibility	MTPA
Resources/Funding	MTPA annual <i>Encephalartos</i> species budget of R147 912.00
Timeline	Within five years of publication of this BMP
Deliverable	Report documenting the germination / establishment success of at least 140 <i>E. middelburgensis</i> seed or seedlings planted in secure wild locations

Recovery Objective 2

To augment the *E. middelburgensis* subpopulation growing in a private Nature Reserve in Gauteng with at least 400 seed or seedlings.

Action 1: Carry out artificial pollination and subpopulation recovery as per the <i>Encephalartos</i> Species Management Plan submitted to GDARD for plants on a private Nature Reserve in Gauteng	
Champions/ Responsibility	Philip Rousseau
Resources/Funding	Philip Rousseau
Timeline	Within five years of publication of this BMP
Deliverable	Report documenting the germination / establishment success of at least 400 <i>E. middelburgensis</i> seed or seedlings planted on a private Nature Reserve in Gauteng

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

4.15 *Encephalartos msinganus*

Background

Encephalartos msinganus is restricted to a small area in the Msinga district of KZN where it grows in short grassland on steep slopes. It is estimated that between 100 and 200 plants used to occur in the wild, however, poaching has reduced the population to a small number of scattered individuals (Government Gazette, 2013). *Encephalartos msinganus* is currently listed as CR under the Red List criteria B1ab(iii,v)+2ab(iii,v); C1+2a(ii) (IUCN version 3.1). Regular aerial surveys of the population have indicated the presence of coning individuals. Ground-based surveys have not been conducted to confirm the presence of seedlings however, since the terrain is difficult to traverse, it is possible that seedlings would be overlooked. The remaining plants grow among large boulders and on steep cliffs and are difficult to reach.

The land on which the population of *E. msinganus* occurs belongs to the Msinga Community. The older members of the Msinga Community are aware of the plants and are displeased with the fact that people are removing the plants. There are unconfirmed reports that the children from the Msinga community remove wild seedlings for trade. *E. msinganus* is represented in a viable *ex situ* collection in at least one NBG.

Objective 1

To create and maintain an enabling environment for the Msinga community to carry out appropriate management actions and to provide the level of security necessary to prevent further poaching of *E. msinganus* plants from the wild.

Action 1: Inform all major landowners and custodians of the significance of <i>E. msinganus</i> and current legislative regulations pertaining to the destruction and/or harvesting of plants, plant parts and seed	
Champions/ Responsibility	District Conservation Officer - Greytown EKZNW Community Conservation
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R1500.00 for travel and R3680.00 for personnel hours
Timeline	Within one year of publication of this BMP
Deliverable	Records of meetings with community members and school heads

Action 2: Investigate the possibility of conservation agreements with the landowners/community to secure the known populations/subpopulations of <i>E. msinganus</i>	
Champions/ Responsibility	EKZNW Stewardship Division
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R300.00 for travel and R7260.00 for personnel hours
Timeline	Within two years of publication of this BMP
Deliverable	Records of meetings with community members

Action 3: Present and discuss all management recommendations to obtain buy-in from the Msinga community	
Champions/ Responsibility	EKZNW District Conservation Officer in Greytown and Community Conservation Officer
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R1500.00 for travel and R36800.00 for personnel hours
Timeline	Within two years of publication of this BMP
Deliverable	Records of meetings with community members

Objective 2

To reduce the loss of plants and habitat critical for the survival of *E. msinganus* in the wild.

Action 1: Assess the current population size of <i>E. msinganus</i> using data from aerial and ground surveys	
Champions/Responsibility	EKZNW Scientific Services
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R4500.00 for travel and R23 760.00 personnel hours
Timeline	Within 1 year of publication of this BMP
Deliverables	Report on the current population size of <i>E. msinganus</i>

Action 2: Engage with landowners and community members over the establishment of a security plan at Msinga	
Champions/Responsibility	District Conservation Officer - Greytown Community Conservation
Resources/Funding	Funding for implementation of security plan (This could include fencing; payment of a security custodian etc.)
Timeline	Within four years of publication of this BMP
Deliverables	Reports on poaching incidents Security plan

Objective 3

To increase the distribution of *E. msinganus* within its natural habitat and to satisfy the local demand for *Encephalartos* species by establishing a viable population at community homesteads.

Action 1: Determine the number of homesteads that currently have <i>E. msinganus</i> plants and the number of additional plants required to satisfy the needs of the community.	
Champion /Responsibility	EKZNW Community Conservation
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R1500.00 for travel and R3120.00 personnel hours
Timeline	Within 5 years of publication of this BMP
Deliverables	Report on the feasibility of planting one <i>E. msinganus</i> plant at each homestead of the Msinga community

Objective 4

To monitor management effectiveness and achievement of objectives for *E. msinganus*.

Action 1: Develop a monitoring plan for <i>E. msinganus</i>	
Champion /Responsibility	Scientific Services EKZNW
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R9200.00 personnel hours
Timeline	Within two years of publication of this BMP
Deliverables	A monitoring plan Mitigatory management interventions where required

Action 2: Survey and report on <i>E. msinganus</i> population status	
Champions/Responsibility	Scientific Services EKZNW
Resources/Funding	Resources are available in the annual operational budget for EKZNW and include Aerial surveys: R6500.00 (5 hours) Travel: R1500.00 (fuel, tyres, maintenance and vehicle purchase costs in 4x4 Diesel DC)/annum Personnel: R8970.00 (39 hrs)
Timeline	Annual
Deliverables	A monitoring report/ status report

Recovery Targets

The long term population target for *E. msinganus* is 5000 plants (at 5 sites with at least 1000 adults each) and although there is scope for the recovery of *E. msinganus*, it is not considered a realistic short term (less than five years) target since the population size, recruitment, number of coning plants and the accessibility of these coning individuals are not known. In order to achieve the long-term target for *E. msinganus*, one objective with a number of subsidiary actions have been developed.

Recovery Objective 1

To increase the population size of *E. msinganus* at three extant sites to a minimum of 500 plants (of more than 5 years of age) by 2030.

Action 1: Hand pollinate cones of <i>Encephalartos</i> species growing in community gardens (including schools) and in the wild where possible	
Champions/ Responsibility	EKZNW Scientific Services
Resources/Funding	Resources are available in the annual operational budget for EKZNW and includes R1500.00 for travel and R3440.00 personnel hours
Timeline	Within one year of publication of this BMP
Deliverable	Report documenting the increase in the number of viable seed in the wild and in community gardens

Action 2: Collect and plant seeds in suitable sites within existing subpopulations	
Champions/ Responsibility	EKZNW Scientific Services
Resources/Funding	Resources are included in previous objectives
Timeline	Annually or when seeds are available for five years
Deliverable	Progress report documenting the germination success of planted <i>E. msinganus</i> seed

Action 3: Establish a propagation programme for <i>E. msinganus</i> at the local school	
Champions/ Responsibility	EKZNW Scientific Services
Resources/Funding	EKZNW
Timeline	Within 5 years of the publication of this BMP
Deliverable	Propagation programme for <i>E. msinganus</i> at the local school

When implementing the actions above, full consideration must be given to the principles and operational guidelines outlined in 3.1 of this document.

5 REFERENCES

- BGCI. (2012): *International Agenda for Botanical Gardens in conservation: 2nd edition*. Botanic Gardens Conservation International. Richmond, UK.
- Chaiprasongsuk, M., Mingmuang, M., Thongpan, A., and Namwongprom, K. (2007): *Molecular identification of Encephalartos (Zamiaceae) species and their relationships to morphological characters*. Kasetsart J. (Nat.Sci) 41: 43-60.
- Cousins, S.R., Williams, V.L., Witkowski, E.T.F. (2012): *Uncovering the cycad taxa (Encephalartos species) traded for traditional medicine in Johannesburg and Durban, South Africa*. South African Journal of Botany 78: 129–138.
- Da Silva, J.M., Donaldson, J.S., Reeves, G. and Hedderson, T.A. (2012): *Population genetics and conservation of critically small cycad populations: a case study of the Albany Cycad, Encephalartos latifrons (Lehmann)*. Biological Journal of the Linnean Society 105: 293-308.
- Daly, B., Donaldson, J.S., Friedmann, Y., Hahndiek, Q., King, N., Newton, D. and Southwood, A. (editors). (2006): *Albany Cycad (Encephalartos latifrons) Population and Habitat Viability Assessment Workshop Report*. Conservation Breeding Specialist Group (SSC/IUCN)/ CBSG Southern Africa. Endangered Wildlife Trust, Johannesburg.
- Department of Environmental Affairs and Tourism (2007): NEM:BA 2004 (Act 10 of 2004): *Critically Endangered, Endangered, Vulnerable and Protected Species*, Regulation No. 151, Government Gazette No. 29657, 23 February 2007, Pretoria: DEAT.
- Donaldson, J. (1997): *Is there a floral parasite mutualism in cycad pollination: the pollination biology of Encephalartos villosus (Zamiaceae)*. American Journal of Botany 84: 1398-1406.
- Donaldson, J. (1999): *Insects associated with the cycads of Zimbabwe, Kenya, and Zanzibar with comparisons to cycad insects in South Africa*. Excelsa No. 19, 1999.
- Donaldson, J.S. 2010. *Encephalartos arenarius*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on 25 August 2014.
- Government Gazette. (2013): National Environmental Management: Biodiversity Act (10/2004): Non-detriment findings. Vol.572. No. 36117.
- Grobbelaar, N. (2004): *Cycads with special reference to the southern African species*. Four Images Bureau & Printers. Pretoria.
- Hawkins, B., Sharrock, S., and Havens, K. (2008): *Plants and climate change: Which future?* Botanic Gardens Conservation International, Richmond, UK.
- IUCN SSC. (2002): *Technical guidelines on the management of ex situ populations for conservation*. 10 December 2002.
- IUCN SSC. (2006): *Pest alert. Cycad Aulacaspis Scale*. 10 February 2010. <<http://www.cycads.org/publications/CAS>>.
- Laliberte, B. (1997): *Botanic Gardens seed banks/genebanks worldwide, their facilities, collections and networks*. BGCI News: Volume 2 Number 9.

