ANNEXURE "P"

SPATIAL DEVELOPMENT FRAMEWORK

DRAFT CAPE WINELANDS DISTRICT SPATIAL DEVELOPMENT FRAMEWORK

2019/2024

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

Western Cape Government

BETTER [redacted]

MUNICIPAL FINANCIAL IMPACT ANALYSIS CAPE WINELANDS

The Financial Impact of Spatial Growth Patterns

Department of Environmental Affairs and Development Planning for
the Cape Winelands District Municipality

Contents

1) Introduction

The Cape Winelands District Municipality is in the process of drafting a new District Spatial Development Framework, with the intention of adopting the policy before the current LGMTEC cycle concludes. The Department of Environmental Affairs and Development Planning is providing assistance, including an investigation of the financial impact of spatial growth patterns within each Cape Winelands Local Municipality. The investigation involves quantifying the potential financial implications of two spatial growth scenarios, a business-as-usual scenario and a compact development or densification approach, using the Municipal Services Financial Model, developed by PDG for the Department of Local Government, and the Development Bank South Africa. The model is provided as a public resource to assist with planning of infrastructure services.

This study is intended for strategic use only. The results of the model are dependent on many inputs, including current and future infrastructure and service needs, default services costs, and other infrastructure and budget related information. Information for this study has been obtained from Municipal officials, through a questionnaire, STATSSA, Municipal Financial Statements, and other reliable sources. A number of assumptions are made where information is not readily available.

Similar studies have been conducted for the Western Cape Provincial Spatial Development Framework, 2014, the Mossel Bay Growth Study, as well as the Breede Valley Long Term Financial Plan, *inter alia*. The Municipal Financial Sustainability Study for the PSDF contained seven case studies - including the City of Cape Town, Stellenbosch, George, Saldanha Bay, Overstrand, Theewaterskloof and Beaufort West Municipalities.

2) Methodology

As indicated above the Municipal Services Financial Model projects the capital and operating requirement for infrastructure provision in a municipal area over a ten-year period.

The model allows users to define the level of service delivery and estimates the infrastructure costs to identified and future consumers in urban formal, urban informal and rural areas.

The model looks at seven functional groupings, namely: governance, administration, planning and development facilitation (GAPD); public services; housing; water services; electricity; roads and solid waste.

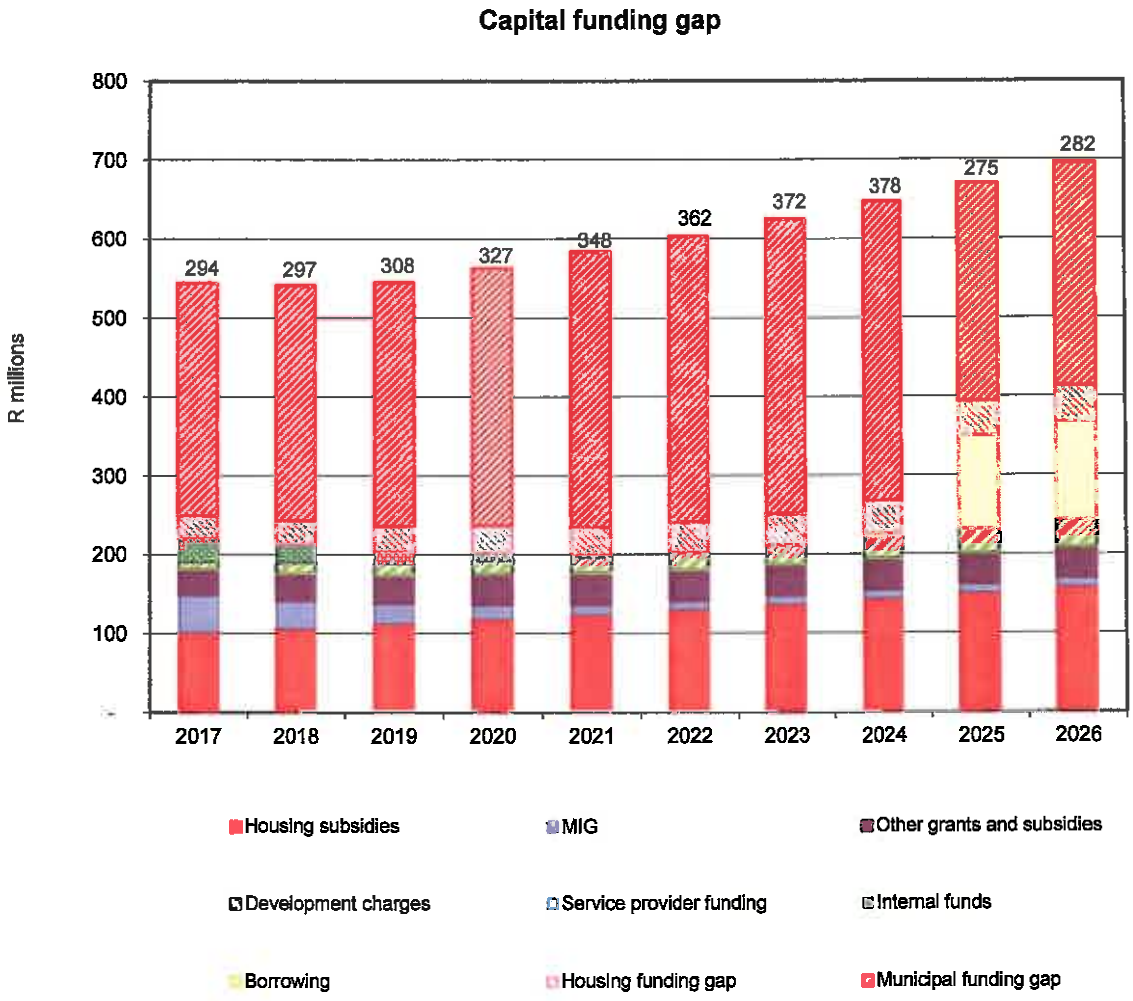
In the case of capital expenditure, the model considers expenditure on new infrastructure (bulk and connector as well as internal infrastructure financed through housing subsidies) and on the rehabilitation of existing infrastructure.

Data used in the model was obtained from a variety of sources. The primary source of information was a survey questionnaire, completed by municipal officials with knowledge and expertise in each of the functional groupings. Other credible information sources such as Statistics South Africa and National Treasury municipal budget and expenditure information have been used. Where data was unavailable, estimates have been used based on national datasets and experience in applying the model to other municipal contexts.

A 2016/17 base year was selected to coincide with CS2016, which is a prominent data source. The base year is the year in which data is entered.

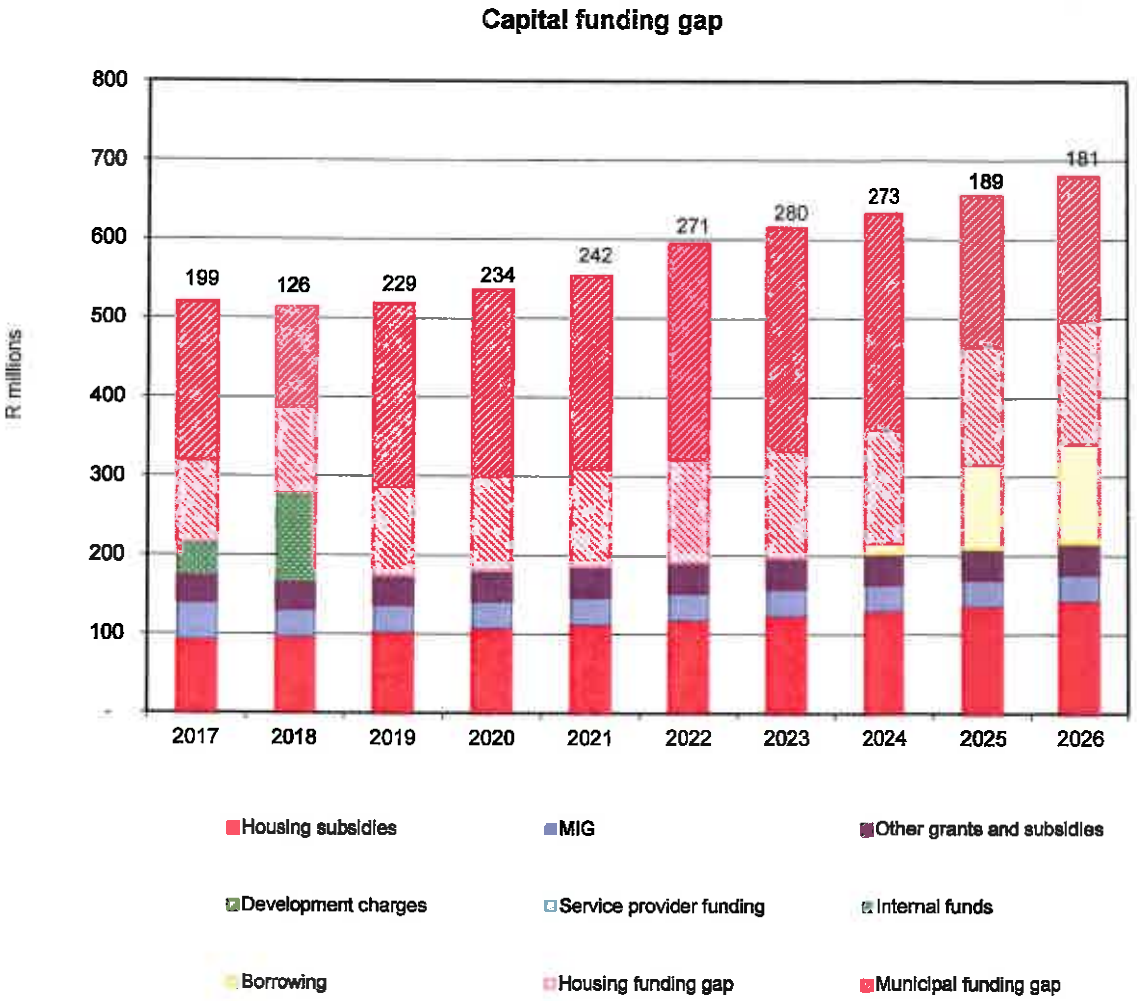
3) Findings

a. Drakenstein Municipality – Business as usual



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*545*	*542*	*546*	*565*	*584*	*604*	*625*	*647*	*671*	*697*
Funding gap	*294*	*297*	*308*	*327*	*348*	*362*	*372*	*378*	*275*	*282*

b. Drakenstein - Densification

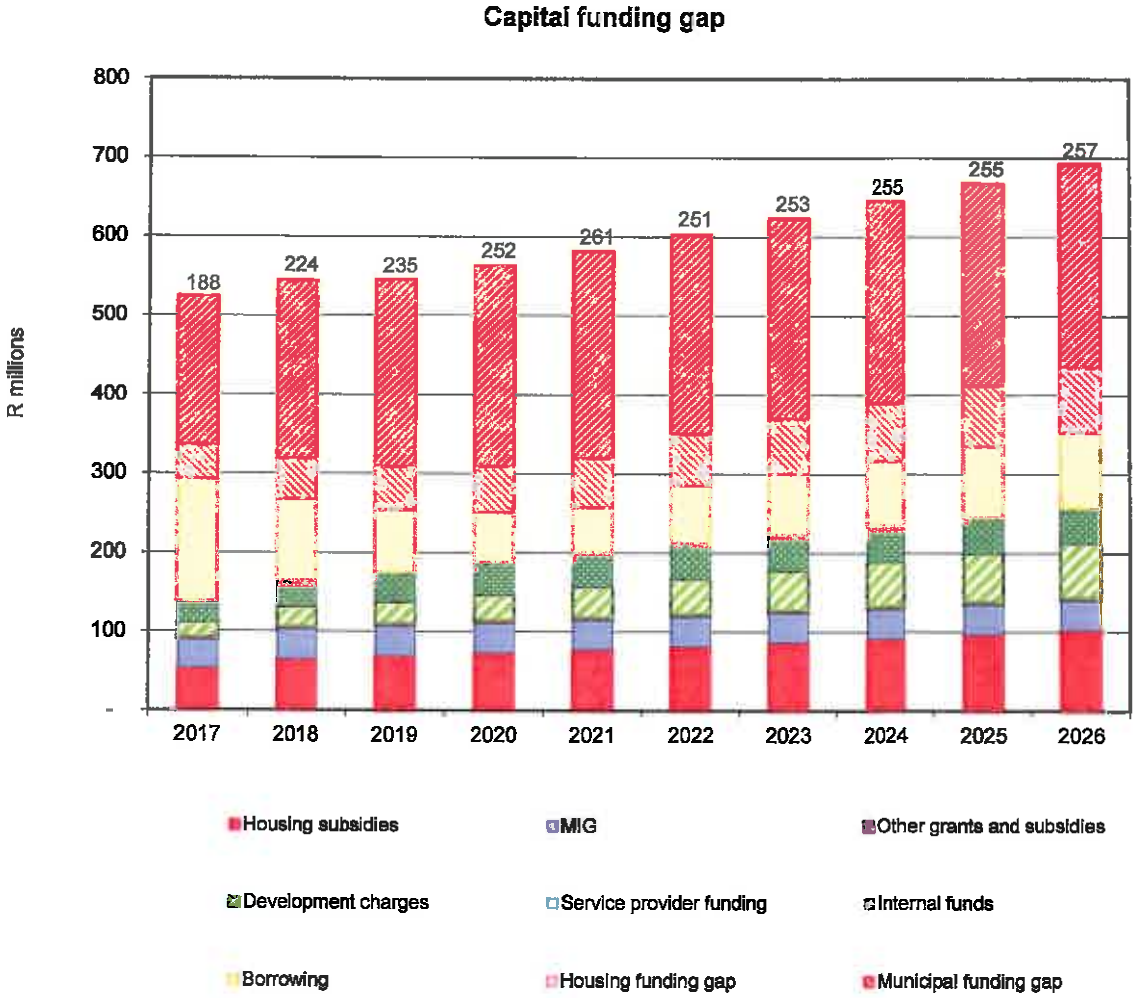


	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*520*	*514*	*519*	*536*	*553*	*594*	*615*	*633*	*656*	*680*
Funding gap	*199*	*126*	*229*	*234*	*242*	*271*	*280*	*273*	*189*	*181*

c. Drakenstein financial analysis

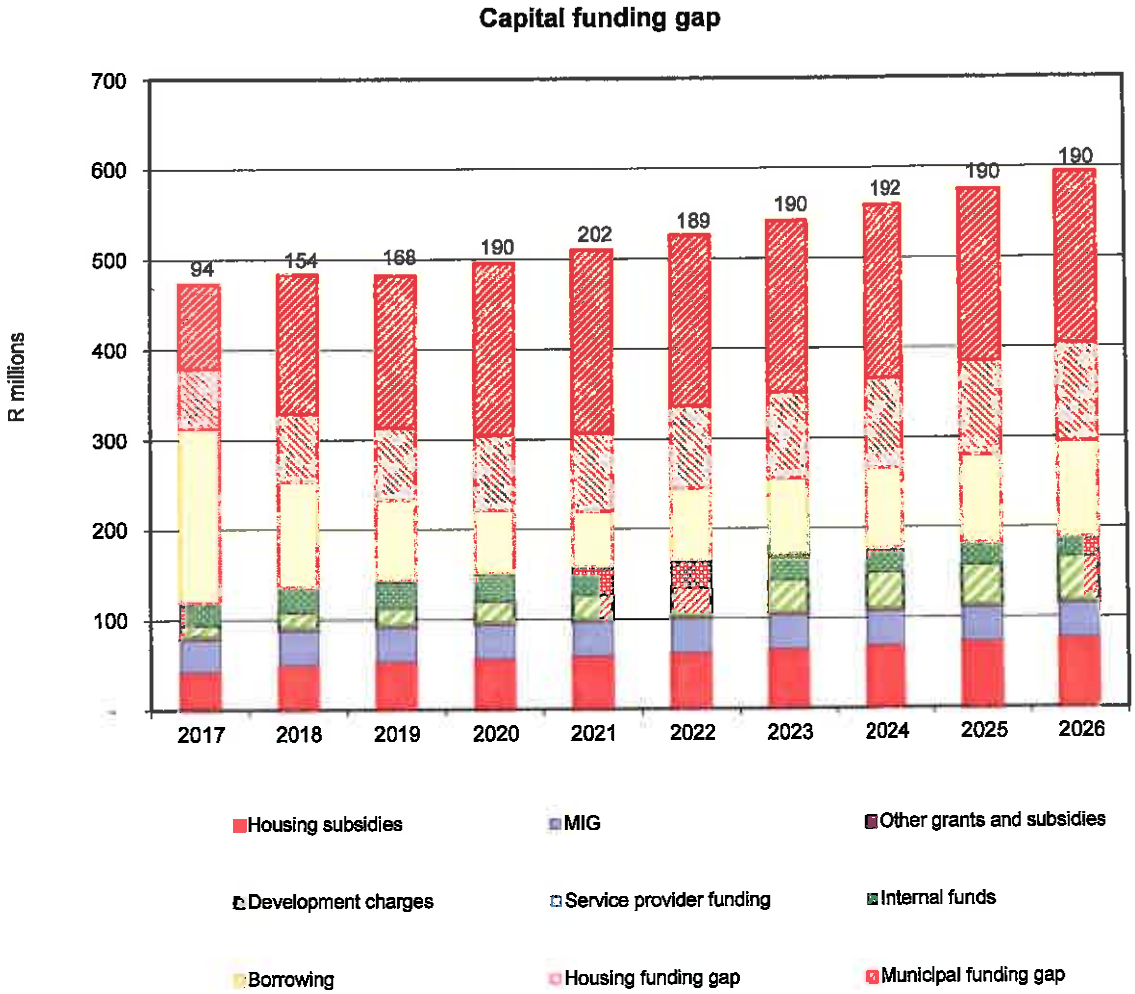
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital finance required – current development trend	545	542	546	565	584	604	625	647	671	697
Capital finance required – Compact development	520	514	519	536	553	594	615	633	656	680
Capital saving	25	28	27	29	31	10	10	14	15	17
Percentage capital saving	4.6%	5.2%	4.9%	5.1	5.3%	1.7%	1.6%	2.2%	2.2%	2.4%
Funding gap – current development trend	294	297	308	327	348	362	372	378	275	282
Funding gap – Compact development	199	126	229	234	242	271	280	273	189	181
Difference in required funding	95	171	79	93	106	91	92	105	86	101
Required funding saving	32.3%	57.6%	25.6%	28.8%	30.5%	25.1%	24.8%	27.8%	31.3%	35.8%