- National Environmental Management: Biodiversity Act. Act No.10 of 2004.
- National Environmental Management: Protected Areas Act. Act No. 58 of 2003.
- Osborne, R., Calonje, M.A., Hill, K.D., Stanberg, L. and Stevenson D.W. (2012): *The world list of cycads*. Systematics.
- Peters, G.A., Toin Jr., R.E., Calvert, H.E., and Marsh B.H. (1986): *Lichens to Gunnera – with emphasis on Azolla*. Plant Soil 90: 17-34.
- Raimondo, D.C. & Donaldson, J.S. (2003): *Responses of cycads with different life histories to the impact of plant collecting: simulation models to determine important life history stages and population recovery times*. Biological Conservation, 111 (3), 345-358.
- Prakash, S. and Van Staden, J. (2006): *Sex identification in Encephalartos natalensis (Dyer and Verdoorn) using RAPD markers*. Euphytica 152.
- Raimondo, D., von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. & Manyama P.A., (eds) (2009): *Red List of South African plants 2009*, Strelitzia 25, Nelspruit: South African National Biodiversity Institute.
- Retief, K., West, A.G., and Pfab, M.F. (2014): *Can stable isotopes and radiocarbon dating provide a forensic solution for curbing illegal harvesting of threatened cycads?* Journal of Forensic Science 59(6), 1541-1551.
- Tang, W., Donaldson, J.S. & Walters, T. (2003): *A unifying framework for cycad conservation*. In. Donaldson J.S.(ed). Cycads. Status survey and conservation action plan. IUCN/SSC Cycad Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.
- Treutlein, P., Voster, P., and Wink, M. (2005): *Molecular relationships in Encephalartos (Zamiaceae, Cycadales) based on nucleotide sequences of nuclear ITS1 & 2, Rbcl, and genomic ISSR fingerprinting*. Plant Biology 7: 79-90.
- Whitelock, L.M. 2002. *The cycads*. Timber Press, Portland.
- Willis, C.K.(ed). (2006): *Conserving South Africa's plants: a South African response to GSPC*. SANBI Biodiversity Series 1. SANBI. Pretoria.
- Xaba. P. and Bosenberg, D.W. (2012): *Investigating the feasibility of using Microdata dot for cycad conservation*. Research report. SANBI.
- Zheng, W., Song, T., Bao, X., Bregman, B., and Rasmussen, U. (2002): *High cyanobacterial diversity in coralloid roots of cycads revealed by PCR fingerprinting*. FEMS Microbiology Ecology 40: 215-222.

DIGITAL REFERENCES

- IUCN (2013): IUCN Red List of Threatened Species, Version 2013.2: www.iucnredlist.org
- South African National Red List (2012): <http://redlist.sanbi.org>

APPENDIX A: GENERIC OBJECTIVES, ACTIONS AND CHAMPIONS

Description	Objective	Action	Champion
Increase protection of wild <i>Encephalartos</i> species populations from poaching	To incentivize the <i>in situ</i> protection of wild <i>Encephalartos</i> populations through increasing the economic value of wild <i>Encephalartos</i> species.	Develop a protocol for the approval of wild seed harvest for seedling production programmes for trade purposes in accordance with the CITES Resolution Conf. 11.11 (Rev.CoP15).	SANBI, DEA and provincial conservation agencies
	To improve provincial capacity for implementation of protection measures for wild plants.	Design and implement a security plan that deals with adequate anti-poaching personnel for priority plants, adequate equipment etc.	Provincial conservation agencies, DEA and relevant departments within the South African Police Services
	To mark priority wild <i>Encephalartos</i> populations with new super unique microchips.	Mark all priority wild <i>Encephalartos</i> populations with new microchips	DEA to purchase microchips. Provincial conservation agencies to insert microchips. The SANBI to advise on selection of priority populations
	To pilot studies on the use of microdots for marking of wild <i>Encephalartos</i> populations.	Identify one priority population per province and apply uniquely coded microdots in accordance with an agreed protocol	SANBI/ Provincial conservation agencies
		Monitor the presence of microdots on marked plants	SANBI/ Provincial conservation agencies
	To develop a forensic stable isotope reference database for wild <i>Encephalartos</i> populations for use in <i>Encephalartos</i> specie investigations and prosecutions.	Develop a forensic stable isotope reference database for wild <i>Encephalartos</i> populations	SANBI/ the University of Cape Town
Conduct essential research to ensure effective implementation of this BMP	To formulate a research plan that prioritizes research documented in the following sections:	Formulate a research plan	SANBI in collaboration with provincial conservation authorities
	Pollinators: To determine whether cucujid pollinators can be transferred between <i>Encephalartos</i> species.	Conduct research to determine if cucujid pollinators can be transferred between <i>Encephalartos</i> species and can therefore be released into populations where they have become locally extinct.	SANBI
	Sex identification of <i>Encephalartos</i> species: To explore various molecular techniques	Continue research into molecular methods for determining the sex of <i>Encephalartos</i> species (adults and seedlings).	Universities

Description	Objective	Action	Champion
	to determine the sex of <i>Encephalartos</i> species.		
	Species Recovery: To conduct research into species recovery techniques.	Initiate research projects in collaboration with recognized universities to increase knowledge on the restoration ecology of <i>Encephalartos</i> species.	SANBI, Mpumalanga Tourism and Parks Agency (MTPA), the Tshwane University of Technology (TUT), other universities
	Maintenance and restoration of essential mutualisms: To determine the role of <i>Encephalartos</i> mutualisms and the importance of maintaining and restoring these mutualisms.	Explore the role and importance of mutualisms such as cyanobacteria in <i>Encephalartos</i> species	SANBI to coordinate
	Diseases: To increase research efforts into <i>Encephalartos</i> diseases in wild populations and <i>ex situ</i> collections.	Document the occurrence of the non-native Cycad Aulacaspis Scale (CAS) in South Africa.	The University of Pretoria, NBGs, CSSA, provincial conservation agencies
		Document the occurrence of pests and diseases affecting <i>Encephalartos</i> in South Africa, with special reference to the 15 <i>Encephalartos</i> species in the BMP.	The University of Pretoria, NBGs, CSSA, provincial conservation agencies
	Species identification through DNA: To use DNA barcoding techniques to identify closely related <i>Encephalartos</i> species and to resolve their taxonomy (e.g. <i>E. heenanii</i> and <i>E. paucidentatus</i>).	Identify closely related <i>Encephalartos</i> species using DNA barcoding techniques and resolve their taxonomy.	University of Johannesburg
	Genetic variation within subpopulations/localities: To conduct conservation genetics research on different subpopulations / localities of <i>E. laevifolius</i> and <i>E. hirsutus</i> in order to inform species recovery.	Determine if there is genetic variation between subpopulations / localities of <i>E. laevifolius</i> and <i>E. hirsutus</i> .	To be determined
	Ex situ collections and maintenance of genetic integrity: To continue research into the use of in vitro storage techniques to establish <i>ex situ</i> conservation collections.	Investigate the possibility of using in vitro storage for <i>ex situ</i> conservation.	SANBI/Kew Millennium Seed Bank Project

Description	Objective	Action	Champion
	Climate change: To investigate the potential impact of climate change on South African <i>Encephalartos</i> species.	Conduct climate modelling to assess the potential impact of climate change on South African <i>Encephalartos</i> species.	Rhodes University
Effective management of confiscated <i>Encephalartos</i> species	To develop guidelines for law enforcement officials for the care of confiscated and damaged <i>Encephalartos</i> species.	Develop a guideline describing the recommended methods for the caring of confiscated and damaged <i>Encephalartos</i> species, inclusive of a list of relevant experts to contact	CSSA – Xander de Kock
	To identify key growers and horticulturists in all provinces who will assist law enforcement officials when damaged <i>Encephalartos</i> species need to be treated.	Identify key growers and horticulturists who will care for confiscated plants	CSSA in collaboration with NBGs and provincial conservation agencies
	To formalize private custodianships of confiscated plants.	Formalize custodianship of confiscated plants in private collections and nurseries	Provincial conservation agencies in collaboration with SANBI
Establish, maintain and secure ex situ genebank collections of all the CR and EN <i>Encephalartos</i> species	To compile a confidential database for ex situ <i>Encephalartos</i> species of potential conservation value.	Establish a database for ex situ <i>Encephalartos</i> species of potential conservation value located within private collections through the Cycad Saviours initiative	CSSA (CSSA) – Japie Steenkamp
		Confirm conservation value of ex situ <i>Encephalartos</i> species on database through DNA barcoding and stable isotope analysis	SANBI
		Establish a database for ex situ <i>Encephalartos</i> species of potential conservation value located within national and international government facilities	SANBI
	To establish, maintain and secure ex situ genebank collections of all the CR and EN <i>Encephalartos</i> species in NBGs.	Upgrade security of valuable <i>Encephalartos</i> species collections at NBGs to prevent theft of <i>Encephalartos</i> species	SANBI through its NBGs
		Following agreement with owners of private collections, mark confirmed ex situ <i>Encephalartos</i> species of conservation value located within private collections with microdots	SANBI
		Manage and coordinate ex situ conservation collections (including private collections where possible) for all the <i>Encephalartos</i> species in this BMP	SANBI (NBGs) in collaboration with private growers and collectors

Description	Objective	Action	Champion
		Develop a protocol for duplicate collections and material exchange between NBG <i>Encephalartos</i> genebanks.	SANBI (NBGs)
		Pilot the RFID <i>Encephalartos</i> species theft detection system at Lowveld NBG	SANBI
		Train key personnel in the maintenance of <i>ex situ</i> conservation collections for <i>Encephalartos</i> species to ensure genetic purity (by preventing hybridization) and retention of important insect assemblages.	SANBI through NBGs

APPENDIX B: SPECIES-SPECIFIC OBJECTIVES, ACTIONS AND CHAMPIONS

Species	Objective	Action	Champion
<i>Encephalartos aemulans</i>	To create and maintain an enabling environment for the community on whose land the <i>E. aemulans</i> plants occur, to carry out appropriate management actions and to provide the level of security necessary to prevent further poaching of plants from the wild.	Inform and educate all landowners and custodians of the conservation value of <i>E. aemulans</i> and of current legislative regulations pertaining to the destruction and/or harvesting of plants, plant parts and seed.	EKZNW District Conservation Officer and EKZNW Scientific Services
		Finalize stewardship agreements with the landowners to secure the known population of <i>E. aemulans</i>	EKZNW Stewardship Division
		Present and discuss all management recommendations for the <i>E. aemulans</i> population and obtain buy-in from the landowners	EKZNW Stewardship Division
	To reduce the loss of individuals, populations, pollinators and habitat critical for the survival of <i>E. aemulans</i> in the wild.	Undertake ground surveys to determine the current population size and assess threats to the <i>E. aemulans</i> population	EKZNW Scientific Services and EKZNW Stewardship Division
	Recovery Objective 1: To increase the size of the population of <i>E. aemulans</i> through seed augmentation at three extant sites by a minimum of 200 plants (>5 years) by 2030.	Collect seed from wild plants and plant them at three extant sites within the existing population	EKZNW Scientific Services
	Recovery Objective 2: To develop a monitoring plan to acquire information required to evaluate the effectiveness of management and to identify where objectives are not being met and/or interventions are required.	Develop a monitoring plan for <i>E. aemulans</i>	EKZNW Scientific Services
<i>E. arenarius</i>	To determine the current population status of <i>E. arenarius</i> on both private land and within areas formally protected by SANParks.	Resurvey all known populations of <i>E. arenarius</i>	EC DEDEAT, SANBI, SANParks, the Nelson Mandela Metropolitan University, Rhodes University
	To determine the status of suitable habitat for <i>E. arenarius</i> within its	Determine the habitat status of <i>E. arenarius</i> through GIS modelling of suitable habitat and then ground	DEDEAT, SANBI, SANParks, NMMU, Rhodes University