d. Stellenbosch -Business as usual



Total	*524*	*544*	*545*	*563*	*582*	*602*	*623*	*645*	*668*	*693*
Funding gap	*188*	*224*	*235*	*252*	*261*	*251*	*253*	*255*	*255*	*257*

e. Stellenbosch – Densification

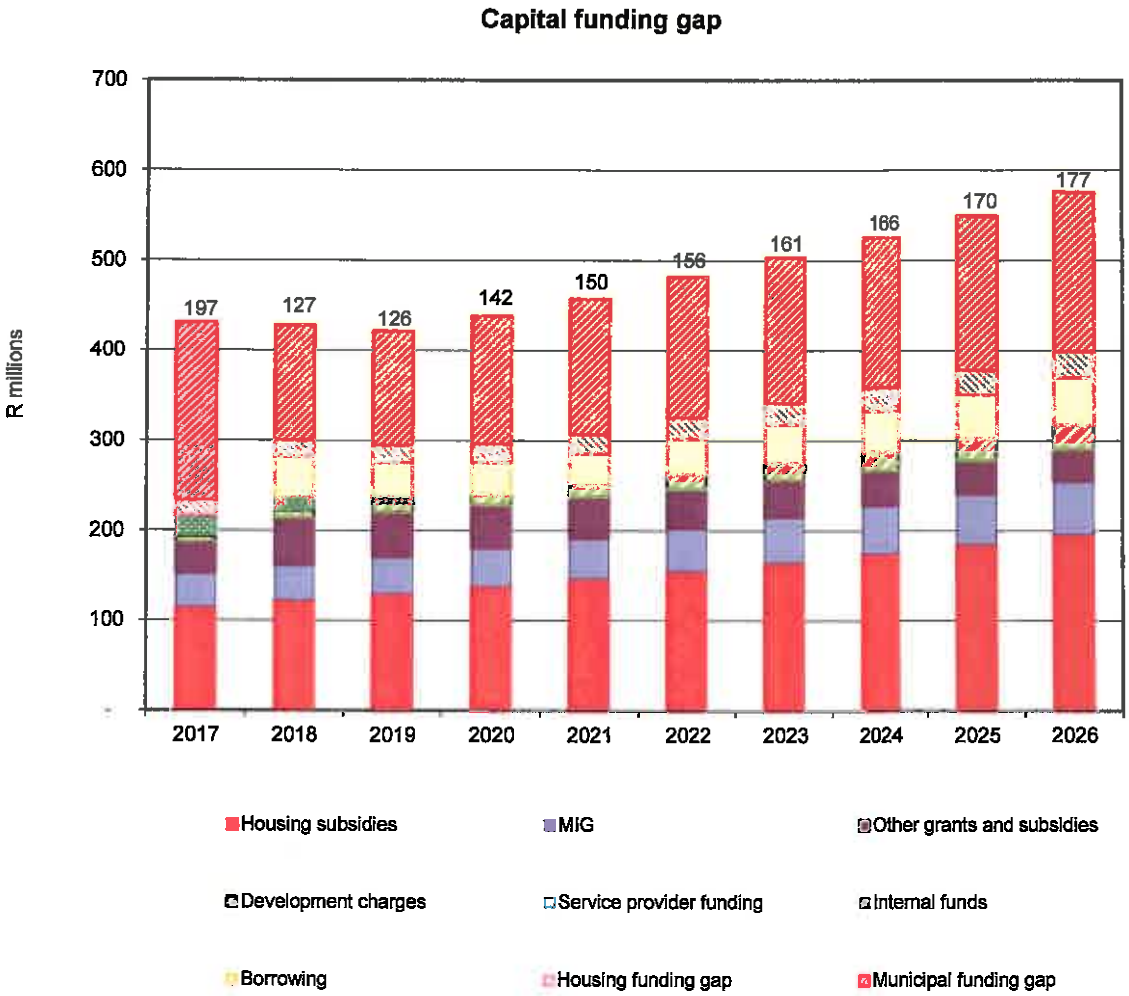


	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*473*	*483*	*482*	*496*	*510*	*526*	*542*	*558*	*576*	*594*
Funding gap	*94*	*154*	*168*	*190*	*202*	*189*	*190*	*192*	*190*	*190*

f. Stellenbosch financial analysis

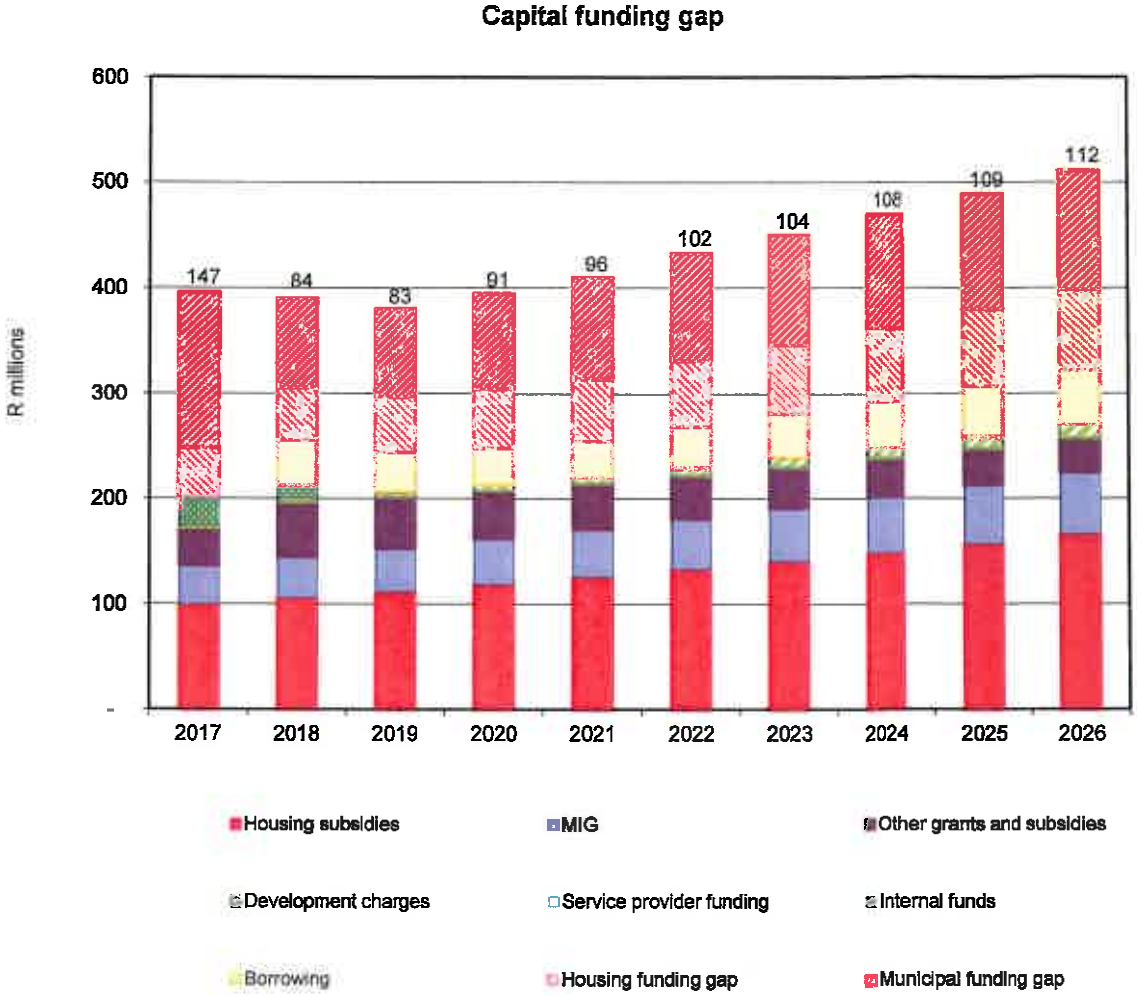
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital finance required – current development trend	524	544	545	563	582	602	623	645	668	693
Capital finance required – Compact development	473	483	482	496	510	526	542	558	576	594
Capital saving	51	61	63	67	72	76	81	87	92	99
Percentage capital saving	9.7%	11.2%	11.6%	11.9	12.3%	12.6%	13%	13.5%	13.8%	14.3%
Funding gap – current development trend	188	224	235	252	261	251	253	255	255	257
Funding gap – Compact development	94	154	168	190	202	189	190	192	190	190
Difference in required funding	94	70	67	62	59	62	63	63	65	67
Required funding saving	50%	31.3%	28.5%	24.6%	22.6%	24.7%	24.9%	24.7%	25.5%	26.1%

g. Breede Valley – Business as usual



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*431*	*428*	*422*	*439*	*458*	*482*	*503*	*526*	*550*	*576*
Funding gap	*197*	*127*	*126*	*142*	*150*	*156*	*161*	*166*	*170*	*177*

h. Breede valley – Densification

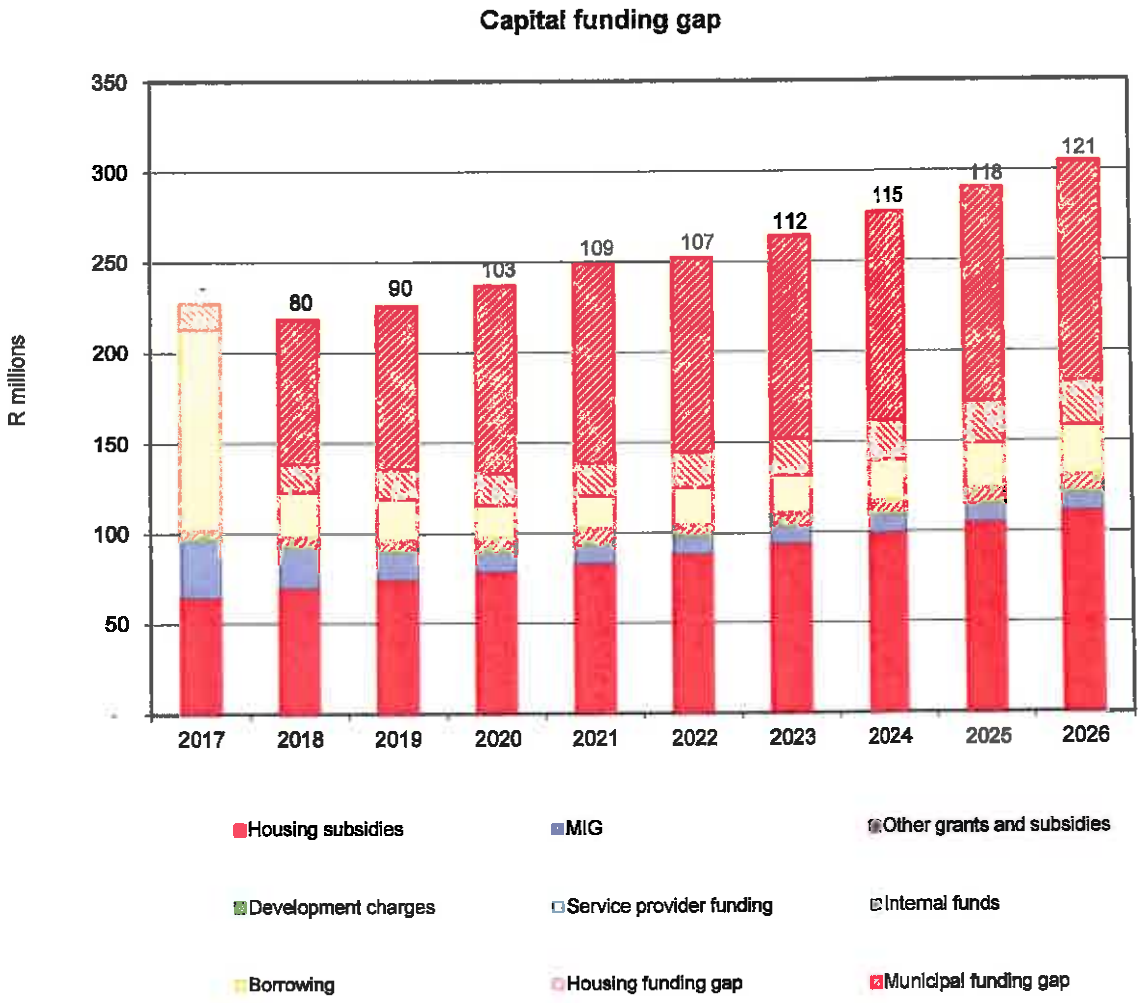


	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*396*	*391*	*381*	*395*	*410*	*433*	*451*	*470*	*490*	*512*
Funding gap	*147*	*84*	*83*	*91*	*96*	*102*	*104*	*108*	*109*	*112*

i. Breede Valley financial analysis

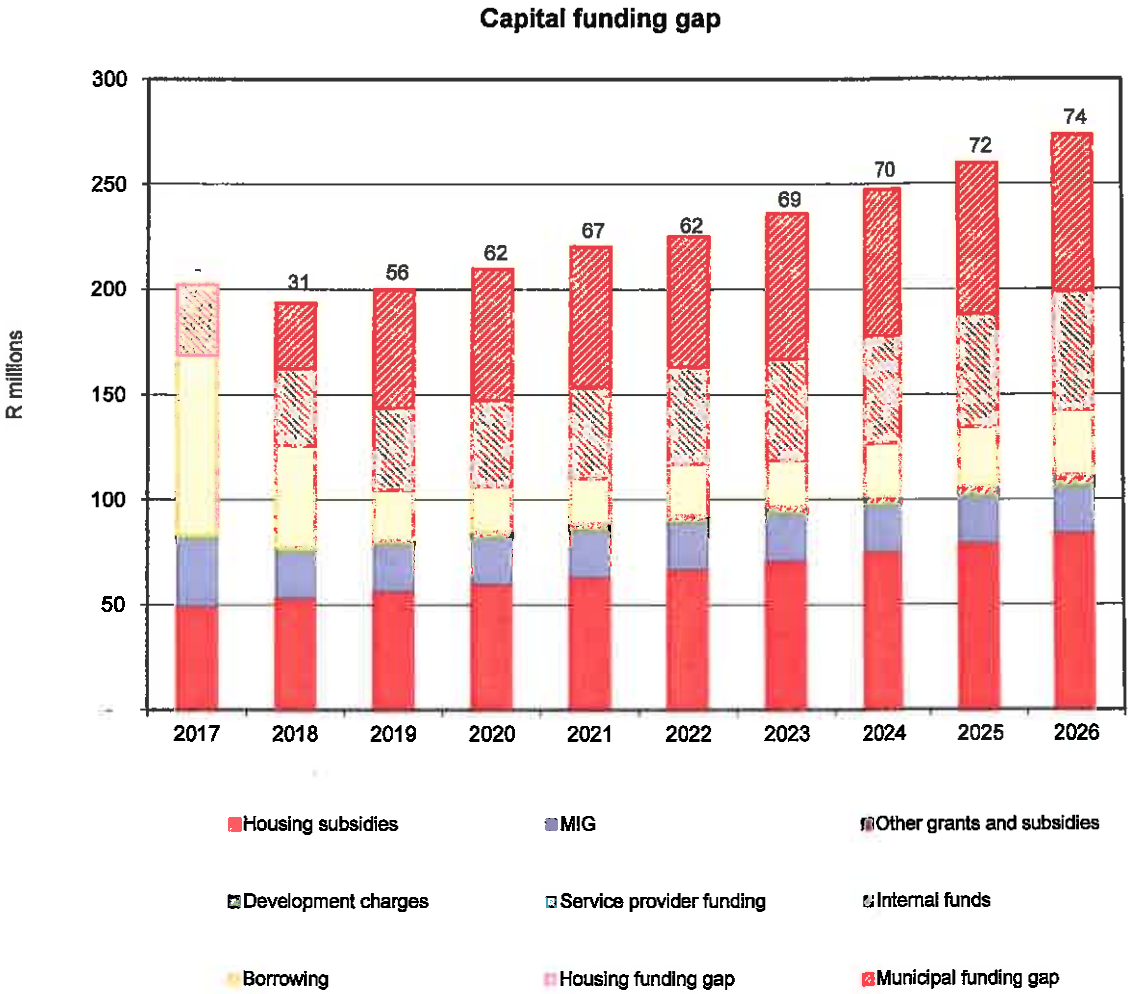
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital finance required – current development trend	431	428	422	439	458	482	503	526	550	576
Capital finance required – Compact development	396	391	381	395	410	433	451	470	490	512
Capital saving	35	37	41	44	48	49	52	56	60	64
Percentage capital saving	8.1%	8.6%	9.7%	10%	10.5%	10.2%	10.3%	10.6%	10.9%	11.1%
Funding gap – current development trend	197	127	126	142	150	156	161	166	170	177
Funding gap – Compact development	147	84	83	91	96	102	104	108	109	112
Difference in required funding	50	43	43	51	54	54	57	58	61	65
Required funding saving	50%	31.3%	28.5%	24.6%	22.6%	24.7%	24.9%	24.7%	25.5%	26.1%

j. Langeberg – Business as usual



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*227*	*219*	*226*	*237*	*249*	*252*	*264*	*277*	*290*	*305*
Funding gap	*-*	*80*	*90*	*103*	*109*	*107*	*112*	*115*	*118*	*121*

k. Langeberg – Densification

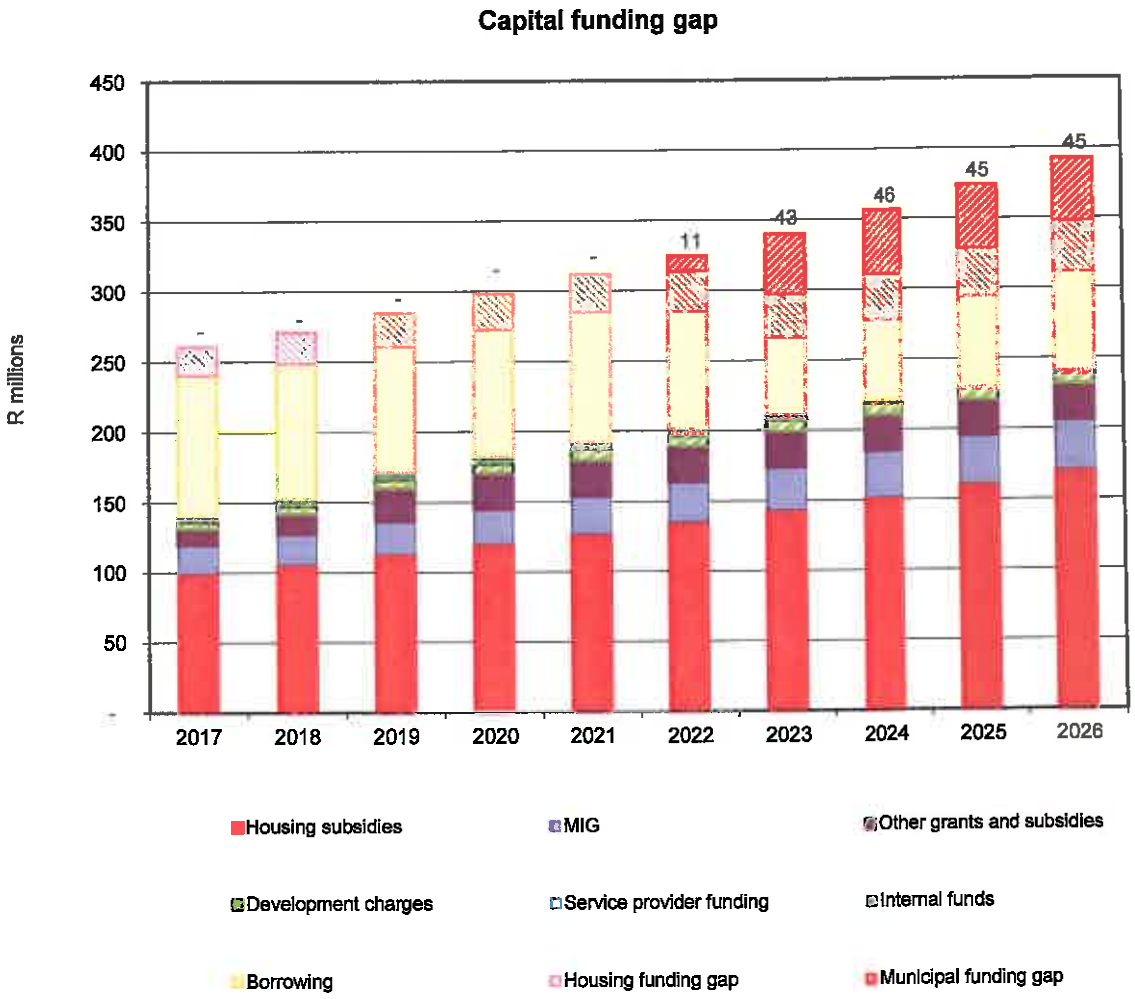


	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*203*	*194*	*200*	*210*	*220*	*225*	*236*	*248*	*260*	*274*
Funding gap	*-*	*31*	*56*	*62*	*67*	*62*	*69*	*70*	*72*	*74*

I. Langeberg financial analysis

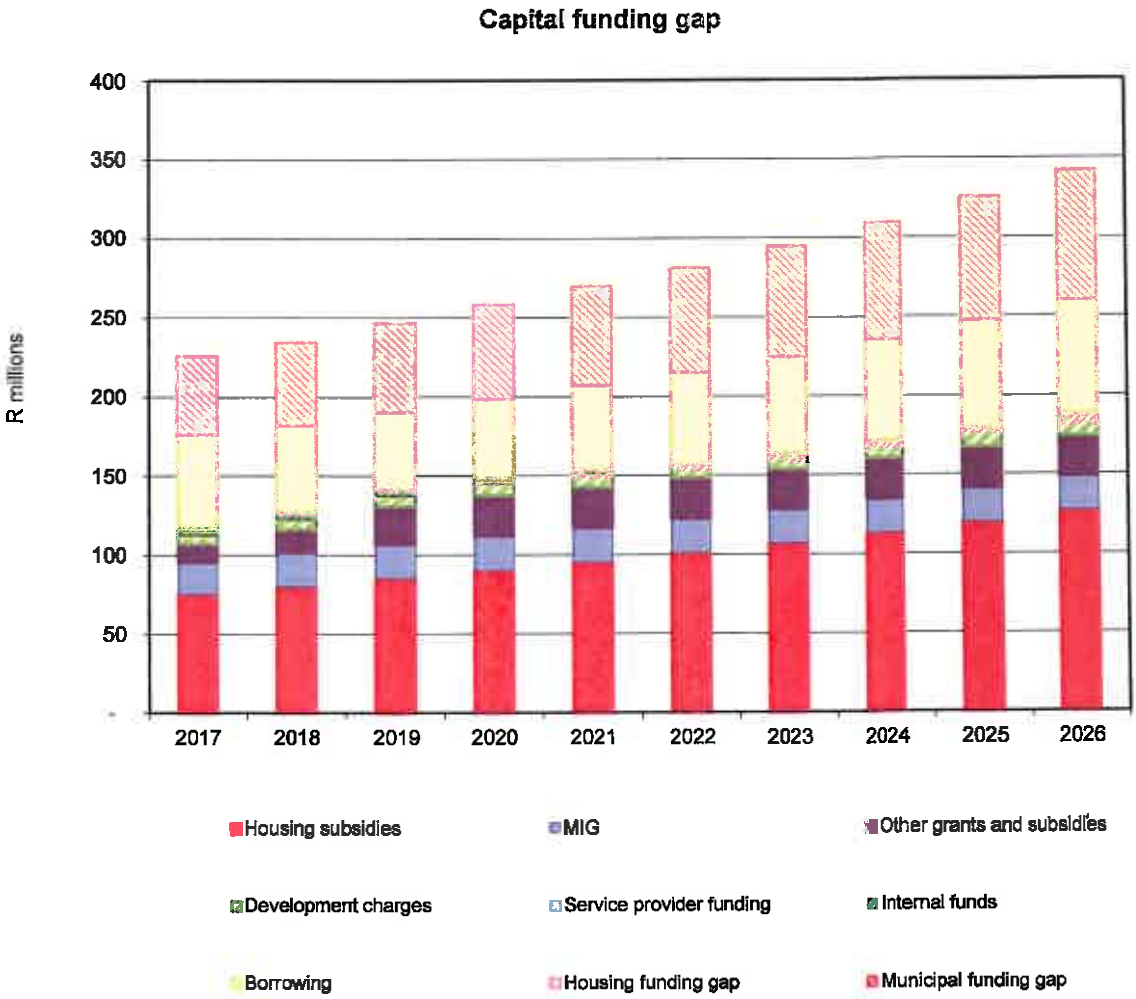
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital finance required – current development trend	227	219	226	237	249	252	264	277	290	305
Capital finance required – Compact development	203	194	200	210	220	225	236	248	260	274
Capital saving	24	25	26	27	29	27	28	29	30	31
Percentage capital saving	10.6%	11.4%	11.5%	11.4%	12.7%	10.7%	10.6%	10.5%	10.3%	10.2%
Funding gap – current development trend	-	80	90	103	109	107	112	115	118	121
Funding gap – Compact development	-	31	56	62	67	62	69	70	72	74
Difference in required funding	-	49	34	41	42	45	43	45	46	47
Required funding saving	-	61.3%	37.8%	39.8%	38.5%	42.1%	38.4%	39.1%	39%	38.7%

m. Witzenberg – Business as usual



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*262*	*272*	*285*	*299*	*313*	*325*	*341*	*357*	*375*	*393*
Funding gap	*-*	*-*	*-*	*-*	*-*	*11*	*43*	*46*	*45*	*45*

n. Witzenberg – Densification



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total	*226*	*235*	*247*	*258*	*270*	*282*	*295*	*310*	*325*	*342*
Funding gap	-	-	-	-	-	-	-	-	-	-

o. Witzenberg financial analysis

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital finance required – current development trend	262	272	285	299	313	325	341	357	375	393
Capital finance required – Compact development	226	235	247	258	270	282	295	310	325	342
Capital saving	36	37	38	41	43	43	46	47	50	51
Percentage capital saving	13.7%	13.6%	13.3%	13.7%	13.7%	13.2%	13.5%	13.2%	13.3%	13%
Funding gap – current development trend	-	-	-	-	-	11	43	46	45	45
Funding gap – Compact development	-	-	-	-	-	-	-	-	-	-
Difference in required funding	-	-	-	-	-	11	43	46	45	45
Required funding saving	-	-	-	-	-	100%	100%	100%	100%	100%

p. Cape Winelands consolidated

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Capital finance required – current development trend	1989	2005	2024	2103	2186	2265	2356	2452	2554	2664	22598
Capital finance required – Compact development	1818	1817	1829	1895	1963	2060	2139	2219	2307	2402	20449
Capital saving	171	188	195	208	223	205	217	233	247	262	2149
Percentage capital saving	8.6%	9.4%	9.6%	9.9%	10.2%	9.1%	9.2%	9.5%	9.7%	9.8%	9.5%
Funding gap – current development trend	679	728	759	824	868	887	941	960	863	882	8391
Funding gap – Compact development	440	395	536	577	607	624	643	643	560	557	5582
Difference in required funding	239	333	223	247	261	263	298	317	303	325	2809
Required funding saving	35.2%	45.7%	29.4%	30%	30.1%	29.7%	31.7%	33%	35.1%	36.8%	33.5%

		2016/17	2017/18	2018/19	2019/20	2019/20
Drakenstein	Transfers recognised - capital	65,400	160,320	74,507	50,037	92,662
	Public contributions & donations	-	-	-	-	-
	Borrowing	453,019	597,245	331,835	173,603	166,183
	Internally generated funds	25,900	81,104	47,699	56,397	68,817
	Total sources of capital funds	**544,360**	**838,669**	**454,040**	**280,037**	**327,662**
Stellenbosch	Transfers recognised - capital	118,377	60,137	82,402	77,453	-
	Public contributions & donations	13,174	-	-	-	-
	Borrowing	-	160,000	80,000	-	-
	Internally generated funds	351,029	197,920	157,112	149,420	-
	Total sources of capital funds	**482,580**	**418,057**	**319,514**	**226,873**	**-**
Breede Valley	Transfers recognised - capital	-	147,951	99,296	123,972	-
	Public contributions & donations	-	-	-	-	-
	Borrowing	-	24,298	-	-	-
	Internally generated funds	-	84,331	78,735	40,921	54,958
	Total sources of capital funds	-	**256,560**	**178,031**	**164,893**	**54,958**
Langeberg	Transfers recognised - capital	-	29,295	29,743	21,342	22,790
	Public contributions & donations	-	-	-	-	-
	Borrowing	-	-	20,124	14,876	-
	Internally generated funds	-	24,526	38,244	27,324	8,850
	Total sources of capital funds	-	**53,821**	**88,111**	**63,541**	**31,640**
Witzenberg	Transfers recognised - capital	38,670	34,670	49,092	47,271	32,923
	Public contributions & donations	54,014	-	-	-	-
	Borrowing	-	3,526	1,550	3,000	-
	Internally generated funds	22,558	27,397	25,333	20,233	10,165
	Total sources of capital funds	**115,242**	**65,593**	**75,975**	**70,504**	**43,088**

In both scenarios, the capital needed to fund new infrastructure or maintain and rehabilitate existing infrastructure for development growth over the next ten years far outweighs the available capital in all municipalities in the Cape Winelands. The total capital cost for development with the current generally sprawling growth patterns is R22,5 billion, with an anticipated saving of over R2,1 billion over the same period with a densified, compact development approach. This equates to a saving of almost 10% on the capital required to accommodate growth in the district over the next 10 years.

The category B1 municipalities, Drakenstein and Stellenbosch, have the highest capital budgets to service the needs of current and future populations. These are the growth nodes and fastest growing municipalities in the district. A compact development approach is even more critical in these municipalities to minimise future financial risk, and savings could be significant.

Most municipalities could see capital savings of between 5% and 15% per year.

ANNEXURE 2: CAPE WINELANDS DISTRICT CAPITAL INVESTMENT FRAMEWORK

2019/2024

CAPE WINELANDS DISTRICT
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CONTENT

1. CAPE WINELANDS DISTRICT MUNICIPALITIES PROVINCIAL INFRASTRUCTURE EXPENDITURE AND TRANSFERS FOR 2018/2019

The Local Government Municipal Systems Act (32 of 2000) requires that a Municipal Spatial Development Framework must have a Capital Investment Framework that projects current and future spending on capital/infrastructure projects. The capital transfers listed in this document is not directly linked to strategic proposals, it contains the outcomes of provincial forward planning emanating from higher order provincial strategies and policies.

For **Cape Winelands District Municipalities**, the adjustments published in November 2018 shows a general upward and unchanged trend. The table below sets out more detail. [1]

Note: Your attention is drawn to the fact that the infrastructure projects are in various stages of planning and implementation and the information may be subject to change, depending on fiscal constraints and the availability of resources.

The summary of planned infrastructure expenditure and transfers to municipalities, as outlined in the Adjusted Estimates of Provincial Expenditure 2018 and Provincial Gazette Extraordinary 8005, 22 November 2018 are as follows:

i. The adjusted infrastructure budget of the **Department of Transport and Public Works** decreases for the 2018/19 period and the total adjusted appropriation amounts to R184, 382million. Note the department added five (5) additional planned projects, which is indicated in green in the tables below.

ii. The adjusted infrastructure budget of the **Department of Health** decreases for the 2018/19 period and the total adjusted appropriation amounts to R18, 170million. Note the department added an additional four (4) planned projects, which is indicated in green in the tables below.

iii. The adjusted infrastructure budget of the **Western Cape Department of Education** decreases for the 2018/19 period and the total adjusted appropriation amounts to R12, 950million. Note the department added an additional six (6) planned projects, which is indicated in green in the tables below.