Species	Objective	Action	Champion
	distribution range.	truthing of areas deemed suitable	
	Recovery objective 1: To set recovery targets for <i>E. arenarius</i> once objectives 1 and 2 above have been achieved.	Set recovery targets for <i>E. arenarius</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. cerinus</i>	To determine if any plants still remain in the wild	Survey all known localities for <i>E. cerinus</i> plants	EKZNW through collaboration with private collectors who reportedly know of additional localities
	To identify at least two secure sites within the natural distribution range of <i>E. cerinus</i> that can be used for species reintroduction.	Identify two secure sites within the historic distribution range for species reintroduction	EKZNW through collaboration with the SANBI/ NBGs
	To conduct research into potential species-specific pollinators	Undertake pollinator research on large <i>ex situ</i> collections of <i>E. cerinus</i> with a specific emphasis on <i>Porthetes</i> species (weevil)	SANBI
	Recovery objective 1: To set recovery targets for <i>E. cerinus</i> once objective 1 and 2 have been achieved	Set recovery targets for <i>E. cerinus</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. cupidus</i>	To verify reports of a large <i>E. cupidus</i> population in Limpopo	Conduct ground surveys to determine if <i>E. cupidus</i> is present in Limpopo	LEDET
	Recovery objective 1: To plant a total of 500 <i>E. cupidus</i> seed back into the species' historic distribution range	Plant 500 viable <i>E. cupidus</i> seed back into secure locations in previously occupied areas	Mpumalanga Tourism and Parks Agency (MTPA) with seed sourced from NBGs and Mr Fanie Vermaak and Jan Joubert from the CSSA.
<i>E. dolomiticus</i>	To conduct a ground-based population survey for <i>E. dolomiticus</i> in order to obtain a more accurate assessment of the population size and structure.	Conduct a ground-based population survey for <i>E. dolomiticus</i>	LEDET
	Upon completion of the population survey, to investigate the effect of current land use practises on <i>E. dolomiticus</i> with the aim of advising on management actions at each locality.	Investigate the effect of current land use practices on <i>E. dolomiticus</i>	SANBI

Species	Objective	Action	Champion
	To enter into a BMA with landowners on whose properties <i>E. dolomiticus</i> occurs.	Initiate a BMA with landowners on whose properties <i>E. dolomiticus</i> occurs	LEDET (stewardship programme), DEA
	To explore and advise on tax incentives relating to the BMA.	Advise on tax incentives for landowners who have entered into the BMA	SANBI, DEA
	To establish an ex situ conservation collection / genebank for <i>E. dolomiticus</i> .	If found to be feasible, selectively remove suckers from <i>E. dolomiticus</i> plants.	SANBI through NBGs and LEDET
		Establish ex situ conservation genebank at identified NBG	SANBI through NBGs and LEDET
	Recovery objective 1: To set recovery targets for <i>E. dolomiticus</i> once objective 1 above has been achieved.	Set recovery targets for <i>E. dolomiticus</i>	Encephalartos species BMP Implementation Committee
<i>E. dyerianus</i>	To proclaim the Lilly Nature Reserve as a Specially protected area in terms of the NEM:PAA.	Declare Lilly Nature Reserve as a Specially protected area	LEDET in collaboration with DEA
	To adapt the current ecological management plan for Lilly Nature Reserve to focus on management and monitoring of the <i>E. dyerianus</i> population.	Include management and monitoring actions for <i>E. dyerianus</i> in the management plan for Lilly Nature Reserve	LEDET
	To conduct a pilot study on the use of microdots and the University of Kent's <i>Encephalartos</i> species theft detection system in the <i>E. dyerianus</i> population.	Establish a pilot study at the <i>E. dyerianus</i> population to test the effectiveness of microdots and the University of Kent's <i>Encephalartos</i> species theft detection system as a security measure	SANBI / the University of Kent
	To establish breeding colonies for <i>E. dyerianus</i> around Lilly Nature Reserve in collaboration with private landowners	Consult with private landowners neighbouring Lilly Nature Reserve on the establishment of breeding colonies for <i>E. dyerianus</i>	LEDET
<i>E. eugene-maraisii</i>	To establish an ex situ genebank for <i>E. eugene-maraisii</i> at the Lowveld NBG.	Source seed from stable wild subpopulations of <i>E. eugene-maraisii</i>	SANBI in collaboration with private Nature Reserves and landowners
	To establish an in situ genebank for <i>E. eugene-maraisii</i> on a private Nature Reserve located within the current	Plant <i>Encephalartos</i> species recovered from poaching incidences in a designated area on a private Nature Reserve to form an in situ genebank	Private landowners in collaboration with SANBI

Species	Objective	Action	Champion
	species' distribution range.		
	Recovery objective 1: To replace the 500 <i>E. eugene-maraisii</i> plants illegally harvested from the private Nature Reserve within the last few years	Plant 500 seed or seedlings into depleted areas in the private Nature Reserve recently affected by poaching	Private landowners in collaboration with SANBI
<i>E. heenanii</i>	To establish a confidential database of genetically pure <i>E. heenanii</i> in private possession that can be used as parental stock	Create a confidential database containing records of genetically pure <i>E. heenanii</i> plants and source seedlings in private possession	SANBI, CSSA
	Recovery objective 1: To set recovery targets for <i>E. heenanii</i> once objectives 1 and 2 above have been achieved.	Set recovery targets for <i>E. heenanii</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. hirsutus</i>	To establish/ formalize <i>ex situ</i> genebanks for <i>E. hirsutus</i> in two secure localities.	Formalise a memorandum of understanding with custodians of confiscated plants and establish these plants in two secure genebanks	SANBI & LEDET
	To establish a database of genetically pure parental stock under state or private control (national and international) that can be used to source seed for additional genebanks.	Create a confidential database containing records of privately owned and state owned <i>E. hirsutus</i> plants	SANBI, CSSA
	To identify three potential sites suitable for species reintroduction.	Conduct habitat suitability modelling to identify three potential sites for future species reintroduction	LEDET (biodiversity planning programme)
	To determine whether <i>E. hirsutus</i> historically occurred in the Kruger National Park.	Conduct extensive surveys to determine presence of <i>E. hirsutus</i> in the KNP	SANParks
		Conduct stable isotope tests of <i>ex situ</i> plants purported to originate from KNP	UCT
	Recovery objective 1: To set recovery targets for <i>E. hirsutus</i> once the above mentioned objectives have been achieved.	Set recovery targets for <i>E. hirsutus</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. horridus</i>	To determine the current distribution and size of <i>E. horridus</i> populations.	Conduct a population survey for <i>E. horridus</i>	EC DEDEAT, SANBI, SANParks, the Nelson Mandela Metropolitan University, Rhodes University

Species	Objective	Action	Champion
	To enter into a BMA with landowners on whose properties <i>E. horridus</i> occurs.	Initiate a BMA with landowners on whose properties <i>E. horridus</i> occurs	EC DEDEAT (stewardship programme) in collaboration with the SANBI
	Recovery objective 1: To set recovery targets for <i>E. horridus</i> once objective 1 above has been achieved.	Set recovery targets for <i>E. horridus</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. inopinus</i>	To establish a genebank for <i>E. inopinus</i> at the Lowveld NBG.	Source seedlings from private growers and members of the CSSA	SANBI (Lowveld NBG), private growers and members of the CSSA
	To proclaim the area where <i>E. inopinus</i> historically occurred as a Nature Reserve in terms of the NEM:PAA.	Investigate and formalize the proclamation of the communal area around Penge as a Nature Reserve	LEDET
	Recovery objective 1: To set recovery targets for <i>E. inopinus</i> once the above mentioned objectives have been achieved	Set recovery targets for <i>E. inopinus</i>	<i>Encephalartos</i> species BMP Implementation Committee
<i>E. laevifolius</i>	To identify an additional three secure sites within the species' historic distribution range where <i>E. laevifolius</i> can be reintroduced in Mpumalanga.	Identify three secure sites within the historic distribution range of <i>E. laevifolius</i> for species recovery	MTPA
	To establish a viable genebank for <i>E. laevifolius</i> in a secure locality using the Blyderivierspoort Nature Reserve plants recovered from poachers.	Establish a viable genebank for <i>E. laevifolius</i> with seed sourced from the recovered Blyderivierspoort Nature Reserve plants	MTPA in collaboration with LEDET
	Recovery objective 1: To undertake species recovery for <i>E. laevifolius</i> within the three identified localities	Plant 2000 <i>E. laevifolius</i> seed within the three identified localities	MTPA
<i>E. lebomboensis</i>	To establish the present population size of <i>E. lebomboensis</i> and quantify poaching impacts for both horticultural and medicinal purposes.	Conduct ground-based surveys of <i>E. lebomboensis</i>	MTPA/ EKZNW/ SANBI
	To clear alien plant infestations such as	Collaborate with Working on Fire (WoF), Working for Water (WfW) and/ or Expanded Public Works	MTPA in collaboration with WoF, WfW and/ or EPWP