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[1] Western Cape Government: Provincial Treasury. Adjustment Estimates of Provincial Revenue and Expenditure, 2018. ISBN 978-0-621-46880-9. Published 22 November 2018 and Provincial Gazette Extraordinary 8005 published 22 November 2018.

1.1 Cape Winelands District: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Transport and Public W	Provincial infrastructure payments and estimates	Twee Jonge Gesellen DM	Cape Winelands Distri	7,400	3,600	11,000	
Transport and Public W	Provincial infrastructure payments and estimates	CW DM regravel	Cape Winelands Distri	1,450	25,050	26,500	
Transport and Public W	Provincial infrastructure payments and estimates	CW DM reseal	Cape Winelands Distri	4,995	11,900	16,895	
Transport and Public W	Provincial infrastructure payments and estimates	Maintenance CW DM	Cape Winelands Distri	-3,000	62,000	59,000	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Cape Winelands Distri	-74	74	0	
Local Government	Transfers to local government	Local Government graduate internship grant	Cape Winelands Distri	72	0	72	
Local Government	Transfers to local government	Municipal service delivery and capacity building grant	Cape Winelands Distri	400	0	400	

1.2 Breede Valley: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Education	Provincial infrastructure payments and estimates	Worcester HS	Breede Valley	650	0	650	
Education	Provincial infrastructure payments and estimates	Zwelethemba SS	Breede Valley	750	0	750	
Health	Provincial infrastructure payments and estimates	De Doorns - De Doorns Ambulance Station - Replacement	Breede Valley	-3,187	3,500	313	
Health	Provincial infrastructure payments and estimates	Worcester - Avian Park Clinic - New	Breede Valley	-15	800	785	
Health	Provincial infrastructure payments and estimates	De Doorns - De Doorns CDC - Upgrade and Additions	Breede Valley	634	50	684	
Health	Provincial infrastructure payments and estimates	Worcester - Worcester CDC - Dental Suite Additions and Alterations	Breede Valley	127	1	128	
Health	Provincial infrastructure payments and estimates	Worcester - WCCN Boland Campus - Nurses Accommodation at Erica Hostel, R & R	Breede Valley	-100	600	500	
Health	Provincial infrastructure payments and estimates	Worcester - Worcester Hospital - Fire Compliance	Breede Valley	-2,085	3,000	915	
Health	Provincial infrastructure payments and estimates	Worcester - Worcester Hospital - Relocation of MOU	Breede Valley	-15	150	135	
Health	Provincial infrastructure payments and estimates	Worcester - Worcester Hospital - Upgrade Ph5	Breede Valley	984	200	1,184	
Health	Provincial infrastructure payments and estimates	Touwsrivier - Touwsrivier Ambulance Station - HT - General upgrade, extension for wash bay, and	Breede Valley	109	200	309	
Social Development	Provincial infrastructure payments and estimates	De Pyp	Breede Valley	53	0	53	
Social Development	Provincial infrastructure payments and estimates	Mooihoek	Breede Valley	88	0	88	
Social Development	Provincial infrastructure payments and estimates	Weltervrede	Breede Valley	49	0	49	
Human Settlements	Transfers to local government	Human Settlements Development grant (Beneficiaries)	Breede Valley	-13,260	118,080	104,820	
Human Settlements	Transfers to local government	Title deeds restoration grant	Breede Valley	1,334	0	1,334	
Transport and Public W	Provincial infrastructure payments and estimates	Worcester - Kleinplasie - Upgrading of electrical	Breede Valley	658	4,000	4,658	
Transport and Public W	Provincial infrastructure payments and estimates	C1051.2 Worcester area	Breede Valley	130	0	130	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Breede Valley	-93	93	0	
Local Government	Transfers to local government	Municipal service delivery and capacity building grant	Breede Valley	750	0	750	
Local Government	Transfers to local government	Local Government graduate internship grant	Breede Valley	72	0	72	

1.3 Drakenstein: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Education	Provincial infrastructure payments and estimates	Dal Josaphat PS	Drakenstein	-1,500	2,500	1,000	
Education	Provincial infrastructure payments and estimates	Wellington PS	Drakenstein	150	0	150	
Health	Provincial infrastructure payments and estimates	Gouda - Gouda Clinic - Replacement	Drakenstein	667	250	917	
Health	Provincial infrastructure payments and estimates	Paarl - Paarl CDC - New	Drakenstein	100	399	499	
Health	Provincial infrastructure payments and estimates	Paarl - Paarl Hospital - Acute Psychiatric Unit	Drakenstein	160	0	160	
Health	Provincial infrastructure payments and estimates	Wellington - Wellington CDC - Pharmacy Additions and Alterations	Drakenstein	488	681	1,169	
Health	Provincial infrastructure payments and estimates	Wellington - Windmeul Clinic - Upgrade and Additions	Drakenstein	-1,148	1,200	52	
Health	Provincial infrastructure payments and estimates	Wellington - Saron Clinic - HT - General maintenance and upgrade (Alpha)	Drakenstein	255	400	655	
Social Development	Provincial infrastructure payments and estimates	Stzamile Educare	Drakenstein	173	0	173	
Social Development	Provincial infrastructure payments and estimates	Khanyisa Day Care	Drakenstein	102	0	102	
Human Settlements	Transfers to local government	Human Settlements Development grant (Beneficiaries)	Drakenstein	-7,730	101,810	94,080	
Human Settlements	Transfers to local government	Provincial contribution towards the acceleration of housing delivery	Drakenstein	17,325	0	17,325	
Human Settlements	Transfers to local government	Title deeds restoration grant	Drakenstein	2,784	0	2,784	
Transport and Public	Provincial infrastructure payments and estimates	C999 Suid Agter Paarl Road	Drakenstein	2,728	0	2,728	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Drakenstein	-111	111	0	
Local Government	Transfers to local government	Local Government graduate internship grant	Drakenstein	72	0	72	

1.4 Langeberg: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Education	Provincial infrastructure payments and estimates	Bonnievale PS	Langeberg	100	0	100	
Education	Provincial infrastructure payments and estimates	Jakes Gerwel HS (Bonnievale)	Langeberg	5,000	1,000	6,000	
Education	Provincial infrastructure payments and estimates	Wakkerstroom Wes PS	Langeberg	750	0	750	
Education	Provincial infrastructure payments and estimates	Wakkerstroom Wes PS	Langeberg	-2,000	2,000	0	
Human Settlements	Transfers to local government	Human Settlements Development grant (Beneficiaries)	Langeberg	23,340	20,290	43,630	
Human Settlements	Transfers to local government	Title deeds restoration grant	Langeberg	845	0	845	
Transport and Public W	Provincial infrastructure payments and estimates	C1050 1 Montagu area	Langeberg	268	300	568	
Transport and Public W	Provincial infrastructure payments and estimates	C818 Ashton-Montagu	Langeberg	-128,812	180,000	51,188	
Transport and Public W	Provincial infrastructure payments and estimates	C1054 5 Robertson area	Langeberg	322	0	322	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Langeberg	-19	19	0	

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1.5 Stellenbosch: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Health	Provincial infrastructure payments and estimates	Stellenbosch - Stellenbosch Hospital - EC Upgrade and Additions	Stellenbosch	-11	500	489	
Health	Provincial infrastructure payments and estimates	Stellenbosch - Stellenbosch Hospital - Hospital and Stores Repairs and Renovation	Stellenbosch	379	100	479	
Health	Provincial infrastructure payments and estimates	Stellenbosch - Stellenbosch Hospital - HT - EC Upgrade and Additions	Stellenbosch	-200	200	0	
Health	Provincial infrastructure payments and estimates	Stellenbosch - Stellenbosch Hospital - OD and QA - Replacement	Stellenbosch	220	0	220	
Human Settlements	Transfers to local government	Title deeds restoration grant	Stellenbosch	1,650	0	1,650	
Transport and Public W	Provincial infrastructure payments and estimates	Elsenburg New Research Facility	Stellenbosch	-5,012	10,000	4,988	
Transport and Public W	Provincial infrastructure payments and estimates	Elsenburg Sewer and Water Upgrade	Stellenbosch	1,894	300	2,194	
Transport and Public W	Provincial infrastructure payments and estimates	Stellenbosch- Assegaaibosch Nature Reserve - New Security Fence	Stellenbosch	426	1,550	1,976	
Transport and Public W	Provincial infrastructure payments and estimates	Stellenbosch - Elsenburg Farms - Access Control Security	Stellenbosch	-316	316	0	
Transport and Public W	Provincial infrastructure payments and estimates	C914.1 Spier Road	Stellenbosch	794	0	794	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Stellenbosch	-56	56	0	
Local Government	Transfers to local government	Local Government graduate internship grant	Stellenbosch	72	0	72	

1.6 Witzenberg: Adjusted provincial infrastructure expenditure and transfers for 2018/19 (R'000)

DEPARTMENT	CATEGORY OF PAYMENT	PROGRAMME NAME	MUNICIPALITIES	ADJ AMOUNT (R'000)	MAIN APPROPRIATION 2018/19 (R'000)	ADJ APPROPRIATION 2018/19 (R'000)	DIRECTION OF CHANGE
Education	Provincial infrastructure payments and estimates	Cloetesville PS	Witzenberg	-26,000	26,000	0	
Education	Provincial infrastructure payments and estimates	Tulbagh HS	Witzenberg	-2,500	5,000	2,500	
Education	Provincial infrastructure payments and estimates	Tulbagh PS	Witzenberg	300	0	300	
Education	Provincial infrastructure payments and estimates	Waveren SS	Witzenberg	-250	1,000	750	
Health	Provincial infrastructure payments and estimates	Prince Alfred Hamlet - Prince Alfred Hamlet Clinic - Replacement	Witzenberg	-639	2,000	1,361	
Health	Provincial infrastructure payments and estimates	Wolseley - Wolseley Clinic - Replacement	Witzenberg	1,255	5,060	6,315	
Health	Provincial infrastructure payments and estimates	Ceres - Ceres Hospital - New Acute Psychiatric Ward	Witzenberg	80	160	240	
Health	Provincial infrastructure payments and estimates	Ceres - Ceres Hospital - Hospital and Nurses Home Repairs and Renovation	Witzenberg	491	50	541	
Health	Provincial infrastructure payments and estimates	Prince Alfred Hamlet - Prince Alfred Hamlet Clinic - OD and QA - Replacement	Witzenberg	60	0	60	
Health	Provincial infrastructure payments and estimates	Wolseley - Wolseley Clinic - OD and QA - Replacement	Witzenberg	60	0	60	
Human Settlements	Transfers to local government	Human Settlements Development grant (Beneficiaries)	Witzenberg	-5,000	32,839	27,839	
Environmental Affairs	Transfers to local government	RSEP/VPUU municipal projects	Witzenberg	-2,000	2,000	0	
Transport and Public W	Provincial infrastructure payments and estimates	C997 Wolseley reseal	Witzenberg	1,441	0	1,441	
Local Government	Transfers to local government	Community development workers (CDW) operational support grant	Witzenberg	-148	148	0	

Any further queries may be directed to Chantel Hauptfleisch at telephone number 021-483 0783 or vial email at chantel.hauptfleisch@westerncape.gov.za or alternatively to Helena Jacobs on landline at 021-483-5167 or via email at: helena.jacobs@westerncape.gov.za.

ANNEXURE 3: CAPE WINELANDS CLIMATE CHANGE SUMMARY REPORT

2019/2024

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

Cape Winelands District Municipality

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

A Unified Cape Winelands of Excellence!

Climate Change Adaption Summary Report

November 2017

Draft Version

Developed through the Local Government Climate Change Support Program

This climate change plan was developed through the Department of Environmental Affairs, Local Government Climate Change Support Program (LGCCSP). The LGCCSP is part of the International Climate Initiative (IKI) and is supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

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1 Executive Summary

Cape Winelands District Municipality recognises climate change as a threat to the environment, its residents, and to future development. Therefore, measures should be implemented to reduce or eliminate carbon emissions and enhance greenhouse gas sinks (mitigation) (Böckmann, M 2015). However, due to lag times in the climate and biophysical systems, the positive impacts of past and current mitigation will only be noticeable in the next 25 years (Jiri, O 2016). In the meanwhile, adaptation is regarded as inevitable and a necessary response to the changes that are projected to take place in the District. Cape Winelands District Municipality has therefore prioritised the development of a Climate Change Vulnerability Assessment and Climate Change Response Plan.

The Climate Change Vulnerability Assessment and Response Plan was developed through the Local Government Climate Change Support (LGCCS) program (http://www.letsrespondtoolkit.org/), led by the Department of Environmental Affairs. The LGCCSP is part of the International Climate Initiative (IKI) and is supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

Through this program key climate change vulnerability indicators for the Cape Winelands District Municipality were identified. These indicators demonstrate areas that may be at high risk of climate change impacts.

A summary of the key vulnerability indicators is provided in the table below.

Table 1: Key Vulnerability Indicators for Cape Winelands District Municipality

No	Sector	Generic Indicator Title	Exposure Answer	Sensitivity Answer	Adaptive Capacity Answer
5	Agriculture	Change in viticulture (grapes) production	Yes	High	Low
6	Agriculture	Change in fruit production	Yes	High	Low
10	Agriculture	Increased risks to livestock	Yes	High	Low
12	Biodiversity and Environment	Loss of High Priority Biomes	Yes	High	Low
14	Biodiversity and Environment	Increased impacts on environment due to land-use change	Yes	High	Low
28	Human Settlements, Infrastructure and Disaster Management	Loss of industrial and labour productivity	Yes	High	Low
29	Human Settlements, Infrastructure and Disaster Management	Increased impacts on strategic infrastructure	Yes	High	Low

No	Sector	Name Indicator Title	Exposure Answer	Sensitivity Answer	Adaptive Capacity Answer
30	Human Settlements, Infrastructure and Disaster Management	Increased impacts on traditional and informal dwellings	Yes	High	Low
31	Human Settlements, Infrastructure and Disaster Management	Increased isolation of rural communities	Yes	High	Low
36	Water	Decreased water quality in ecosystem due to floods and droughts	Yes	High	Low
37	Water	Less water available for irrigation and drinking	Yes	High	Low

Based on the key indicators identified in the table above, the following sub-projects and actions are prioritised as a response to each of the indicators.

1.1 Agriculture

The Cape Winelands District Municipality's agricultural sector will be adversely affected by climate change. Increased temperatures, drought, and the increase in frequency and severity of storm events will impact on the crops that can be grown and potentially result in a loss of livestock.

The following key agricultural indicators, sub-projects and actions were identified:

Project	Sub-Project
Manage the change in viticulture (grapes) production	Commission research and improve understanding of climate change impacts on viticulture production.
	Optimise climate resilient land-uses of existing agricultural areas.
	Promote knowledge generation, knowledge sharing, stakeholder participation and raise awareness regarding alternative agricultural production in the western and southern Cape.
	Promote knowledge generation, knowledge sharing, stakeholder participation and raise awareness regarding viticulture in new growth areas.
Manage the change in fruit production	Generate and share scientific, social and indigenous knowledge that will minimise the loss of areas suitable for the growth of fruit.
	Identify climate resilient land-uses that will support new agricultural opportunities that will minimise the new areas and new crops thus reducing climate change impacts on current agricultural potential.
	Implement evidence based monitoring initiatives that feed into the management systems for fruit production.

Project	Sub-Project
Manage increasing risks to livestock	Promote knowledge generation, knowledge sharing, stakeholder participation and raise awareness regarding the decline in suitable areas for the growth of fruit.
	Research and improve understanding of climate change impacts on fruit.
	Strengthen management plans, to enable continuous monitoring and the ability to effectively respond to change.
	Commission research and improve understanding of how climate change impacts livestock and land availability.
	Develop a framework that will assist and educate farmers with adjusting to reduced rainfall.
	Generate and share scientific, social and indigenous knowledge that will assist with adapting to the reduction in herbage yields.
	Improve collaboration and partnership on existing programs (e.g. LandCare Programme, EPWP and River Health Programmes).
	Strengthen management plans, to enable continuous monitoring of water and herbage availability for livestock.

1.2 Biodiversity and Environment

Climate change predictions include the shifting of biomes across South Africa.

The following key biodiversity indicator, sub-project and actions were identified:

Project	Sub-Project
Manage Loss of High Priority Biomes	Implementation of fire breaks in local municipalities (Langeberg) by 2022 through the Disaster Management Unit.
	Identification/Inclusion of high priority biomes in local Spatial Development Frameworks during the review process.
Manage Increased impacts on environment due to land-use change	Develop programmes to diversify community livelihoods strategies to earn income from activities such as ecotourism and other non-farming activities.
	Incentivize small scale farmers to practice sustainable and conservation agriculture
	Incorporate sustainable land use management and planning into other sectors' plans.
	Research and improve understanding of land use change in the municipality.
	Strengthen institutional capacity to deal with pressure on land use change.

1.3 Disaster Management, Infrastructure and Human Settlements

Climate change will affect Disaster Management, Infrastructure and Human Settlements in several ways in Cape Winelands District Municipality. Increases in the severity of storm events and an increase in flooding will damage infrastructure which may result in a loss of industrial productivity

and service delivery. The impacts of storm events will particularly affect communities located in informal settlements, on flood plains and where there is poor drainage infrastructure. In addition, communities in rural areas that depend on subsistence farming may be unable to grow crops that they have grown in the past due to the changing climate. It is predicted therefore, that there will be an increase in rates of rural-urban migration. Rural communities may also become more physically isolated due to extreme events impacting on key infrastructure.

The following key human settlement indicators, sub-projects and actions were identified:

Project	Sub-Project
Manage potential loss of industrial and labour productivity.	Research and implement water efficiency projects in industrial processes.
Manage potential increased impacts on strategic infrastructure.	Implement a water augmentation project that will help reduce reliance on surface water and seek alternative sources of water (e.g. recycling of water).
	Upgrade and maintain storm water infrastructure so that it considers extreme weather events such as flooding.
	Upgrading and maintenance of road infrastructure.
Manage increased impacts on traditional and informal dwellings	Develop and upgrade informal settlements.
	Partner with research institutions to implement a research project to develop a model aimed at achieving sustainable informal settlements with lower risk exposure.
Manage potential increased isolation of rural communities.	Build Climate change resilient road infrastructure that serves as a link for rural areas.
	Develop economic nodes and improved service provision in rural areas to improve connectivity.
	Identify alternative access routes to rural communities.
	Identify local responses that will reduce isolation of rural communities.
	Identify roads at risk of flooding and erosion and prioritise those for upgrading and maintenance.
	Implement flood drainage systems that will reduce impacts on rural roads.

1.4 Water

Water resources are the primary medium through which climate change impacts will be felt by South Africans (Schulze et al., 2014). Climate change will affect Cape Winelands District Municipality's water accessibility, quantity, and quality (Parikh, J 2007) through drought, reduced runoff, increased evaporation, and an increase in flood events.

The following key water indicators, sub-projects and actions were identified:

Project	Sub-Project
Manage decreased water quality in ecosystem.	Invasive aquatic weeds removal and management in Berg and Breede Rivers by the Cape Winelands District Municipality, B municipalities, DOWA, property/landowners and water user associations. Continuous clearing should be done annually between September and April. The specific area to be targeted is between the R45 and Herman.
Manage the quantity of water available for irrigation and drinking.	Cape Winelands District Municipality to facilitate research into the re-use of wastewater within the District Municipality, with B-municipalities indicating which towns should be included in the research. The economic viability and quantities are important selection criteria. The replenishment of aquifers by infusion of purified waste water should form part of the research. Implementation by relevant Engineering Departments of B-municipalities.
	Cape Winelands District Municipality to facilitate the assessment of existing infrastructure for water storage. Implementation by Engineering Departments of B-municipalities.
	Increase alien clearing in catchments located throughout the entire District and B municipalities in partnership with Department of Water and Sanitation and the LandCare Programme.

2 Introduction

This document outlines key climate change vulnerabilities and responses to address these vulnerabilities for Cape Winelands District Municipality. The Climate Change Vulnerability Assessment and Response Plan were developed through the Local Government Climate Change Support Program (LGCCSP), an initiative of the National Department of Environmental Affairs and the International Climate Initiative (IKI) and is supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

The three primary objectives of the LGCCSP are to:

- Undertake a desktop analysis of the municipality to provide context on change vulnerabilities and responses;
- Undertake district municipal specific engagements to draft climate change vulnerabilities and responses;
- Facilitate capacity building and knowledge-transfer throughout the program to enhance implementation of prioritised climate change adaptation options.

For more details on the LGCCSP please visit the website: http://www.letsrespondtoolkit.org/.

Through the LGCCSP, a Climate Change Vulnerability Assessment Toolkit was developed to assist municipalities to identify and prioritise climate change indicators to facilitate the assessment of adaptive capacity. Indicators are a range of potential impacts which have been identified using the Long Term Adaptation Scenario (LTAS) reports (Department of Environmental Affairs 2013e). Indicators are grouped into the following themes:

- Agriculture
- Biodiversity and Environment
- Human Health
- Disaster Management, Infrastructure and Human Settlements
- Water

The LGCCS Toolkit was applied to the Cape Winelands District Municipality to assist with the development of its Climate Change Response Plan.

2.1 Climate Change Introduction

2.1.1 Climate change defined

Climate change is a natural phenomenon that takes place over geological time. However, over the past few decades the rate of climate change has been more rapid and the magnitude of global warming has increased dramatically (Warburton, M.L and Schulze, R 2006; Warburton, M.L 2012). This change has been attributed to increased anthropogenic greenhouse gas emissions (Koske, J and Ochieng, M.A 2013). For example, the burning of coal to generate electricity, the burning of petrol in cars, some chemical processes in industries, and many farming activities all contribute to the increased concentration of greenhouse gasses in the atmosphere.

Climate change is not just an increase in average global temperatures but changes in regional climate characteristics such as rainfall, relative humidity and severe weather extremes (Davis, C.L 2011). Climate change can manifest as a shock or a stress (Ziervogel, G and Calder, R 2003). Shocks are defined as discrete, extreme events (rapid onset) such as floods, while gradual change (slow onset) such as long-term climate variability is classified as a stress (Ziervogel, G and Calder, R 2003).

The negative impacts of climate change "are already felt in many areas, including in relation to, *inter alia*, agriculture, and food security; biodiversity and ecosystems; water resources; human health; human settlements and migration patterns; and energy, transport and industry" (United Nations WomenWatch 2009, 1).

2.1.2 Climate Change Policy Context in South Africa

Climate change is a relatively new area of policy development in South Africa. As policies and structures are developed, it is necessary to ensure that they are evidence-based, coordinated and coherent. This section introduces international and national climate change policies and structures:

- The United Nations Framework Convention on Climate Change (UNFCCC). This international treaty provides guidance on setting agreements pertaining to the reduction of greenhouse gas emissions.

- The Paris Agreement, came into effect on 4 November 2016. This is the first agreement all countries have committed to and stipulates that all countries must reduce carbon emissions to limit global temperature increase to 1.5 degrees Celsius above pre-industrial levels.

- South Africa's Nationally Determined Contributions, came into effect after the Paris Agreement was signed. South Africa is therefore required to report on mitigation and adaptation efforts. Concerning mitigation, South Africa is to reduce emissions by a range between 398 and 614 million metric tons of carbon equivalent by 2025 and 2030. There are several instruments to ensure reduction in carbon emissions including car tax and company carbon budgets among other instruments. With reference to adaptation, a National Adaptation Plan is currently being developed, and climate change is to be incorporated in all policy frameworks, institutional capacity is to be enhanced, vulnerability and adaptation monitoring systems are to be in place, vulnerability assessment and adaptation needs frameworks are to be developed and there needs to be communication of past investments in adaptation for education and awareness.

- The National Climate Change Response White Paper (NCCRWP) was adopted in 2011 and presents the South African Government's vision for an effective climate change response in the long-term, to transition to a climate-resilient and lower-carbon economy and society.

- The National Development Plan, focuses on eliminating poverty and reducing inequality by 2030 and creating an environmentally sustainable country through mitigation and adaptation efforts.

- Long Term Mitigation Scenarios, outline different scenarios of mitigation action for South Africa.

- Long Term Adaptation Scenarios, consist of two phases. Phase one, was the identification of climate change trends and projections as well as impacts and responses for the main sectors. Phase two focussed on integrating issues such as climate information and early warning systems, disaster risk reduction, human settlements and food security.

2.1.3 Climate Change Impacts in South Africa

South Africa's temperature is expected to increase to 1.2° C by 2020, 2.4° C by 2050 and 4.2° C by 2080 (Kruger, A.C and Shongwe, S 2004). Contrary to the global increase in rainfall, South Africa's rainfall is expected to decrease by 5.4% by 2020, 6.3% by 2050 and 9.5% by 2080 (Kruger, A.C and Shongwe, S 2004). The frequency and intensity of climate extremes, *inter alia,* droughts, floods, storms and wild fires will increase (Davis, C.L 2011; Böckmann, M 2015). Climate change evidence indicates changes in frequency and intensity of flood and prolonged drought events at small scales (Meyiwa, T et al. 2014). Furthermore, the sea level will continue rising and ocean acidification will get worse (Böckmann, M 2015).

There are however uncertainties associated with climate projections because they are based on the potential rates of resource use in the future, and associated greenhouse gas emissions (Nicholson-Cole, S.A 2005).

To assist with assessing the potential impacts from climate change, the country has been divided into six hydrological zones (Figure 1 below). These hydrological zones not only reflect water management areas but have also been grouped according to common climatic and hydrological characteristics (Department of Environmental Affairs 2013a). Based on a range of data and projections, four possible climate scenarios have been identified for South Africa:

- Warmer/wetter (with greater frequency in extreme rainfall events),
- Warmer/drier (with an increase in frequency of drought and somewhat increased frequency of extreme rainfall events),
- Hotter/wetter (with substantially greater frequency of extreme rainfall events), and,
- Hotter/drier (with a substantial increase in the frequency of drought events and greater frequency of extreme rainfall events).

Projections on rainfall have also been developed for each of the hydrological zones (Department of Environmental Affairs 2013a). The following four climate change scenarios have been described for the Breede-Gouritz-Berg Hydrological Zone (the dominant zone in the Western Cape) in the Department of Environmental Affairs' Long Term Adaptation Scenarios Reports. These are:

- Warmer wetter scenario - Decreased rain in autumn & increased in winter & spring
- Hotter drier scenario - Decreased rain in all seasons & strongly decreased in west
- Hotter wetter scenario - Decreased rain in autumn & increased in winter & spring
- Warmer drier scenario - Decreased rain in all seasons & strongly decreased in west

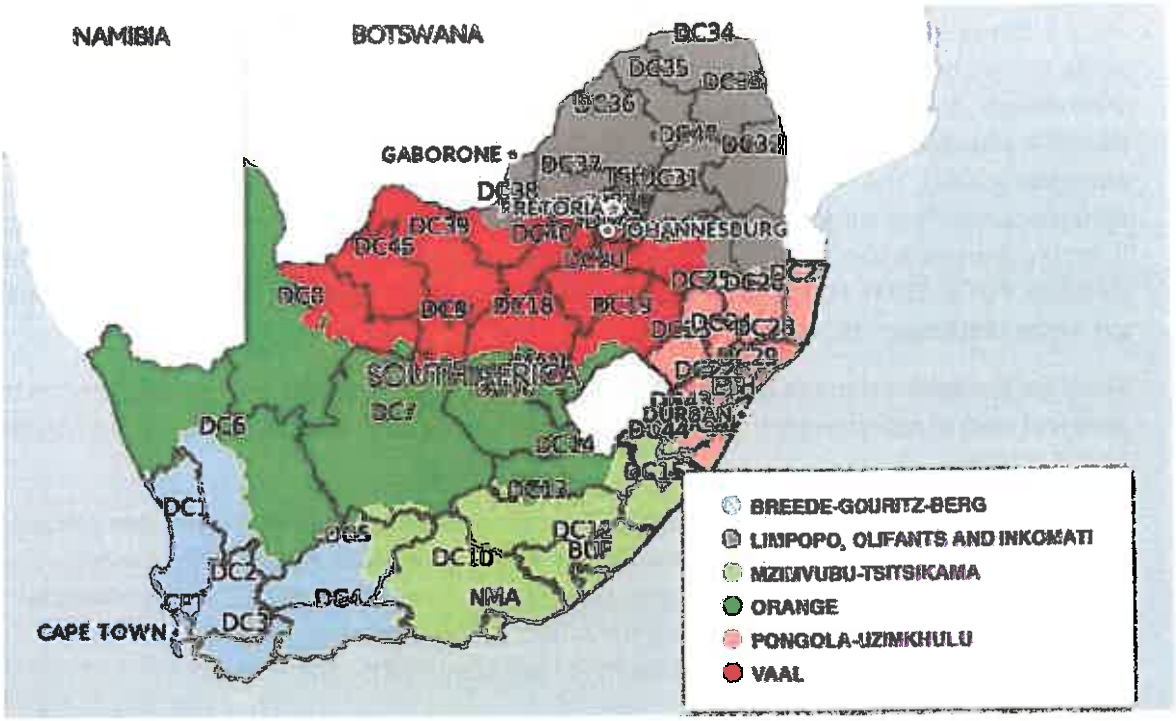

Figure 1: Hydrological Zones of South Africa

2.1.4 Provincial Climate Change Context

The Western Cape has a well-developed climate change policy environment. In 2005, the Western Cape government carried out a study titled "Status Quo, Vulnerability and Adaptation Assessment of the Physical and Socio-economic Effects of Climate Change in the Western Cape" and in the same year, the Western Cape government signed the Montreal Accord to protect the Ozone layer (Department of Environmental Affairs and Development Planning 2008). The Western Cape Climate Change Strategy and Action Plan was then developed in 2008 (Department of Environmental Affairs and Development Planning 2008; Coastal & Environmental Services 2011). A lot of emphasis was placed on adaptation to allow for developmental priorities (Coastal & Environmental Services 2011). The Climate Change Strategy was then updated in 2014 to align with the National Climate Change Response Policy and "geared to strategically direct and mainstream climate change actions and related issues throughout relevant Provincial transversal agendas" (Western Cape Government: Environmental Affairs and Development Planning 2014).

The province experiences drought and flood events with significant adverse impacts (Pasquini, L, Cowling, R.M, and Ziervogel, G 2013). Historically the province has been the most disaster prone in the country (Western Cape Government 2015) and increased temperatures in the future are certain for the Western Cape (Western Cape Government 2015). Rainfall projections are less certain, some projections reveal increased rainfall while others reveal decreased rainfall in the future, decreased rainfall has the most adverse impacts in comparison to increased rainfall (Western Cape Government 2015).

The City of Cape Town local sea level rise scenarios range from 2m to 6.5m (Coastal & Environmental Services 2011; Pasquini, L, Cowling, R.M, and Ziervogel, G 2013). Concerning wildfire, the frequency and intensity is expected to increase with climate change (Pasquini, L, Cowling, R.M, and Ziervogel, G

2013). The frequency and intensity of other extreme events are expected to increase as well (Department of Environmental Affairs and Development Planning 2008).

The table below is a summary of the key climate change impacts in the province as outlined in the climate change strategy and action plan for the Western Cape.

Table 2: Climate change impacts for the Western Cape province

Change to climate variable	Vulnerability Details
Higher mean temperatures	• Increased evaporation and decreased water balance • Increased wild fire danger (frequency and intensity)
Higher maximum temperatures, more hot days and more heat waves	• Heat stress in humans, livestock, crops and wildlife • Increased incidence of heat-related illnesses • Increased incidence of death and serious illness, particularly in older age groups • Decreased crop yields and rangeland productivity • Extended range and activity of some pests and disease vectors • Increased threat to infrastructure exceeding design specifications relating to temperature (e.g. traffic lights, road surfaces, electrical equipment, etc.) • Increased electric cooling demand increasing pressure on already stretched energy supply reliability • Exacerbation of urban heat island effect
Higher minimum temperatures, fewer cold days and frost days	• Decreased risk of damage to some crops due to less frost and increased risk to others such as deciduous fruits that rely on a cooling period in autumn • Reduced heating energy demand • Extended range and activity of some pests and disease vectors • Reduced risk of cold-related deaths and illnesses
General drying trend in western part of the country	• Decreased average runoff, and stream flow • Decreased water resources and potential increases in cost of water resources • Decreased water quality • Decrease in shoulder season length threatening the Western Cape fruit crops • Increased fire danger (drying factor) • Impacts on rivers and wetland ecosystems
Intensification of rainfall events	• Increased flooding • Increased demand on storm water systems in urban settlements • Increased soil erosion • Increased river bank erosion and demands for protective structures • Increased pressure on disaster relief systems • Increased risk to human lives and health • Negative impact on agriculture such as lower productivity levels and loss of harvest

Change to climate variable	Vulnerability Details
Increased mean sea level and associated storm surges	• Salt water intrusion into ground water and coastal wetlands • Increased storm surges leading to coastal flooding, coastal erosion and damage to coastal infrastructure • Increased impact on estuaries and associated impacts on fish and other marine species

The provincial climate change strategy also lists a number of priority responses in each of the key sectors. These are summarised in the table below

Table 3: Priority Climate Change Adaptation Responses for the Western Cape province

Adaptation Category	Adaptation Responses
Water Security and Efficiency	• Invasive alien vegetation clearing • Prioritisation, valuation, mapping, protection, and restoration of ecological infrastructure in catchments • Effective utilisation of irrigation water • Resource nexus 18 decision support • Develop ecosystem goods and services (EGS) investment opportunities
Biodiversity and Ecosystem Goods and Services	• Prioritisation, valuation, mapping, protection, and restoration of ecological infrastructure • Landscape initiatives/biodiversity corridors and identification of requirements for climate change adaptation corridors • Biodiversity stewardship • Mainstreaming of conservation planning into decision making
Food Security	• Farming practices that are in harmony with nature, i.e. 'conservation agriculture'; • Climate smart agriculture; • Agricultural water technologies that reduce consumption and increase efficiency; • Research on climate resilient and alternative crops and livestock applicable to the Western Cape; • Addressing climate vulnerability through the Municipal Support Programme; • Assessing food security in the context of the resource nexus
Managing the effects of increased temperature on human lives	• Societal adaptation to human health impacts from temperature increases associated with climate change.
Healthy Communities	• Monitoring health trends in relation to climate trends; • Research linkages between human health and climate change in the WC context. These include: Air quality, Water quality, Food security, Heat stress, Disease vectors

3 Methodology

This climate change response plan was developed through a combination of desktop research and stakeholder engagement activities. Initially, desktop research was conducted on the climate change status quo for each of the key sectors in the district. This research was used for the basis of the stakeholder engagement activities.