Species	Objective	Action	Champion
	<i>Lantana camara</i> and <i>Chromolaena odorata</i> within the <i>E. lebomboensis</i> population at Mananga.	Programme (EPWP) on the removal of alien invasive plants from the Lebombo Mountain at Mananga.	
	To ascertain whether <i>E. lebomboensis</i> currently occurs in formally protected areas managed by SANParks.	Conduct extensive surveys for <i>E. lebomboensis</i> in SANParks formally protected areas	SANParks
	Recovery objective 1: To establish an <i>in situ</i> genebank for <i>E. lebomboensis</i> at various ranger outpost at Mananga.	Plant 2000 <i>E. lebomboensis</i> seed at various ranger outposts at Mananga	MTPA in collaboration with NBGs
	Recovery objective 2: To augment subpopulations of <i>E. lebomboensis</i> growing within the species' historic distribution range at Piet Retief	Plant 1000 seed in secure localities within the historic distribution range at Piet Retief	MTPA
<i>E. middelburgensis</i>	To investigate the ecology and restoration of <i>E. middelburgensis</i> , including restoration success with seed compared to seedlings.	Register and undertake a research project on the ecology and restoration of <i>E. middelburgensis</i>	MTPA and the Tshwane University of Technology
	Recovery objective 1: To augment <i>E. middelburgensis</i> subpopulations in Mpumalanga with an additional 140 seed or seedlings.	Plant an additional 140 <i>E. middelburgensis</i> seed/seedlings in secure wild locations, sourcing seed from a) wild populations or b) the NBG genebank	MTPA
	Recovery objective 2: To augment the <i>E. middelburgensis</i> subpopulation growing in a private Nature Reserve in Gauteng with at least 400 seed or seedlings.	Carry out artificial pollination and subpopulation recovery as per the <i>Encephalartos</i> Species Management Plan submitted to GDARD for plants on a private Nature Reserve in Gauteng	Philip Rousseau
<i>E. msinganus</i>	To create and maintain an enabling environment for the Msinga community to carry out appropriate management actions and to provide the level of	Inform all major landowners and custodians of the significance of <i>E. msinganus</i> and current legislative regulations pertaining to the destruction and/or harvesting of plants, plant parts and seed	District Conservation Officer - Greytown EKZNW Community Conservation
		Investigate the possibility of conservation agreements	EKZNW Stewardship Division

Species	Objective	Action	Champion
	security necessary to prevent further poaching of <i>E. msinganus</i> plants from the wild.	with the landowners/community to secure the known populations/subpopulations of <i>E. msinganus</i>	
		Present and discuss all management recommendations to obtain buy-in from the Msinga community	EKZNW District Conservation Officer in Greytown and Community Conservation Officer
	To reduce the loss of plants and habitat critical for the survival of <i>E. msinganus</i> in the wild.	Assess the current population size of <i>E. msinganus</i> using data from aerial and ground surveys	EKZNW Scientific Services
		Engage with landowners and community members over the establishment of a security plan at Msinga	District Conservation Officer-Greytown Community Conservation
	To increase the distribution of <i>E. msinganus</i> within its natural habitat and to satisfy the local demand for <i>Encephalartos</i> species by establishing a viable population at community homesteads.	Determine the number of homesteads that currently have <i>E. msinganus</i> plants and the number of additional plants required to satisfy the needs of the community.	EKZNW Community Conservation
	To monitor management effectiveness and achievement of objectives for <i>E. msinganus</i> .	Develop a monitoring plan for <i>E. msinganus</i>	Scientific Services EKZNW
		Survey and report on <i>E. msinganus</i> population status	Scientific Services EKZNW
	Recovery objective 1: To increase the population size of <i>E. msinganus</i> at three extant sites to a minimum of 500 plants (of more than 5 years of age) by 2030.	Hand pollinate cones of <i>Encephalartos</i> species growing in community gardens (including schools) and in the wild where possible	EKZNW Scientific Services
		Collect and plant seeds in suitable sites within existing subpopulations	EKZNW Scientific Services
		Establish a propagation programme for <i>E. msinganus</i> at the local school	EKZNW Scientific Services

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA
NOTICE 316 OF 2017

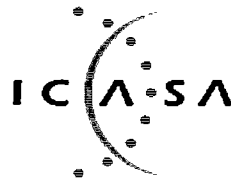


Independent Communications Authority of South Africa
Pinmill Farm, 164 Katherine Street, Sandton
Private Bag X10002, Sandton, 2146

Ref: 1/6/43

**NOTICE OF INTENTION TO EXTEND THE DUE DATE FOR THE SUBMISSION
OF WRITTEN COMMENTS ON THE REGULATORY FRAMEWORK FOR
COMMUNITY BROADCASTING SERVICES DISCUSSION DOCUMENT**

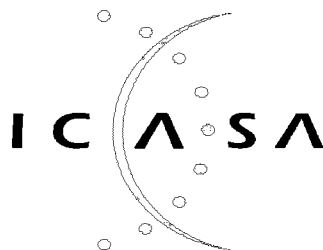
- (1) The Independent Communications Authority of South Africa ("the Authority") published, for comments, a Discussion Document on Regulatory Framework for Community Broadcasting Services on 03 March 2017 in General Notice 170 of Government Gazette 40660.
- (2) In terms of the General Notice, interested parties were invited to make written comments by no later than 10 May 2017.
- (3) Stakeholders requested an extension of the due date for submissions emphasising that they would like to get input from the National Community Radio Forum National Conference that will take place on the 24-27 May 2017, as the conference will deliberate on the Discussion Document.
- (4) The Authority deems it advisable to extend the submission deadline as the stakeholders that will be attending the National Conference are among the primary stakeholders in Community Broadcasting. This will allow stakeholders to make sound and substantial input to the Discussion Document.



(5) The deadline for the submission of written comments on the above is extended to 02 June 2017.

A handwritten signature in black ink, appearing to read 'R. Mohlaloga', is written over a horizontal line.

RUBBEN MOHLALOGA
ACTING CHAIRPERSON
DATE: 10/April/2017

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA**NOTICE 317 OF 2017**

**PROVIDES STANDARD OPERATING PROCEDURES FOR THE GUIDELINES
REGARDING THE USE OF RADIO FREQUENCY SPECTRUM IN THE E-BAND (71-76
GHz PAIRED WITH 81-86 GHz), CONTAINED IN THE AMENDMENT TO THE RADIO
FREQUENCY SPECTRUM REGULATIONS, 2015**

The Independent Communications Authority of South Africa (“the Authority”) on 22 November 2016 published, in Government Gazette number 40436 (Notice Number 781 of 2016), the Radio Frequency Spectrum Amendment Regulations 2016 which, amongst others, introduced the concept of light-licensing for the E band 73.375-75.875 GHz paired with 83.375-85.375GHz.

The Authority hereby published a notice on the standard operating procedures regarding the use of radio frequency spectrum in the E band8 (71 – 76 GHz) Paired with the (81 – 86 GHz).


NOMVUYISO BATYI
COUNCILLOR

**STANDARD PROCEDURES AND GUIDELINES REGARDING THE USE OF RADIO
FREQUENCY SPECTRUM IN THE E BAND (71-76 GHz PAIRED WITH 81-86 GHz)**

Table of Contents

1	Introduction	3
2	Eligibility.....	3
3	Radio Spectrum Fees	3
4	Overview	4
4.1	Self-co-ordinated Block A	4
4.2	ICASA-coordinated Block B - Standard licensing procedures.....	4
5	Annex 1 – Block A Application Process flow.....	6
6	Annex 2 – Block B Application Process flow.....	7
7	Annex 3 – Form for E-band technical parameters	8

1 Introduction

The Independent Communications Authority of South Africa (“the Authority”), on 22 November 2016 published, in Government Gazette number 40436 (Notice Number 781 of 2016), the Radio Frequency Spectrum Amendment Regulations 2016 which, amongst others, introduced the concept of light-licensing for the E band 73.375-75.875 GHz paired with 83.375-85.375GHz.

Central to the light-licensing regime is that the location of and characteristics of the stations are recorded in a reference RF database on a first-come-first-served basis. The responsibility users are to ensure coordination and compatibility with previously registered stations. It is envisaged that the link registration on the reference RF database will ultimately be online. The Authority is in the process of developing such a system and has in the interim decided to introduce a manual link registration procedure as outlined in this document.

This document provides guidelines and procedures for radio spectrum applications in the E Band. It is based on the Radio Frequency Spectrum Regulations and the National Radio Frequency Plan currently in force.

2 Eligibility

Eligible persons who may apply for or self-register link (s) are:

- ECNS or
- Persons who have been granted exemption from holding ECNS licences by the Authority.

3 Radio Spectrum Fees

The radio spectrum fee is levied as the “minimum fees¹” per annum per link per hop based on 2 x250 MHz channel or multiples thereof. As an example, a 500-MHz link will attract twice the amount paid for a 250-MHz link. Where applicable, the fees will be charged pro-rata based on the date of registration or licence issue date. The minimum fees are revised on an annual basis and are published as an amendment to the Radio Frequency Spectrum Fees Regulations.

¹ Minimum fee is a fee prescribed in the Radio Spectrum Fees Regulations and is adjusted annually based on the consumer price index (CPI) prevailing at a time.

4 Overview

As per Radio Frequency Spectrum Regulation 2016, as amended, the utilisation of the E Band shall be segmented as follows:

4.1 Self-co-ordinated Block A

Channel Number	1	2	3	4	5	6	7	8	9	10
Centre frequency (GHz)	73.500	73.750	74.000	74.250	74.500	74.750	75.000	75.250	75.500	75.750
Centre frequency (GHz)	83.500	83.750	84.000	84.250	84.500	84.750	85.000	85.250	85.500	85.750

- 4.1.1 The prospective user shall notify the Authority of the geographic location and technical details of the radiocommunication link (or links) within 30 days of the deployment of the installation.
- 4.1.2 Only type-approved equipment is allowed and shall be registered on the database.
- 4.1.3 A prospective user shall perform the necessary technical assessments against the Authority's database of already registered links. The user shall only register and deploy the link if it has been established that it will not cause harmful interference to the links in the database.
- 4.1.4 Once completed, the registration forms must be e-mailed to ebandregistrations@icasa.org.za. The date and time on the e-mail will be used to establish the order of priority in terms of interference resolutions between licensees.
- 4.1.5 Properly completed and signed notifications must be sent by e-mail to ebandregistrations@icasa.org.za

4.2 ICASA-coordinated Block B - Standard licensing procedures.

Channel Number	1	2	3	4	5	6	7	8
Centre frequency (GHz)	71.250	71.500	71.750	72.000	72.250	72.500	72.750	73.000
Centre frequency (GHz)	81.250	81.500	81.750	82.000	82.250	82.500	82.750	83.000

4.2.1 The use of Block B shall follow the Standard Application Procedure as prescribed in the Radio Frequency Spectrum Regulations as amended.