The workshop methodologies were based on the active-based learning theory approach. Action learning is an approach used to train and to encourage stakeholders to solve real life problems. The workshop methodologies ensured there was a focus on knowledge exchange and capacity building at the workshops.

There were three stakeholder engagement occurrences. These were:

- Provincial level workshop, where key stakeholders were introduced to the core concepts of climate change and the LGCCSP program. The exposure component of the vulnerability assessment was also undertaken by various stakeholders at this workshop, including government officials and other key community members. The workshop therefore involved presentations, participatory exercises and associated discussions.
- A District Municipality Level workshop, where the focus was specifically on the identification and review of key climate change vulnerabilities for the area. A more detailed vulnerability assessment was undertaken by the participants. The process included the identification of context specific climate change indicators, assessing exposure, sensitivity and adaptive capacity. Participants also developed priority climate change responses.
- A final Provincial Level workshop, where key stakeholders were invited to present their municipal climate change plans.

These workshops aimed to provide the necessary tools, build capacity and provide support to stakeholders to develop and review existing Climate Change Vulnerability Assessments and response plans.

3.1 What is a Vulnerability Assessment?

According to the IPCC (Parry et al. 2007) "vulnerability to climate change is the degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of climate change". A vulnerability assessment therefore is a multifaceted assessment of an area's vulnerability to climate change. Nelitz et al. further define a climate change vulnerability assessment as "a process for assessing, measuring, and/or characterizing the exposure, sensitivity, and adaptive capacity of a natural or human system to disturbance" (Nelitz, M, Boardley, S, and Smith, R 2013). The methodology used in assessing climate change vulnerability for the district used the three assessment criteria, namely: exposure, sensitivity and adaptive capacity.

- **Exposure** refers to the magnitude and extent, to which a municipal area is exposed to climate change impacts (Amos, E, Akpan, U, and Ogunjobi, K 2015) and is a function of one's location and environment.
- **Sensitivity** on the other hand refers to the extent to which a municipal area is affected by the climate change impacts
- The IPCC (Parry et al. 2007) formally defines **adaptive capacity** as: "The ability of a system to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences".

Exposure and sensitivity, increases one's vulnerability to climate change while adaptive capacity decreases vulnerability. The above-mentioned components allow for more detailed characterizations of climate change vulnerability.

3.2 Steps involved in a Vulnerability Assessment

Four steps were followed when conducting a vulnerability assessment, they are:

- Step 1: Identify indicators' potential impacts.
- Step 2: Assess whether the impact will take place (exposure).
- Step 3: Assess how important the risk is (sensitivity).
- Step 4: Assess if you can respond to the risk (adaptive capacity).

Figure 2 below illustrates how the components of a Climate Change Vulnerability Assessment link to each other.

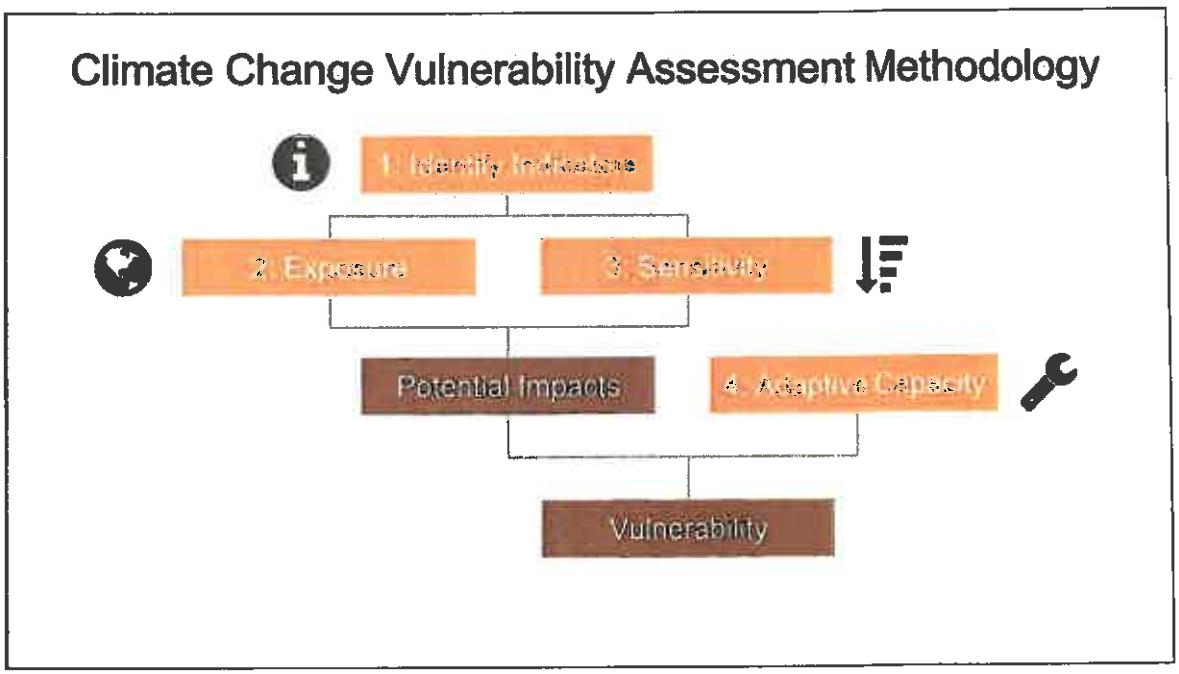

Figure 2: Vulnerability Assessment Methodology

3.3 Step 1: Develop Climate Change Indicators

As mentioned above, the first step in a Climate Change Vulnerability Assessment is the identification of context specific indicators. Essentially, indicators are potential climate change induced impacts in a specific area. The LGCCSP Vulnerability Assessment Toolkit developed a draft of several indicators using the Long Term Adaptation Scenario Reports (Department of Environmental Affairs 2013e). The indicators are grouped into six sectors (agriculture; biodiversity and environment; coastal and marine; human health; disaster management, infrastructure and human settlements; and water).

3.4 Step 2: Assessing Exposure

The assessment of exposure followed the identification of indicators. Exposure assessment aimed to ascertain whether the identified indicators are relevant in the District Municipality. If the District Municipality was exposed to an indicator, stakeholders scored that indicator a 'yes'.

3.5 Step 3: Assessing Sensitivity

The third step of the Climate Change Vulnerability Assessment 'asks' the question, "if you are exposed, how important is the potential impact?" This is termed "sensitivity" and is assessed using a graded scale (High, Medium or Low). If an indicator scored a "yes" in the exposure assessment, the sensitivity of the Municipality to that indicator was than analysed using the graded scale.

3.6 Step 4: Assessing Adaptive Capacity

Once exposure and sensitivity were determined, the next step was the assessment of adaptive capacity. The question directed at stakeholders during the workshop was "if there are going to be significant impacts due to climate change, do you have the necessary systems (policy, resources, social capital) in place to respond to the change?"

The indicators that scored "yes" for the exposure questions and "high" or "medium" for the sensitivity questions, were then assessed in terms of adaptive capacity. For the LGCCS Vulnerability Assessment Toolkit, the guiding question was "Do you have high, medium or low adaptive capacity (policy, institutional, social and finance) to respond to the change?" The adaptive capacity answers were scored using a graded scale (high, medium or low).

Those that scored a "low" or "medium" were recorded as indicators with potential adaptive capacity constraints in Cape Winelands District Municipality.

3.7 Step 5: Develop Response Plans for Priority Indicators

Upon completion of the exposure, sensitivity and adaptive capacity assessments, priority indicators were identified using the criteria below:

- Exposure - Yes
- Sensitivity - High or Medium
- Adaptive Capacity - Low or Medium

Priority indicators are perceived to be the ones the district are most vulnerable to. A response plan was then developed to address climate change vulnerabilities and inform resource allocation for climate change adaptation. To facilitate the development of a response plan, stakeholders were given a LGCCS generic response plan template for each sector, which was used as a starting point to develop sector specific response plans for Cape Winelands District Municipality.

3.8 Desired Adaptation Outcomes

The Department of Environmental Affairs (DEA) has developed (ongoing process) a set of Desired Adaptation Outcomes (DAOs). The DAOs provide evidence of climate change impacts and of responses to climate change in South Africa. DAOs identify desired states that, individually and in combination, will contribute to climate resilience in the short to medium-term (i.e. over the next five to 20 years). They aim to provide clear insights into climate change adaptation in South Africa and help capture the country's unique circumstances to aid reporting on adaptation at national and international levels. They also provide a means of assessing the capacity of 'at risk' sectors and their stakeholders to adapt to climate change and whether the measures being taken are appropriate, efficient and effective.

The current set of DAOs are provided below:

- G1 - Robust/integrated plans, policies and actions for effective delivery of climate change adaptation, together with monitoring, evaluation and review over the short, medium and long term.

- G2 - Appropriate resources (including current and past financial investments), capacity and processes (human, legal and regulatory) and support mechanisms (institutional and governance structures) to facilitate climate change adaptation.
- G3 - Accurate climate information (e.g. historical trend data, seasonal predictions, future projections, and early warning of extreme weather and other climate-related events) provided by existing and new monitoring and forecasting facilities/networks (including their maintenance and enhancement) to inform adaptation planning and disaster risk reduction.
- G4 - Capacity development, education and awareness programmes (formal and informal) for climate change adaptation (e.g. with tools to utilise data/outputs and informed by adaptation research).
- G5 - New and adapted technologies/knowledge and other cost-effective measures (e.g. nature-based solutions) used in climate change adaptation.
- G6 - Climate change risks, impacts and vulnerabilities identified and addressed.
- G7 - Systems, infrastructure, communities and sectors less vulnerable to climate change impacts (e.g. through effectiveness of adaptation interventions/response measures).
- G8 - Non-climate pressures and threats to human and natural systems reduced (particularly where these compound climate change impacts).
- G9 - Secure food, water and energy supplies for all citizens (within the context of sustainable development).

The activities in the Sector Response Plans below have a column to allocate the DAOs. This will assist the DEA to monitor and evaluate the implementation of climate change adaptation throughout the country.

4 District Snapshot Cape Winelands District Municipality

Cape Winelands District Municipality is one of five district municipalities within the Western Cape Province. The district is in the Boland region and comprises of the Breede Valley, Drakenstein, Langeberg, Stellenbosch, and Witzenberg local municipality. The district municipal area has a total population of 787 491 more than 10% of the province's total population (Statistics South Africa 2011). Drakenstein local municipality is home to a greatest proportion of the district's population and Langeberg local municipality is home to the smallest proportion of the district's population. The district is largely rural in nature (Cape Winelands District Municipality 2017) with only 0.5% of land located to towns (SRK Consulting 2011). Climate related hazards in the district include: floods, seismic activity, and veld fires (SRK Consulting 2011). Climate change is likely to exacerbate the above-mentioned hazards in the future. Furthermore, climate projections reveal reduced rainfall and increased temperatures in the future (SRK Consulting 2011).

4.1 Key District Indicators

The table below provides a summary of the key indicators for the District. The table lists the national indicators for comparison purposes. Many of these indicators are used in the climate change vulnerability assessment process below.

Table 4: Key District Municipal Indicators for the Cape Winelands DM compared to the National Average

General Information	Cape Winelands District Municipality	South Africa
Code	DC02	
Province	Western Cape	
Seat	Worcester	
Area (km²)	22309	1219740
Census Statistics		
Criteria	**Cape Winelands District Municipality**	**South Africa**
Population	**787491**	**51770553**
Age Structure		
Population under 15	25.84%	29.17%
Population 15 to 39	43.98%	44.30%
Population 40 to 64	25.05%	21.19%
Population over 65	5.13%	5.34%
Dependency Ratio		
People in age group 0-14 & 65+, supported by age group 15-64	44.9%	52.7%
Employment (between 15 and 64)		
Employed	53.30%	38.87%
Not economically active	35.68%	39.21%
Unemployed	8.74%	16.50%

Discouraged work-seeker	2.28%	5.41%
Education (aged 20 +)		
Post School Qualification	8.56%	9.94%
Grade 12/Matric	23.33%	27.83%
High School	35.61%	32.16%
Less than High School	21.59%	16.43%
Other	10.90%	13.64%
Vulnerability Indicators		
Criteria	Cape Winelands District Municipality	South Africa
Household Dynamics		
Households	198261	14450151
Average household size	3.97	3.58
Percentage households involved in agricultural activities	7.60%	20.56%
Dwelling Type		
Percentage Households that are Informal Dwellings	15.96%	13.58%
Percentage Households that are Traditional Dwellings	0.60%	7.89%
Combined Percentage Households that are Traditional and Informal Dwellings	16.57%	21.47%
Sources of Water		
Percentage of Population that sources water from Boreholes	5.21%	1.76%
Percentage of Population that do not source water from piped water schemes	21.55%	21.82%
Percentage of Population that source water from Service Providers (e.g. Municipalities)	78.45%	78.18%
Percentage of Population that sources water from Water Tanks	1.18%	2.67%
Electricity Usage		
Percentage of households that use alternatives to electricity for cooking	12.16%	26.12%
Percentage of households that use alternatives to electricity for cooking, heating or lighting	6.60%	17.77%
Sanitation		
Percentage Population with flush toilets	91.28%	56.51%
Percentage Population using pit latrines	0.79%	30.73%
Percentage of Population with no toilet facilities	2.41%	5.34%
Percentage of Population with other toilet facilities	5.52%	7.42%

Refuse		
Percentage of Households with no rubbish disposal	1.45%	5.97%
Percentage of households with refuse removed by local authority/private company	82.66%	59.40%
Health		
Percentage of young (<5yrs) and elderly (>64yrs)	14.53%	16.32%
Percentage workforce employed in the informal Sector	16.00%	12.20%
Vulnerability Tool Indicators		
Criteria	Cape Winelands District Municipality	South Africa
Percentage households involved in agricultural activities	7.60%	20.56%
Percentage Population with flush toilets	91.28%	56.51%
Percentage of young (<5yrs) and elderly (>64yrs)	14.53%	16.32%
Percentage Households that are Traditional and Informal Dwelling	16.57%	21.47%
Percentage of Households with no rubbish disposal	1.45%	5.97%

4.2 Cape Winelands DM Agriculture Sector Summary

The agriculture sector in the Cape Winelands District Municipality is a key sector in terms of employment and food security within the municipality(Cape Winelands District Municipality 2017). Most of the land in the District Municipal Area that is not either mountains or natural vegetation (i.e. fynbos and veld) is covered by commercial agriculture and some commercial forestry (Cape Winelands District Municipality 2017). The main commercial agricultural activities in the district are the production of grapes, wine, poultry and horticulture such as fruit, nuts and cut flowers (Cape Winelands District Municipality 2009, 2017). The Cape Winelands District Municipality is known for its viticulture and it is estimated that roughly 56 % of all South African wine grapes are grown in the District Municipality (Cape Winelands District Municipality 2009). Additionally, about 68 % of South Africa's wine is produced in the District Municipality(Cape Winelands District Municipality 2009).

Much of the agricultural production in the Cape Winelands District Municipal Area is irrigated and this has led to the agriculture sector becoming the largest water user in the District Municipality (Cape Winelands District Municipality 2009, 2015). The District Municipality is already a water stressed area (Cape Winelands District Municipality 2015) and the high use of water in the District Municipal Area has caused sections of some rivers inside the District Municipal Area to run dry by midsummer (Cape Winelands District Municipality 2017). This is a failure to meet the obligation of maintaining the ecological reserve, which requires that a portion of the available water stays in rivers to maintain the biological life found there (SRK Consulting 2011).