4.2.2 Technical details shall apply as contained in the Radio Frequency Spectrum Regulations.

4.2.3 Only type-approved equipment shall be registered on the database.

4.2.4 Completed and signed applications can be submitted to:

The General Manager: Licensing

ICASA

Private Bag X 10002

Sandton, 2146

SpecLicensing@icasa.org.za

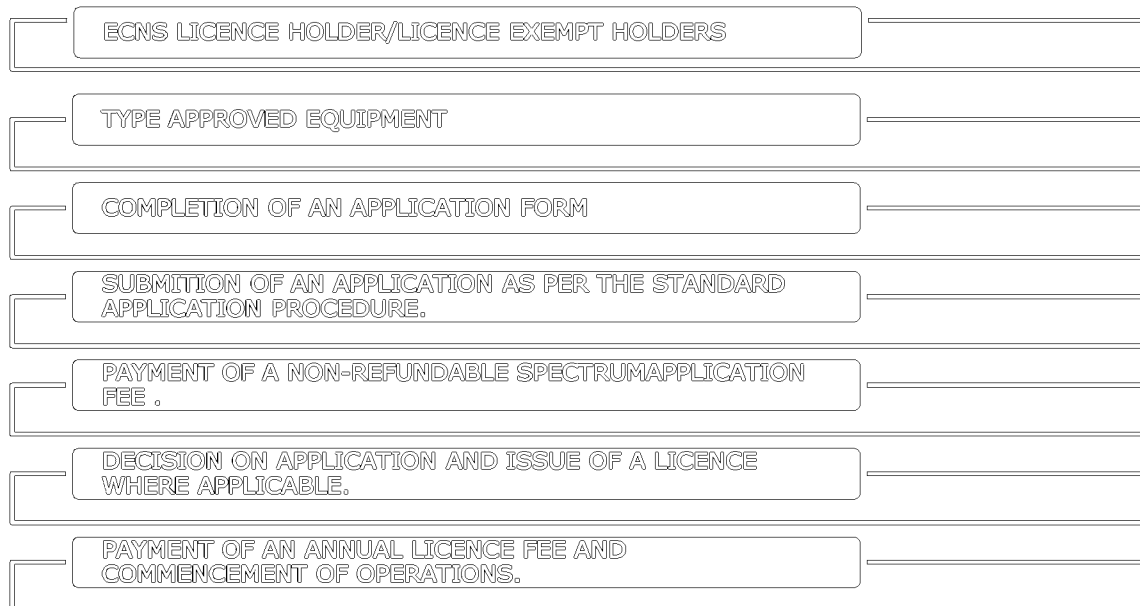
5 Annex 1 – Block A Application Process flow.

The following are the steps in the process of link registration for the “self-coordination framework” under Block A of the E band.



6 Annex 2 – Block B Application Process flow.

The following are the steps in the process of link registration for the standard application procedure under Block B of the E band.

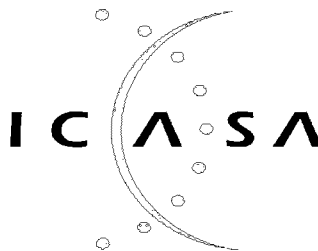


7 Annex 3 – Form for E-band technical parameters

Licensee name The Authority's serial reference number Date of link registration with a time stamp Province City/Town Link path-length (km) Channel bandwidth utilised (MHz) Bit-rate (Mbps) Receiver sensitivity Polarisation (H, V or V&H) Duplexing method (FDD/TDD)			
Site A Geographical co-ordinates (dd:mm:ss) Ground height (m ASL) Antenna height (m AGL) Equipment manufacturer Equipment model number Equipment Type Approval number (TA number) Antenna manufacturer Antenna model number Antenna maximum gain (dBi) Antenna elevation angle (deg) Antenna azimuth angle (deg) e.i.r.p (dBm) Transmit frequency carrier (MHz)		Site B Geographical co-ordinates (dd:mm:ss) Ground height (m ASL) Antenna height (m AGL) Equipment manufacturer Equipment model number Equipment Type Approval number (TA number) Antenna manufacturer Antenna model number Antenna maximum gain (dBi) Antenna elevation angle (deg) Antenna azimuth angle (deg) e.i.r.p (dBm) Transmit frequency carrier (MHz)	

End///

**INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA
NOTICE 318 OF 2017**



**PURSUANT TO SECTION 4 (1) OF THE ELECTRONIC COMMUNICATIONS ACT 2005,
(ACT NO. 36 OF 2005)**

**HEREBY ISSUES A NOTICE REGARDING THE DRAFT REGULATIONS ON THE USE OF
TELEVISION WHITE SPACES.**

The Independent Communications Authority of South Africa ("the Authority"), in terms of section 4, read with sections 31(4), 34(7) (c) (iii), 34(8) and 34(16) of the Electronic Communications Act (Act No. 36 of 2005), hereby publishes the draft regulations on the use of Television White Spaces for public consultation.

Interested persons are hereby invited to submit written representations, including an electronic version of the representation in Microsoft Word, of their views on the Draft regulations on the use of Television White Spaces no later than 16H00 on 19 May 2017.

Written representations or enquiries may be directed to:

The Independent Communications Authority of South Africa

Pinmill Farm Block A

164 Katherine Street

South Africa

Private Bag X10002

Sandton

2146

Attention:

Mr Manyapelo Richard Makgotlho

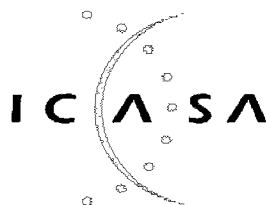
e-mail: rmakgotlho@icasa.org.za

All written representations submitted to the Authority pursuant to this notice shall be made available for inspection by interested persons from 23 May 2017 at the ICASA Library or website and copies of such representations and documents will be obtainable on payment of a fee.

Where persons making representations require that their representation, or part thereof, be treated confidentially, then an application in terms of section 4D of the ICASA Act, 2000 (Act No. 13 of 2000) must be lodged with the Authority. Such an application must be submitted simultaneously with the representation on the draft regulations and plan. Respondents are requested to separate any confidential material into a clearly marked confidential annexure. If, however, the request for confidentiality is refused, the person making the request will be allowed to withdraw the representation or document in question.



NOMVUYISO BATYI
COUNCILLOR



Independent Communications Authority of South Africa

Pinmill Farm, 164 Katherine Street, Sandton

Private Bag X10002, Sandton, 2146

DRAFT REGULATIONS ON THE USE OF TELEVISION WHITE SPACES

2017

Contents

1	Definitions	5
2	Purpose	8
3	Characteristics of White Space Devices	8
4	White Space Device Authorisation.	9
5	Avoidance of Harmful Interference	9
6	Operational Parameters.....	9
7	Permitted Channels of Operation	10
8	Location Specific Maximum Permitted Radiated Power Levels.....	10
9	Operation of WSD Immediately Adjacent to a Broadcast TV Channel	10
10	Requirements for White Space Devices to Access the Geo-Location Spectrum Database	11
11	Requirements for Installers of White Space Devices.....	12
12	Antenna Requirements and Limits.....	12
13	Frequency of GLSD Access	13
14	Continuous Operations	13
15	Geo-location Spectrum Database Security Mechanisms.....	13
16	Responsibilities of Geo-Location Spectrum Database Operators.....	14
17	Display of Available Channels	15
18	Labelling Requirements	15
19	User Instructions Regarding Correction of Harmful Interference	15
20	Compliance with Radio Frequency Exposure Requirements	15
21	WSD Operations near International Borders.....	16
22	Offences, Contraventions and Penalties.....	16
23	Short Title and Commencement.....	16

1 Definitions

In these Regulations, unless the context otherwise indicates, a word or expression to which a meaning has been assigned in the Act has meaning so assigned:

“**Act**” means the Electronic Communications Act, 2015 (Act No. 36 of 2015);

“**Adjacent Channel Leakage Ratio (ACLR)**” means the ratio of the in-band transmit power measured in an 8 MHz TV channel, to the out-of-band emission measured in any 100 kHz segment in an adjacent TV channel;

“**Altitude**” means the vertical distance above mean sea level (AMSL) defined by WGS84¹;

“**Antenna height**” means the vertical distance above ground level (AGL) to the radiation centre of an antenna;

“**Antenna height above average terrain (HAAT)**” means the vertical distance between a point on the ground to the radiation centre of an antenna. This height takes into consideration of an averaged surrounding terrain where the antenna is located. The calculation uses a radial horizontal distance starting from 3.2 km away from the antenna up to 16 km;

“**Assignment**” means the authorisation given by the Authority to use a radio frequency or radio frequency channel under specified conditions;

“**Authentication**” means the ability to verify that a message was truly sent by the claimed sender;

“**Authority**” means the Independent Communications Authority of South Africa (ICASA);

“**Contact verification signal**” means an encoded signal broadcast by a Master or Client device for reception by Client devices to which the Master device has provided Operational Parameters. A Master device must provide the information needed by a Client device to decode the contact verification signal at the same time that it provides the Operational Parameters;

“**Device emission class**” means the classification declared by the manufacturer that identifies the level of ACLR for the device;

“**Digital Terrestrial TV (DTT)**” means the digital terrestrial broadcasting technologies and platforms for delivery of TV content in the UHF band;

“**Dynamic Spectrum Assignment**” means a mechanism used to assign the unused spectrum within a frequency band of interest, to secondary users, such that they don’t cause any harmful interference with the primary user or licensee.

“**dBm**” means a power value in decibels referenced to one milliwatt;

“**Equivalent Isotropic Radiated Power (EIRP)**” means the product of the power in dBm supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna over a frequency bandwidth of 8 MHz;

“**EIRP Spectral density**” means the EIRP in dBm over a frequency bandwidth of 100 kHz;

¹ The World Geodetic System (**WGS84**) is the reference coordinate system used by the Global Positioning System. It comprises of a reference ellipsoid, a standard coordinate system, altitude data and a geoid. Similar to the North American Datum of 1983 (NAD83), it uses the Earth's center mass as the coordinate origin.

“**ETSI**” means the European Technical Standards Institute;

“**ETSI EN 301 598**” means the ETSI Harmonized European Standard for “White Space Devices (WSDs); Wireless Access Systems operating in the 470 MHz to 790 MHz TV broadcast band; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive”, final draft V1.0.9 (2014-02);

“**Fixed equipment**” means a WSD which has an integral antenna, a dedicated antenna or an external antenna and is intended to operate in a fixed location only;

“**Geo-location capability**” means the capability of a WSD to determine and report the latitude, longitude and altitude coordinates of its antenna;

“**Geo-locations Spectrum Database (GLSD)**” means a database system operated by an entity which has been authorised by the Authority to calculate and generate Operational Parameters and to provide GLSD services to the WSD within the frequency band 470 MHz to 694 MHz;

“**Geo-location Spectrum Database GLSD Operator**” means a delegated or designated entity that operates the GLSD;

“**GLSD services**” means the provision of Operational Parameters in response to requests from the WSDs;

“**Geo-location uncertainty**” means the potential positioning error in three dimensions (latitude, longitude and altitude) defined by the maximum difference in metres between the point reported by the WSDs to the GLSD and the actual position of the TVWS antenna;

“**Integral antenna**” means the antenna designed as a fixed part of the equipment, without the use of an external connector, which cannot be disconnected from the equipment by a user with the intent to connect another antenna. An integral antenna may be fitted internally or externally. In the case where the antenna is external, a non-detachable cable shall be used;

“**License**” means a radio frequency spectrum license;

“**Licensee**” means a person to whom a radio frequency spectrum license has been issued in terms of the Act;

“**MHz**” means a frequency value designated in megahertz;

“**Network initiation**” means a process by which a Master device sends control signals to one or more Client devices and allows them to begin communications;

“**Nomadic equipment**” means a device which has an integral antenna or a dedicated antenna and is intended to operate continuously within a limited coverage area;

“**Operational Parameters (OP)**” means the technical parameters generated by a Geo-location spectrum database as a response to a request made by the Master white space device.