Being so varied and large, the agriculture sector is one of the most important employers in the Cape Winelands District Municipal Area, however, employment in the agriculture sector is declining (Cape Winelands District Municipality 2017). Overall, employment in the agriculture, forestry and fisheries sector accounted for 76,820 or approximately 20.5 % of the total number of people employed within the District Municipality in 2015 (Cape Winelands District Municipality 2017). However, between 2005 and 2015 the agriculture sector experienced a net decrease in employment of approximately

23,334 jobs, which represents an average decrease of 2.3 % per annum (Cape Winelands District Municipality 2017).

Furthermore, the South African National Census of 2011 estimated that only 7.60 % of households in the Cape Winelands District Municipality(Figure 3) are involved in agricultural activities (Statistics South Africa 2011). This is lower than the national average of 20.56 % (Statistics South Africa 2011).

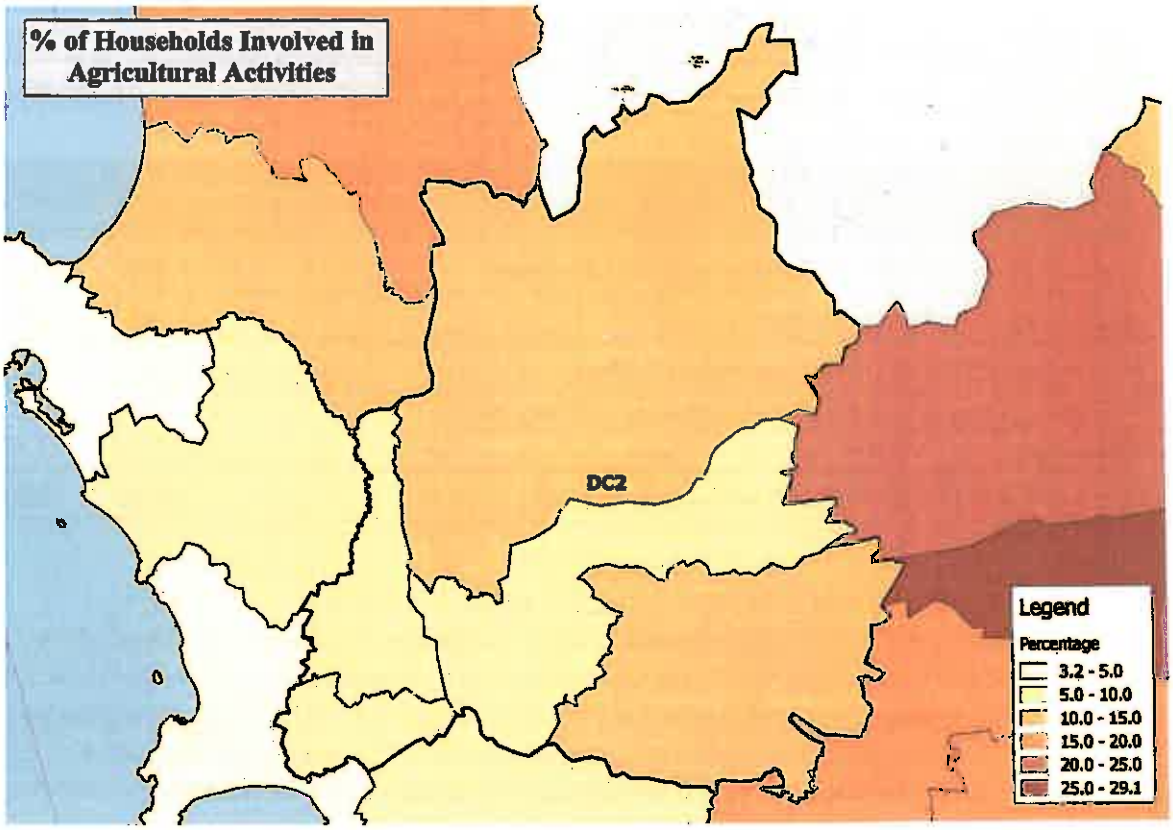

Figure 3: Percentage of households involved in agricultural activities across the District Municipal Area. Darker areas indicate higher involvement in agricultural activities. (Statistics South Africa 2011)

In contrast to the decrease in employment is the change in the agriculture sector's contribution to the Cape Winelands District Municipal Area's economy. Between 2005 and 2015 the agriculture sector's contribution to the District Municipal Area's gross domestic profit (GDP) grew by 2.0 % per annum on average (Cape Winelands District Municipality 2017). Overall, the agriculture, forestry and fisheries sector contributed R4.54 billion (or approximately 10.3 % of the total GDP) to the Cape Winelands District Municipal Area's economy in 2015 (Cape Winelands District Municipality 2017). The GDP refers to the total value of all the goods and services produced in the District Municipal Area (Blignaut and De Wit 2004). Clearly, the agriculture sector is a key contributor to the economy and employment in the Cape Winelands District Municipal Area.

Within the Cape Winelands District Municipality, agriculture can be split into nine SmartAgri Zones, of which only one, the Hex SmartAgri Zone, falls entirely within the District Municipal Area (Figure 4) (Western Cape Department of Agriculture 2017).

The future agricultural potential of the Hex, Bokkeveld, Breede, Cape Town-Winelands, Montagu-Barrydale and Grabouw-Villiersdorp-Franschhoek SmartAgri Zones are all predicted to maintain high agricultural potential as long as sufficient water is available (SmartAgri and African Climate and Development Initiative 2015). However, due to higher average temperatures, the farming of apples

in the Grabouw-Villiersdorp-Franschhoek SmartAgri Zone is predicted to become unviable (SmartAgri and African Climate and Development Initiative 2015). While in the Swartland SmartAgri Zone, future agricultural potential is predicted to remain high for small grains (such as wheat and barley), however, the variability of these yields is expected to increase (SmartAgri and African Climate and Development Initiative 2015).

Additionally, the Tankwa-van Wyksdorp and Cederberg SmartAgri Zones are predicted to become less productive due to water availability and heat-related issues (SmartAgri and African Climate and Development Initiative 2015).

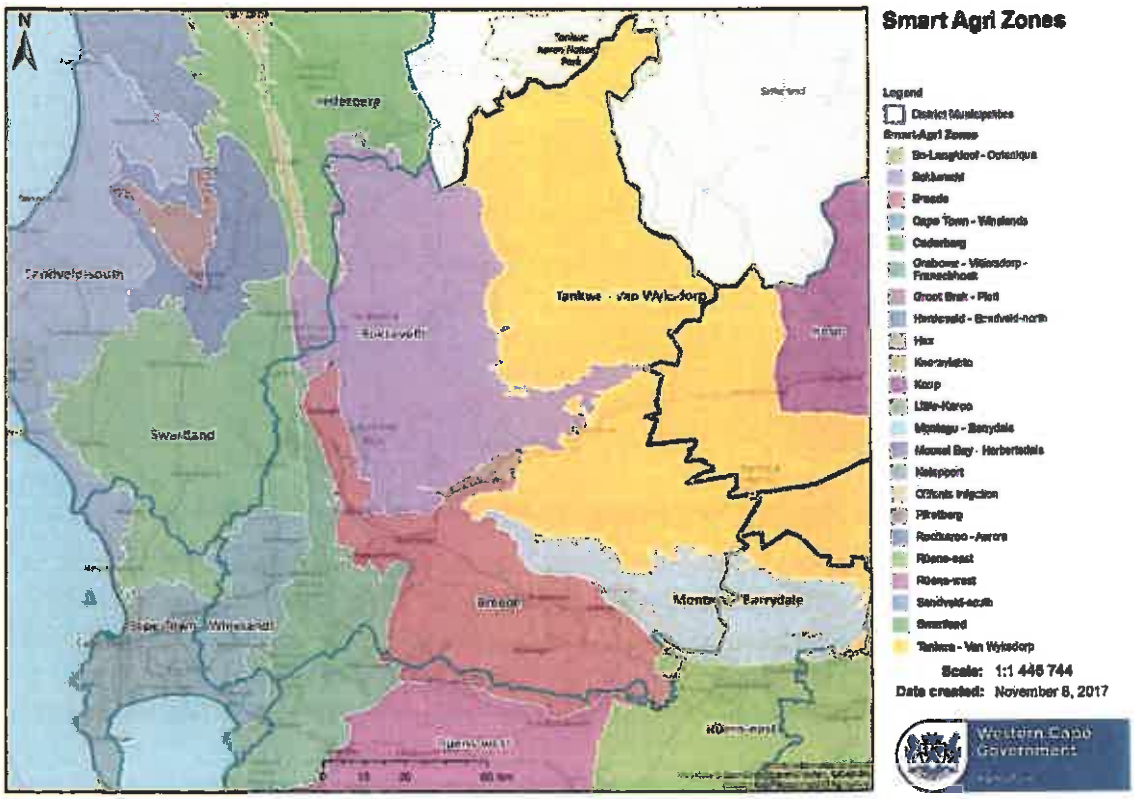

Figure 4: SmartAgri Zones in the District Municipal Area (Western Cape Department of Agriculture 2017)

The northern part of the Cape Winelands District Municipal Area has the highest grazing capacity (i.e. the highest number of hectares required per large stock unit for viable grazing) in the District Municipal Area, while the west has the lowest grazing capacity (Figure 5) (Western Cape Department of Agriculture 2017). Much of the south of the District Municipal Area has been categorised as "Transformed rangeland" and thus has no grazing capacity (Western Cape Department of Agriculture 2017). It should be noted that the data for this map is from 1993 and so the grazing capacities may have changed somewhat in the intervening years.

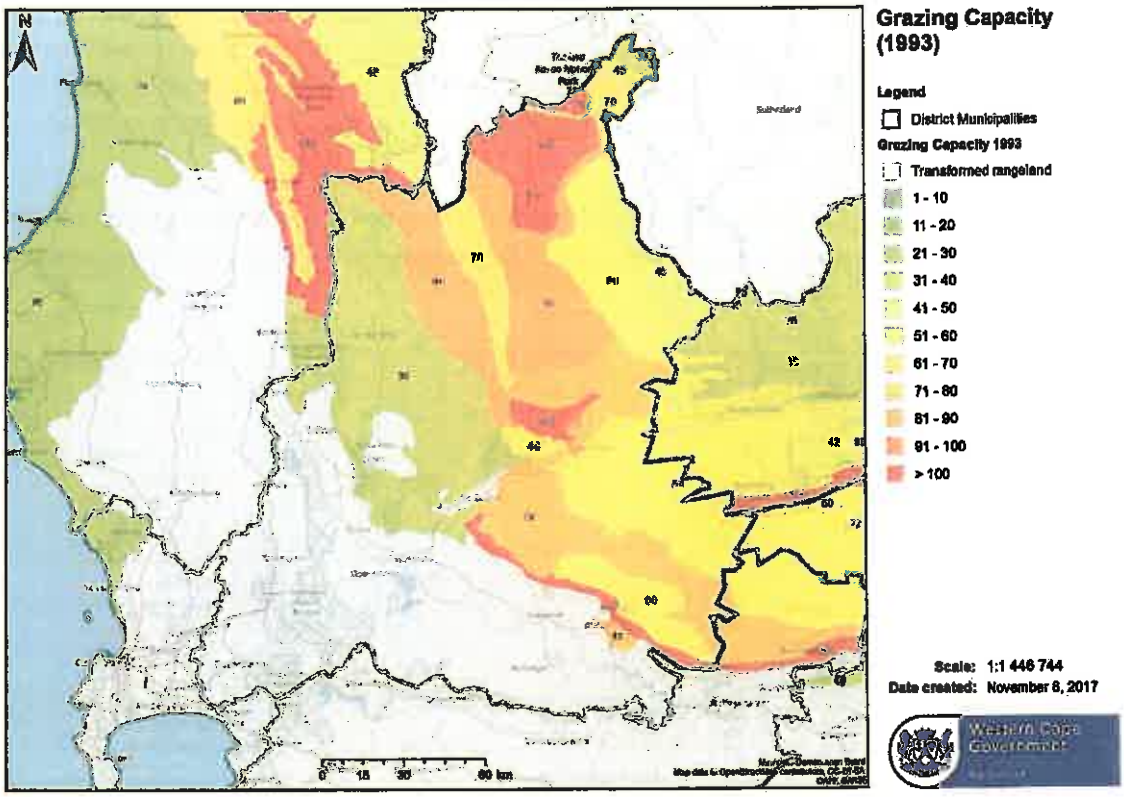

Figure 5: Grazing capacity in the District Municipal Area (Western Cape Department of Agriculture 2017)

Looking at specific livestock density levels (i.e. the number of animals per square kilometre), small stock occurs in limited amounts within the Cape Winelands District Municipal Area (Figure 6) (Western Cape Department of Agriculture 2017). Specifically, the highest density of small stock occurs in a small area in the centre in the District Municipal Area, followed by the southwest and southeast with lower small stock density levels (Western Cape Department of Agriculture 2017).

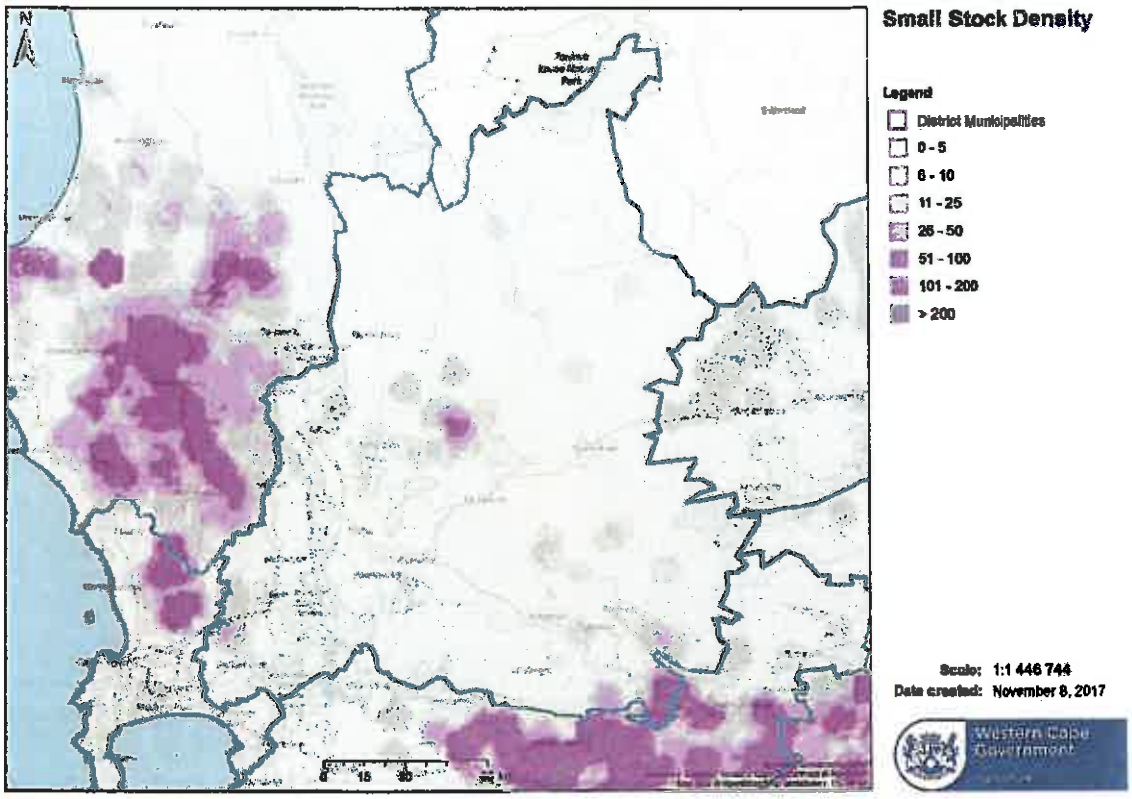

Figure 6: Small stock density levels in the District Municipal Area (Western Cape Department of Agriculture 2017)

Similarly, bovine density levels (Figure 7) are mostly low in the Cape Winelands District Municipal Area (Western Cape Department of Agriculture 2017). Specifically, cattle density levels are at their highest in the south of the District Municipal Area (Western Cape Department of Agriculture 2017).