“**Out-of-band-emissions**” means the unwanted emissions that fall within the 470 to 694 MHz band;

“Primary basis” means a primary service has priority over all other users of the spectrum band and is entitled to protection from harmful interference by other services;

“Primary service” means the service to which a specific band in the National Radio Frequency Plan;

“Reference Geo-Location Spectrum Database (R-GLSD)” means a GLSD that performs baseline calculations for the country-wide TVWS availability maps and Operational Parameters for WSDs, for setting regulatory limits;

“Rural” means any area that is not classified urban. Rural areas are subdivided into tribal areas and commercial farms

“Secondary user” means a secondary service allocated in using a specific band in the National Radio Frequency Band Plan that is assigned to a primary service, meaning that the secondary user shall operate without causing harmful interference to the primary service and that the secondary user shall not be entitled to protection from harmful interference by other users, including but not limited to the primary user;

“Secondary Geo-Location Spectrum Databases (S-GLSD)” means GLSDs operated by entities certified by the Authority to provide GLSD services to end users.;

“Sleep mode” means a mode in which the device is inactive but is not powered-down;

“Time validity” means the time period which Operational Parameters provided by the GLSD to a Master WSD are in force.

“Transmitter power” means the power produced by a WSD, measured at the output of the transmitter to which the antenna is normally connected;

“Transmitter Power Control (TPC)” means technical mechanism used by within some networking devices in order to prevent unwanted interference between wireless networks;

“TV” means broadcast Television services;

“TV White Spaces (TVWS)” means the locally unused frequencies within the 470 MHz - 694 MHz UHF band;

“TV transmitter dataset” means a dataset containing technical parameters of terrestrial TV installations such as geographical locations, transmitting powers and antenna heights. This dataset is under the sole custodianship of the Authority;

“Ultra-High Frequency (UHF) TV band” means the frequency band from 470 to 694 MHz (TV channel 21 – 48);

“Urban” means an area typified by wide streets and where building heights are generally less than three stories making diffraction over roof-top likely

“White Space Device (WSD)” shall be construed in accordance with Regulation 3.

“World Geodetic System 1984 (WGS84)” means a geodetic system used by the Department of Rural Development and Land Reform as an official ellipsoid for the South Africa’s Hartebeesthoek94 (Hart-94) datum.

2 Purpose

- (1) The purpose of these regulations is to:
- (a) To support the uptake of affordable broadband services and access;
 - (b) Establish the regulatory framework through which the Authority may authorise the use of Dynamic spectrum assignment for Television White Spaces (TVWS);
 - (c) Establish the conditions under which the TVWS must operate in accordance with the National Radio Frequency Plan;
 - (d) Establish standard terms and conditions applicable to the operation of WSDs in the frequency band 470 MHz to 694 MHz;
 - (e) Establish standard terms and conditions applicable to the operation of Geo-location spectrum databases (GLSDs) in the frequency band 470 MHz to 694 MHz;
 - (f) Prescribe conditions for the possession of White Space Devices (WSDs).
 - (g) Establish the mechanisms for ensuring the protection of primary users in the band from harmful interference;

3 Characteristics of White Space Devices

- (1) A White Space Device (WSD) wireless apparatus must be:
- (a) capable to transmit or receive in the frequency band 470 MHz to 694 MHz;
 - (b) Fixed device;
 - (c) Nomadic device;
 - (d) Master device; and
 - (e) Client device.
- (2) Types of WSD:
- (a) A fixed WSD must be a device intended to operate in a fixed location only, and must have either:
 - (i) an integral antenna;
 - (ii) a dedicated antenna; and
 - (iii) an external antenna.
 - (b) A nomadic WSD must be a device intended to operate within a limited coverage area that has either:
 - (i) an integral antenna;
 - (ii) a dedicated antenna;
 - (iii) an external antenna.
- (3) Categories of White Space Devices:

(a) Master WSD must be:

- (i) Fixed WSD with an internal geo-location capability and Internet access to request and receive Operational Parameters from a GLSD.
- (ii) Nomadic WSD with an internal geo-location capability and Internet access to request and receive Operational Parameters from a GLSD.
- (iii) Able to transmit and receive within the frequency band 470 MHz - 694 MHz under specific Operational Parameter limitations.

(b) Client WSD must be:

- (i) Fixed WSD with an internal geo-location capability and does not have direct access to a GLSD to request and receive Operational Parameters.
- (ii) Nomadic WSD with an internal geo-location capability and does not have direct access to a GLSD to request and receive Operational Parameters.
- (iii) able to obtain operational parameters from a Master WSD for use by one Client WSD within a TV white space network served by that Master WSD.
- (iv) able to obtain operational parameters from a Master WSD for use by all Client WSDs within a TV white space network served by that Master WSD.
- (v) able to transmit and receive within the frequency band 470 MHz – 694 MHz under specific Operational Parameter limitations.

4 White Space Device Authorisation.

- (1) Any person granted authorisation by the Authority to operate WSD, must provide the Authority with a mandatory certification information from an accredited laboratory during network roll-out.
- (2) A WSD must have the capability to automatically communicate with the GLSD during the WSD initialisation and registration with the GLSD operator.
- (3) The GLSD must provide sufficient security to the user to ensure privacy and protection.

5 Avoidance of Harmful Interference

- (1) The GLSD must provide Operational Parameters to protect primary services from possible harmful interference generated by transmissions of WSD.
- (2) The GLSD must generate technical parameters in response to request by Master WSD.

6 Operational Parameters

- (1) Operational Parameters must include:
 - (a) The lower and upper boundaries of each TV channel within the 470 MHz to 694 MHz frequency range within which a WSD may transmit and receive;
 - (b) The maximum permitted EIRP spectral density for each TV broadcast channel within which a WSD may transmit;
 - (c) The maximum permitted EIRP for each TV channel within which a WSD may transmit;

- (d) The time period during which the Operational Parameters are valid;
- (e) The geographic area within which the Master White Space Device Operational Parameters are valid; and
- (f) The duration (in seconds) within which a Master WSD must regularly check with a GLSD that the Operational Parameters received are still valid.

7 Permitted Channels of Operation

- (1) A WSD may operate in the frequency band 470 to 694 MHz, subject to the interference protection requirements set forth in Regulations 5;
- (2) A WSD may operate on available frequencies determined in accordance with the interference avoidance mechanisms in Regulation 5;
- (3) A WSD may not operate on a co-channel basis with broadcast television stations in the same area guided by the GLSD; and
- (4) Client WSDs may only operate on available frequencies determined by a Master WSD.

8 Location Specific Maximum Permitted Radiated Power Levels

- (1) The maximum EIRP shall be in accordance with Table 1.
- (2) The GLSD may instruct the Master WSD to operate at lower power level in order to meet the co-channel and adjacent channel suppression limitations.

Table 1: Location specific maximum permitted EIRP and EIRP spectral density

Location	Maximum EIRP per 8 MHz channel	EIRP Spectral Density per 100 kHz
Urban	36 dBm	17 dBm
Rural	41.2 dBm	22.2 dBm

9 Operation of WSD Immediately Adjacent to a Broadcast TV Channel

- (1) A WSD operating immediately adjacent to the occupied Television channels must have the out-of-band-emissions based on the Adjacent channel leakage ratios (ACLRs) established for the WSD emission classes prescribed in Table 2.

Table 2 ACLRs per classes of WSDs on the first adjacent TV channel.

Device Emission Class	ACLR
Class 1	74 dB
Class 2	74 dB
Class 3	64 dB
Class 4	54 dB
Class 5	43 dB

- (2) The out-of-band power (EIRP) spectral density shall be measured in the first 100 kHz beyond the channel edge.
- (3) The out-of-band power (EIRP) spectral density shall be greater than the measured in-band transmit power spectral density over 8 MHz minus the ACLR (-84 dBm).

10 Requirements for White Space Devices to Access the Geo-Location Spectrum Database

- (1) The communication between the GLSD and the Master WSD must comply with the latest version of Protocol to Access White Space Databases (PAWS), Internet Engineering Task Force (IETF), RFC 7545.
- (2) The Master WSD must initiate communication with the GLSD.
- (3) The GLSD must acknowledge the initial request from the Master WSD.
- (4) The Master WSD in registering with GLSD must provide:
 - (a) information specifying that it is a Master device;
 - (b) the Master device's unique identifier;
 - (c) the type approval identification designated by the Authority
 - (d) information of the Master device owner;
 - (e) information of the device operator;
 - (f) information specifying that the Master device is Fixed;
 - (g) information specifying that the Master device is Nomadic;
 - (h) the geographic location of its antenna expressed in latitude and longitude coordinates;
 - (i) the geo-location uncertainty of its antenna not exceeding 50 metres.
 - (j) Storage capacity in the device for geo-location uncertainty; and
 - (k) the confidence interval of 95% report to the GLSD.
- (5) The GLSD must validate the accuracy and authenticity of the information;
- (6) The GLSD must decide on the registration of the Master WSD;
- (7) The Master WSD in requesting for the Operational Parameters from the GLSD, must provide:
 - (a) information specifying that it is a Master device;
 - (b) the Master device's unique identifier;
 - (c) the type approval identification designated by the Authority
 - (d) information specifying that the Master device is Fixed;
 - (e) information specifying that the Master device is Nomadic;
 - (f) the geographic location of its antenna expressed in latitude and longitude coordinates;
 - (g) the geo-location uncertainty of its antenna not exceeding 50 metres.
 - (h) Storage capacity in the device for geo-location uncertainty; and
 - (i) the confidence interval of 95% report to the GLSD.
- (8) The GLSD upon receipt of the request from the Master WSD may provide Operational Parameters;
- (9) Upon receipt of the Operational Parameters the Master WSD must:
 - (a) communicate periodically its usage of TVWS channel to that GLSD;

- (b) communicate periodically with the GLSD to confirm the validity of the Operational Parameters.
- (10) The GLSD must instruct the Master WSD to end its operation when Operational Parameters are no longer valid.
- (11) When Operational Parameters are no longer valid:
 - (a) Master WSD must communicate an instruction to all Client devices associated to that Master device to stop transmission; and
 - (b) Master WSD must stop transmission.
- (12) The Master WSD must perform network initialisation with the Client WSD using the TVWS channels obtained from the GLSD.
- (13) The Client WSD must communicate through the Master WSD the following information to the GLSD for registration purposes:
 - (a) information specifying that it is a client device;
 - (b) the associated Master WSD;
 - (c) the client device's unique identifier;
 - (d) the type approval identification designated by the Authority
 - (e) information specifying that the client device is Fixed;
 - (f) information specifying that the client device is Nomadic;
 - (g) the geographic location of its antenna expressed in latitude and longitude coordinates;
 - (h) the geo-location uncertainty of its antenna not exceeding 50 metres.
 - (i) Storage capacity in the device for geo-location uncertainty; and
 - (j) the confidence interval of 95% report to the GLSD.
- (14) The Master WSD must provide Operational Parameters to the associated client WSD.
- (15) Master WSD must communicate an instruction to all Client WSDs associated to that Master WSD to stop transmission, when Operational Parameters are no longer valid;
- (16) When Operational Parameters are no longer valid the Client WSD must stop transmission.

11 Requirements for Installers of White Space Devices

- (1) Fixed WSDs shall be installed by an installer of wireless equipment in possession of a radio dealer certificate issued by the Authority.
- (2) Fixed WSDs shall be installed by an installer of wireless equipment certified by an accredited institution.
- (3) The installer must not reconfigure or tamper with any technical operational features settings of the WSD.
- (4) The installer must ensure that characteristics of the WSD remain constant.
- (5) The installer must ensure that the WSD complies with type approval certificate.

12 Antenna Requirements and Limits

- (1) Fixed WSD must at first power-on, and at any time after it has been relocated:

- (a) store its geo-location;
 - (b) Store the antenna height;
 - (c) The maximum permitted transmit antenna height of Fixed WSD must be 30 m above ground level (AGL);
 - (d) The maximum permitted transmit antenna height must not be located where the height above average terrain (HAAT), as calculated by the GLSD, is greater than 250 m; and The Authority may approve deviations from this restriction on a case-by-case basis, in approving an alternative means of interference mitigation in the GLSD.
- (2) The default antenna height of a Nomadic WSD must be recorded by the GLSD as 1.5 m above ground level, unless the WSD notifies the GLSD otherwise.
- (3) The Nomadic WSD must have 7 dB of power to compensate for in-building penetration loss when operating indoors.

13 Frequency of GLSD Access

- (1) A Master WSD must access the GLSD once every twelve (12) hours to verify that the Operational Parameters continue to remain available.
- (2) Each Master WSD must adjust its use of TVWS channels provided the Operational Parameters are still valid.

14 Continuous Operations

- (1) The Master WSD may continue to operate up to 48 hours after the last GLSD access where after it must cease its operation.
- (2) The Master WSD must re-establish contact with the GLSD and verifies its Operational Parameters.
- (3) The client WSD must cease operation immediately if it does not receive a contact verification signal from the associated Master WSD;
- (4) The client WSD must re-establish a contact with the associated master WSD within 900 seconds of last contact.
- (5) The Client WSD device must then receive the Operational Parameters from the associated Master WSD.

15 Geo-location Spectrum Database Security Mechanisms

- (1) Communications security must be instituted to ensure that GLSDs are protected from unauthorised data input.
- (2) authentication procedures must be instituted to ensure that GLSDs are protected from unauthorised alteration of stored data.
- (3) Communications between the GLSD and WSDs must be secured to prevent unauthorized parties from accessing information during transmission.
- (4) GLSD must incorporate sufficient security measures to prevent the unauthorised WSDs from accessing GLSDs.

16 Responsibilities of Geo-Location Spectrum Database Operators

Reference GLSD

- (1) The Authority, directly or through a designated delegated entity, will develop and operate a reference GLSD and will:
 - (a) maintain a reference GLSD that contains information about incumbent licensees to be protected;
 - (b) implement propagation algorithms and interference parameters issued by Authority to calculate country-wide map of baseline Operating Parameters for WSDs.
 - (c) The maps are to be utilised as regulatory limits when verifying accuracy of secondary GLSDs;
 - (d) update the algorithms or parameter values as necessary for good spectrum coordination;
 - (e) establish a technical procedure for approving entities wishing to operate secondary GLSDs; and
 - (f) from time to time use the reference GLSD for verification and monitoring purposes on the accuracy of results given by secondary GLSD operators

Secondary GLSD

- (2) The Authority may designate entities to operate secondary GLSDs after undergoing a technical examination.
- (3) Each secondary GLSD operator designated by the Authority must:
 - (a) maintain a database that contains information about incumbent licensees to be protected;
 - (b) establish a process in the secondary GLSD for synchronising and acquiring necessary technical information from the reference GLSD at least once a week to include newly licensed facilities or any changes to licensed facilities;
 - (c) establish a process for registration of Master WSDs;
 - (d) implement propagation algorithms and interference parameters prescribed by the Authority to calculate and provide accurate Operational Parameter to Master WSDs;
 - (e) establish protocols and procedures to ensure that all communications and interactions between the GLSD and Master WSDs are accurate and secured
 - (f) that unauthorized parties cannot access or alter the database or the Operational Parameters;
 - (g) respond in a timely manner to verify, correct and/or remove, as appropriate, data in the event that the Authority or a party brings a claim of inaccuracies in the GLSD to its attention.
 - (h) have functionality such that upon request from the Authority it can indicate that no TVWS channels are available when queried by WSDs;
 - (i) not discriminate between WSDs in providing the minimum information levels; and
 - (j) may provide additional information to certain classes of devices.

Service fees

- (4) A secondary GLSD operator may charge a fee to the TVWS network operators for;

- (a) registration of WSDs; and
- (b) the provision Operational Parameters to Master WSDs.

17 Display of Available Channels

- (1) A Master WSD must incorporate the capability to display a list of TVWS channels given to it by the GLSD including the channels selected for use;
- (2) The Master WSD must fulfil this requirement by a built-in display.

18 Labelling Requirements

A WSD must bear the following statement in conspicuous location on the device:

"This device complies with applicable regulations promulgated by the Authority. Operation is subject to the following conditions: (1) this device may not cause harmful interference. (2) This device must accept any interference received."

19 User Instructions Regarding Correction of Harmful Interference

The text of the user manual for a WSD, in whatever form it is provided (printed, electronic or on-line) shall include the following statement placed in a prominent location within the manual:

This equipment has been tested and found to comply with the technical rules and regulations for WSDs, consistent with all applicable regulations issued by the Authority.

These rules have been formulated to furnish reasonable protection against harmful interference. This equipment generates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to protected primary services. If this equipment does cause harmful interference to radio or television reception, the user shall correct the interference by one or more of the following measures:

- (1) Reorient or relocate the receiving antenna of the WSD and/or broadcast receiver.**
- (2) Increase the separation between the equipment and the receiver.**
- (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- (4) Consult the manufacturer, dealer or an experienced radio / TV technician for help.**
- (5) If the interference cannot be resolved, operation of this device shall be discontinued.**

20 Compliance with Radio Frequency Exposure Requirements

A fixed WSD must be accompanied by instructions on measures to ensure that persons maintain a distance of at least 7.5m from the device during operation, as well as any necessary hardware that may be needed to implement that protection. These instructions shall be displayed in all formats of the user manual.

21 WSD Operations near International Borders

WSDs must operate in a manner that will not cause harmful interference to broadcasting and other services in neighbouring countries².

22 Offences, Contraventions and Penalties

Operations in the TVWS without authorisation and in contraventions of these regulations is a criminal offense and subject, on conviction, to:

- (a) A fine not less than R100,000, but not exceeding R1,000,000; and/or
- (b) Imprisonment of not less than a month, but not exceeding six months.

23 Short Title and Commencement

These regulations are called “Regulations on the use of Television White Spaces” and shall come into force upon publication in the government gazette.

End///

². <http://www.crasa.org/crasa-publications-details/id/105/memorandum-of-understanding-on-cross-border-coordination-on-radio-communication-services-sadc/>

DEPARTMENT OF PUBLIC WORKS**NOTICE 319 OF 2017****NOMINATION RULES FOR THE PROPERTY VALUERS PROFESSION, 2017**

The South African Council for the Property Valuers Profession, under section 37 of the Property Valuers Profession Act, 2000, hereby makes the rules in the Schedule.

SCHEDULE

Arrangement of Rules

PART I

Definitions

1. Definitions

PART II

Nomination Procedure

2. Invitation
3. Format
4. Recommendation Panel
5. Assessment of Nominations

PART III

General

6. Repeal of rules
7. Short title and commencement

SCHEDULE

(Rule 6)

PART I**Definitions**

1. In these rules any word or expression to which a meaning has been assigned to in the Act shall have that meaning and-
 - (i) “the Act” means the Property Valuers Profession Act, 2000 (Act No. 47 of 2000);
 - (ii) “the Council” means the South African Council for the Property Valuers Profession, established by section 2 of the Property Valuers Profession Act, 2000 (Act No. 47 of 2000);
 - (iii) “the Minister” means the Minister of the Department of Public Works.

PART II

NOMINATION PROCEDURE

(Sections 2; 3; 4 and 5)

Invitation

2. When the council invites nominations for the appointment of members in accordance with section 4(1) of the Act, such invite shall be done by notice in the *Government Gazette* and any newspaper. Nominees shall exclude candidates.

Format

3. A nomination for appointment in terms of section 3(1)(a), (b) or (c) of the Act shall –
 - (a) be in writing;
 - (b) state the name of the person being nominated (hereinafter referred to as “the nominee”);
 - (c) state whether the nomination is being made in respect of section 3(1)(a), (b) or (c) of the Act;
 - (d) in the case of a nominee registered in terms of section 20, read with sections 19 and 43(8) of the Act, state the category in which the nominee is registered, as well as the nominee’s registration number;
 - (e) state –
 - (i) the name of the registered person, voluntary association, educational institution, department or other institution of the State, or member of the public, as the case may be, making the nomination (hereinafter referred to as “the nominator”); and
 - (ii) the nominator’s postal; business; residential and e-mail addresses, as well as his or her telephone and facsimile numbers;
 - (f) be signed by the nominator;
 - (g) be countersigned by the nominee to denote his or her acceptance of the nomination;
 - (h) be accompanied by –
 - (i) a relevant but brief *curriculum vitae* of the nominee, also stating the nominee’s postal, business, residential and e-mail addresses, as well as his or her telephone and facsimile numbers; and
 - (ii) a declaration, signed by the nominee, to the effect that he or she is not disqualified from membership in terms of section 6(1) of the Act; and
 - (i) be submitted by registered post to the Registrar, P O Box 114, MENLYN, 0063, within 60 days from the date of the invitation or notice referred to in section 4(1) of (2) of the Act.

Recommendation Panel

4.

- 4.1 When any nomination for members of a new council becomes necessary, the council shall constitute a Recommendation Panel within 30 days of the call for nominations.
- 4.2 The Recommendation Panel shall be constituted as follows:
 - (a) One registered person.

- (b) One registered person with special knowledge of valuation education.
- (c) Two persons from the State nominated by the Director-General of the Department Public Works. At least one of the persons must be registered with the council.
- (d) One person who has legal knowledge of both the Act and the Constitution of the Republic of South Africa.
- (e) Members of the Recommendation Panel may include outgoing council members who do not qualify for re-appointment.

4.3 Directives to Recommendation Panel:

- (a) The council shall identify and inform the Recommendation Panel of council members that are eligible and available for reappointment. The Recommendation Panel should ensure continuity.
- (b) The council has the right to ratify or, with valid reason/s, amend the list of nominees recommended by the Recommendation Panel.
- (c) Persons serving on the Recommendation Panel may not serve on the new council.

4.4 The Recommendation Panel shall consider the following when making recommendations to the council:

4.4.1 The requirements for nominees to be appointed from the profession (registered persons) [Section 3(1)(a)], from the State nominations [(Section 3(1)(b)], and from the public [(Section 3(1)(c)].

4.4.2 The Recommendation Panel shall take into account transformational and, where possible, geographic representivity in its recommendation.

4.4.3 The needs of the council:

The council shall, within 60 (sixty) days of the expiry of the notice of invitation, make its recommendations to the Minister based on recommendations from the Recommendation Panel. The recommendations shall be made with the view to meeting, *inter alia*, the following needs of the new council:

- (a) Persons with knowledge of valuation education and training.
- (b) Persons with knowledge of accreditation of valuation educational programmes.
- (c) Persons with experience in preliminary investigations and enquiries related to alleged improper conduct by registered persons.

- 4.5 The administrative and secretariat assistance required by the Recommendation Panel is to be provided by the council's officials.

Assessment of Nominations

5.

- 5.1 All nominations received shall be scrutinised by the Registrar firstly to confirm the eligibility of the nominee and compliance with requirements.
- 5.2 The Recommendation Panel shall evaluate each nominee in terms of the council's needs and the requirements of the Act and identify all Nominees who met the requirements.
- 5.3 The Recommendation Panel shall interview the nominees shortlisted for consideration under the public [(Section 3(1)(c)] nominations.
- 5.4 The Recommendation Panel shall by a date determined by the council submit a report to the council containing:
- (i) a list of all nominations received;
 - (ii) a list of nominees recommended;
 - (iii) a reserve list of nominees; and
 - (iv) a list of nominees not eligible and the reasons therefore.

PART III GENERAL

Repeal of rules

6. (1) The rules set out in the Schedule hereinafter are hereby repealed.
- (2) Anything done in terms of a provision repealed by subrule (1), which may be done in terms of a corresponding provision in this rules, shall be deemed to have been done in terms of that corresponding provision.

Short title and commencement

7. These Rules shall be called the Nomination Rules for the Property Valuers Profession, 2017, and shall commence on 1 June 2017.

SCHEDULE (Rule 6)

Short Title	Board Notice	Extent of Repeal
Rules for the Property Valuers Profession, 2008 ("Rules")	Board Notice ("BN") 119 of 21 November 2008, Government Gazette ("GG") 31604	Sections 2 and 3 of PART II

SOUTH AFRICAN RESERVE BANK**NOTICE 320 OF 2017****THE BANKS ACT, 1990 (ACT NO. 94 OF 1990 – “THE BANKS ACT”)****WITHDRAWAL OF CONSENT TO MAINTAIN A REPRESENTATIVE OFFICE OF A FOREIGN INSTITUTION IN THE REPUBLIC OF SOUTH AFRICA, IN TERMS OF SECTION 34 OF THE BANKS ACT: VNESHECONOMBANK**

Notice is hereby given, for general information, that the consent granted to Vnesheconombank, by the Registrar of Banks, to maintain a representative office of a foreign institution in the Republic of South Africa was withdrawn with effect from 31 March 2017.

SOUTH AFRICAN RESERVE BANK**NOTICE 321 OF 2017****THE BANKS ACT, 1990 (ACT NO. 94 OF 1990 – “THE BANKS ACT”)****WITHDRAWAL OF CONSENT TO MAINTAIN A REPRESENTATIVE OFFICE OF A FOREIGN INSTITUTION IN THE REPUBLIC OF SOUTH AFRICA, IN TERMS OF SECTION 34 OF THE BANKS ACT: FIRST BANK OF NIGERIA LIMITED**

Notice is hereby given, for general information, that the consent granted to First Bank of Nigeria Limited, by the Registrar of Banks, to maintain a representative office of a foreign institution in the Republic of South Africa was withdrawn with effect from 20 February 2017.

SOUTH AFRICAN RESERVE BANK**NOTICE 322 OF 2017****THE BANKS ACT, 1990 (ACT NO. 94 OF 1990 – “THE BANKS ACT”)****WITHDRAWAL OF CONSENT TO MAINTAIN A REPRESENTATIVE OFFICE OF A FOREIGN INSTITUTION IN THE REPUBLIC OF SOUTH AFRICA, IN TERMS OF SECTION 34 OF THE BANKS ACT: AFRICAN BANKING CORPORATION OF BOTSWANA LIMITED (TRADING AS BANCABC BOTSWANA)**

Notice is hereby given, for general information, that the consent granted to African Banking Corporation of Botswana Limited (trading as BancABC Botswana), by the Registrar of Banks, to maintain a representative office of a foreign institution in the Republic of South Africa was withdrawn with effect from 21 February 2017.

SOUTH AFRICAN RESERVE BANK**NOTICE 323 OF 2017****THE BANKS ACT, 1990 (ACT NO. 94 OF 1990 – “THE BANKS ACT”)****WITHDRAWAL OF CONSENT TO MAINTAIN A REPRESENTATIVE OFFICE OF A FOREIGN INSTITUTION IN THE REPUBLIC OF SOUTH AFRICA, IN TERMS OF SECTION 34 OF THE BANKS ACT: BANK LEUMI LE-ISRAEL BM**

Notice is hereby given, for general information, that the consent granted to Bank Leumi Le-Israel BM, by the Registrar of Banks, to maintain a representative office of a foreign institution in the Republic of South Africa was withdrawn with effect from 31 January 2017.

SOUTH AFRICAN RESERVE BANK**NOTICE 324 OF 2017****THE BANKS ACT, 1990 (ACT NO. 94 OF 1990 – “THE BANKS ACT”)****WITHDRAWAL OF CONSENT TO MAINTAIN A REPRESENTATIVE OFFICE OF A FOREIGN INSTITUTION IN THE REPUBLIC OF SOUTH AFRICA, IN TERMS OF SECTION 34 OF THE BANKS ACT: UNION BANK OF NIGERIA PLC**

Notice is hereby given, for general information, that the consent granted to Union Bank of Nigeria Plc, by the Registrar of Banks, to maintain a representative office of a foreign institution in the Republic of South Africa was withdrawn with effect from 31 March 2017.

BOARD NOTICES • RAADSKENNISGEWINGS

BOARD NOTICE 56 OF 2017**ROAD ACCIDENT FUND****ADJUSTMENT OF STATUTORY LIMIT IN RESPECT OF CLAIMS FOR LOSS OF INCOME AND LOSS OF SUPPORT**

The Road Accident Fund hereby, in accordance with section 17(4A)(a) of the Road Accident Fund Act, No. 56 of 1996, as amended, adjusts and makes known that the amounts referred to in subsection 17(4)(c) are hereby adjusted to **R 259 810.00**, with effect from **30 April 2017**, to counter the effects of CPI inflation.

Note: The CPI index based on the new “basket and weights” was used to calculate this adjustment, **effective from 30 April 2017** (with base year December 2016 = 100). The rebased CPI index for May 2008 was 62.63. The CPI index for February 2017 was 101.7. This adjustment was calculated by multiplying the R 160 000 limit by 101.7/62.63.

RAADSKENNISGEWING 56 VAN 2017**PADONGELUKFONDS****AANPASSING VAN STATUTÊRE LIMIET TEN OPSIGTE VAN EISE VIR VERLIES AAN INKOMSTE EN ONDERHOUD**

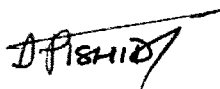
Die Padongelukfonds maak ooreenkomstig artikel 17(4A)(a) van die Padongelukfondswet, No. 56 van 1996, soos gewysig, bekend dat, met effek vanaf **30 April 2017**, die bedrae waarna verwys word in subartikel 17(4)(c) aangepas word tot **R 259 810.00**, ten einde die uitwerking van VPI inflasie teen te werk.

Neem kennis: Die VPI indeks gebasseer op die nuwe “mandjie en gewigte” is gebruik om hierdie aanpassing, **effektief vanaf 30 April 2017**, te bereken (met basisjaar Desember 2016 = 100). Die heraangepaste VPI indeks vir Mei 2008 was 62.63. Die VPI indeks vir Februarie 2017 was 101.7. Hierdie aanpassing was bereken deur die R 160 000 limiet te vermenigvuldig met 101.7/62.63.

BOARD NOTICE 57 OF 2017**FINANCIAL MARKETS ACT, 2012****A2X (PROPRIETARY) LIMITED: EXCHANGE RULES**

I, Dube Phineas Tshidi, Registrar of Securities Services, hereby give notice under section 71(1) of the Financial Markets Act, 2012 (Act No. 19 of 2012) that the exchange rules of A2X (Proprietary) Limited have been published on its official website (www.a2x.co.za) and on the official website of the Financial Services Board (www.fsb.co.za).

The effective date of these rules will be the date of publication of this Notice.

**D P TSHIDI****REGISTRAR OF SECURITIES SERVICES**

BOARD NOTICE 58 OF 2017**FINANCIAL MARKETS ACT, 2012****AMENDMENTS TO THE JSE CONFLICTS OF INTEREST ARRANGEMENTS IN
RESPECT OF THE FOLLOWING RULE BOOKS:****JSE DERIVATIVES RULES;
JSE EQUITIES RULES; AND
JSE INTEREST RATE AND CURRENCY DERIVATIVES RULES**

I, Dube Phineas Tshidi, Registrar of Securities Services, hereby give notice under section 71(3)(c)(ii) of the Financial Markets Act, 2012 (Act No. 19 of 2012) that the amendments to the JSE Rules have been approved. Please be advised that the rules are available on the official website of the Financial Services Board (www.fsb.co.za) and the website of the market infrastructure (www.jse.co.za).

The amendments come into operation on the date of publication of this Notice.


D P TSHIDI**REGISTRAR OF SECURITIES SERVICES**