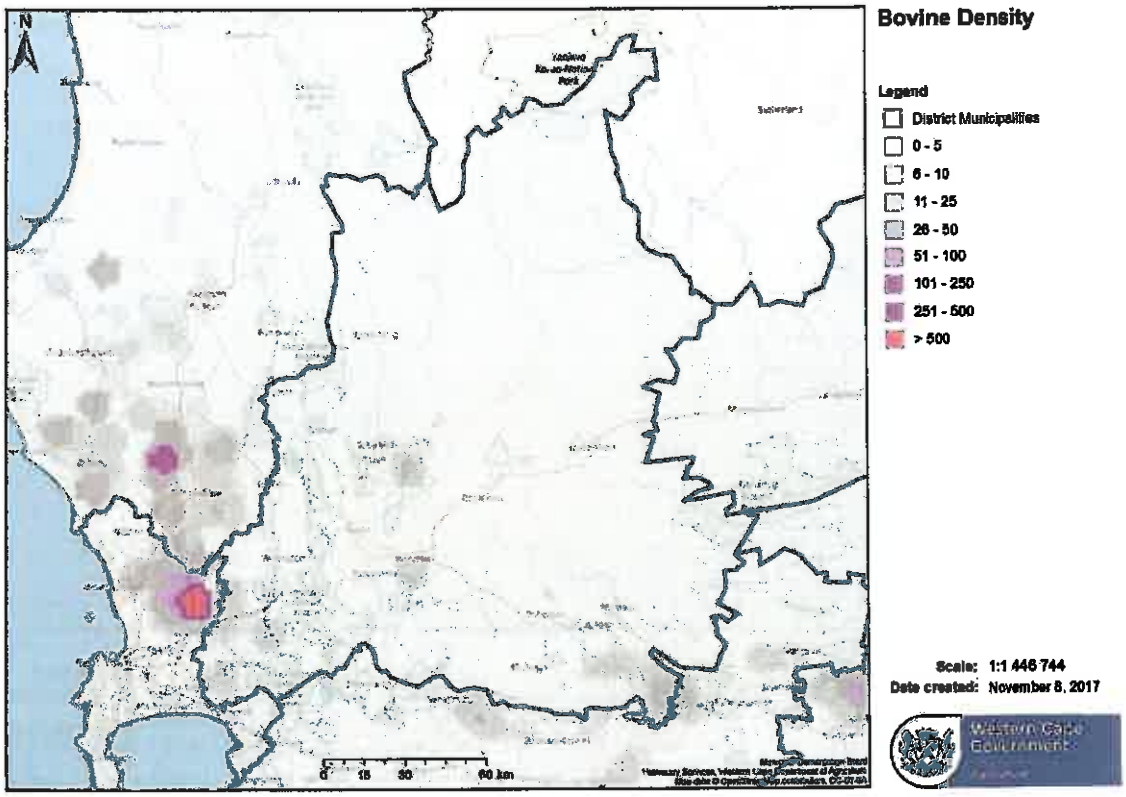

Figure 7: Bovine density levels in the District Municipal Area (Western Cape Department of Agriculture 2017)

Furthermore, ostrich farming (Figure 8) is very limited in the Cape Winelands District Municipal Area, occurring in four small areas with limited density levels (Western Cape Department of Agriculture 2017).

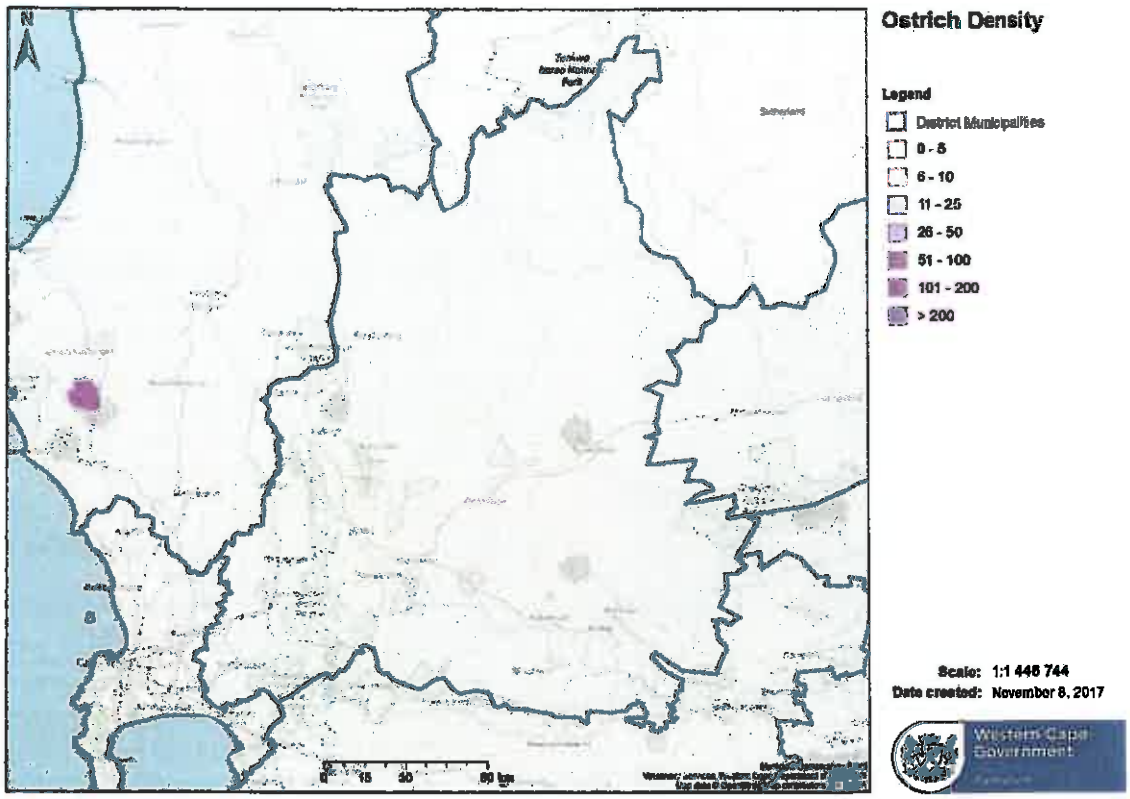

Figure 8: Ostrich density levels in the District Municipal Area (Western Cape Department of Agriculture 2017)

While the grazing capacities in the Cape Winelands District Municipal Area are mostly low, the crop census (Figure 9) shows that there is a lot of crop production in the District Municipal Area, largely in the southern and western parts (Western Cape Department of Agriculture 2017). Much of this crop production occurs alongside the District Municipal Area's rivers (Western Cape Department of Agriculture 2017). The main crops grown in the District Municipal Area are 'grapes', 'planted pastures', 'grains and mixed', 'pome fruit' (such as apples) and 'citrus' (Western Cape Department of Agriculture 2017).

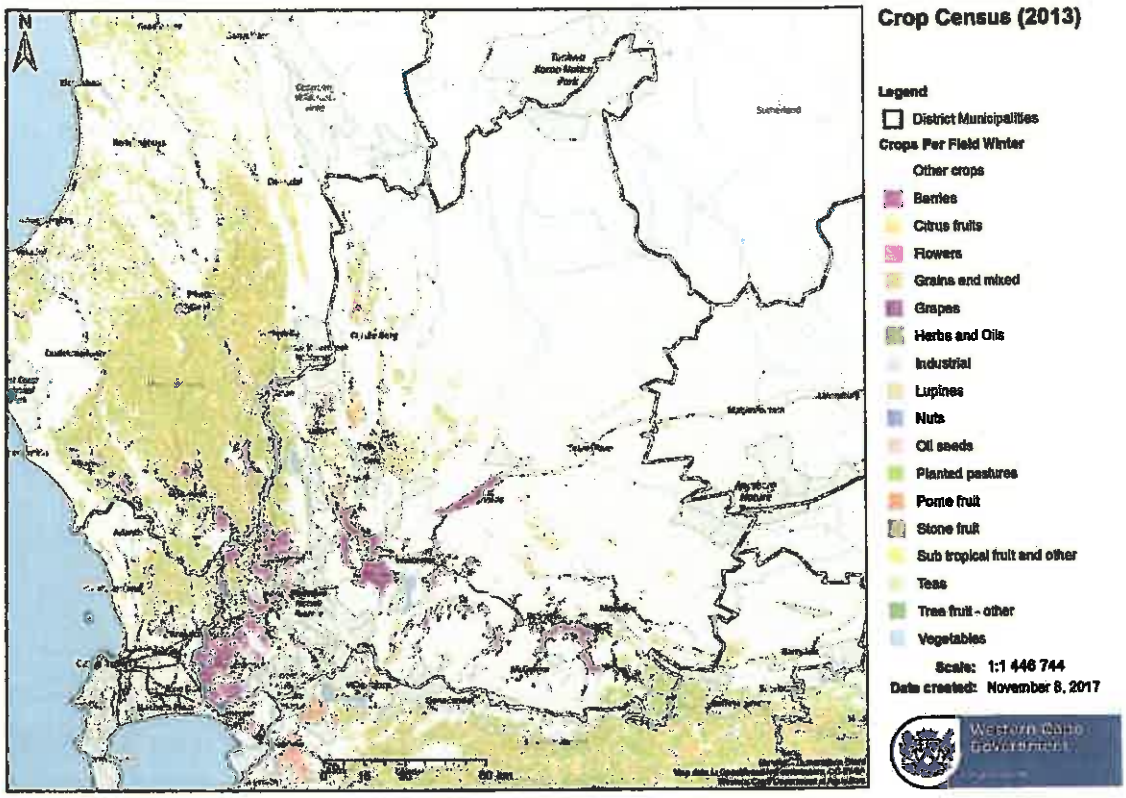

Figure 9: Crop census in the District Municipal Area (Western Cape Department of Agriculture 2017)

There are eleven Wine of Origin districts that occur mainly within the Cape Winelands District Municipal Area (Figure 10), as the District Municipal Area is (unsurprisingly given its name) the most important viticulture and winemaking area in South Africa (Western Cape Department of Agriculture 2017). Wine of Origin districts are more specific than wine regions and they signify that all the grapes came from the same specific area (Western Cape Department of Agriculture 2017). The Wine of Origin districts that occur mainly in the District Municipal Area are the Ceres Plateau, Tulbagh, Worcester, Wellington, Breedekloof, Franschhoek, Paarl, Stellenbosch and Robertson Wine of Origin districts.The Overberg and Swellendam Wine of Origin districts fall partially within the District Municipal Area (Western Cape Department of Agriculture 2017).

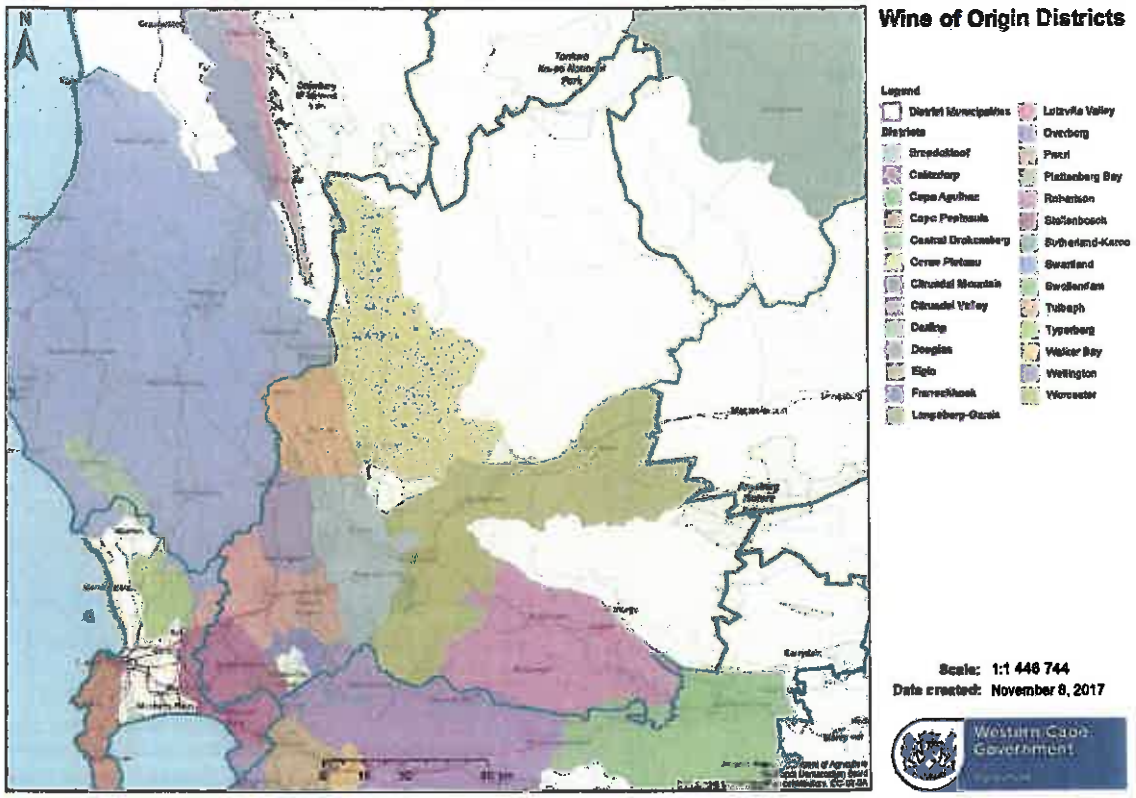

Figure 10: Wine of origin districts in the District Municipal Area (Western Cape Department of Agriculture 2017)

Additionally, some small commercial plantations consisting of *Pinus* species are scattered in the southwest of the Cape Winelands District Municipal Area (Figure 11) (De Lange 2013). Plantations are predicted to be exposed to greater risk due to an increase in the frequency and severity of fires caused by climate change related increases in average temperatures (Cape Winelands District Municipality 2015).

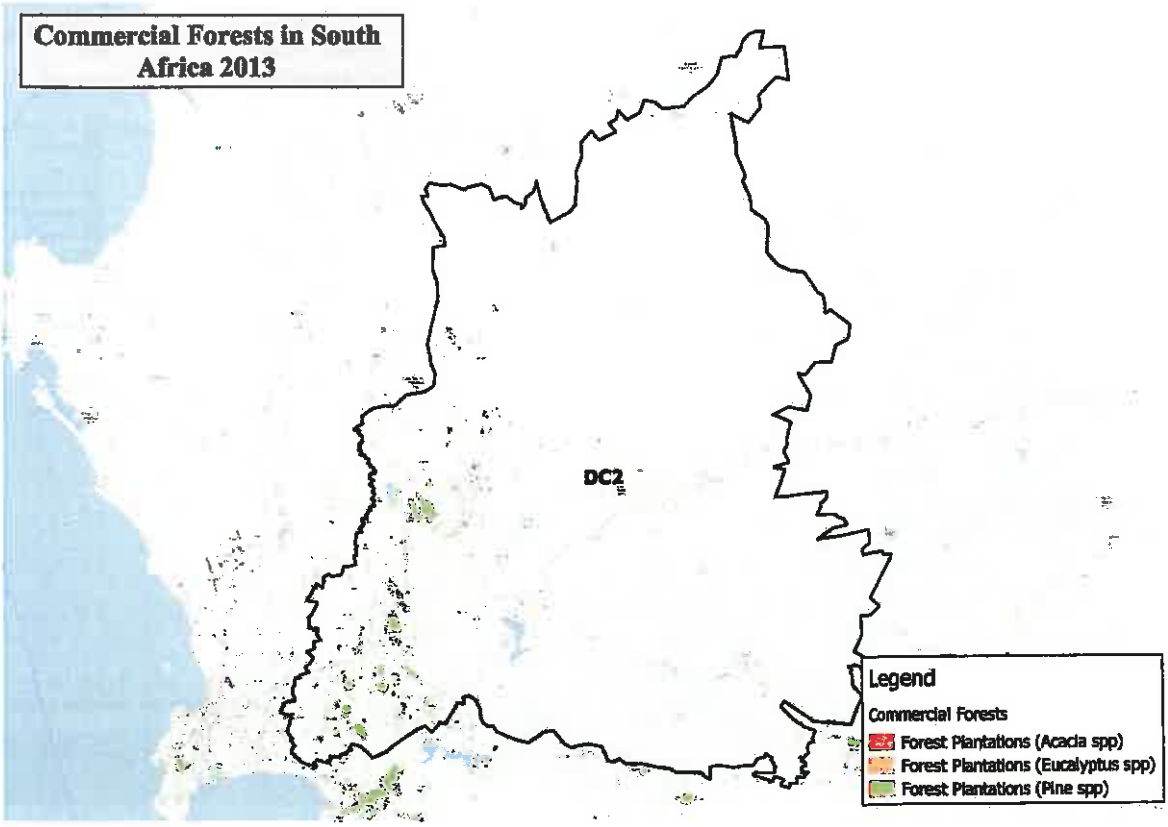

Figure 11: Commercial forestry distribution across the District Municipal Area (De Lange 2013)

Despite the potential for expanding agricultural production in the Cape Winelands District Municipal Area, it is predicted that climate change will affect the agriculture sector both positively and negatively. The Long Term Adaptation Scenarios Flagship Research Programme (LTAS) has forecast that climate change is predicted to increase temperatures and rainfall variability, while decreasing the total average rainfall in the west of South Africa (Department of Environmental Affairs 2013c).

The predicted increases in mean average temperature (Figure 12) in the Cape Winelands District Municipal Area, show that mean average temperatures are projected to increase in bands from 'low range warming' in the southwest to 'medium to high range warming' in the northeast of the District Municipal Area (Western Cape Department of Agriculture 2017).

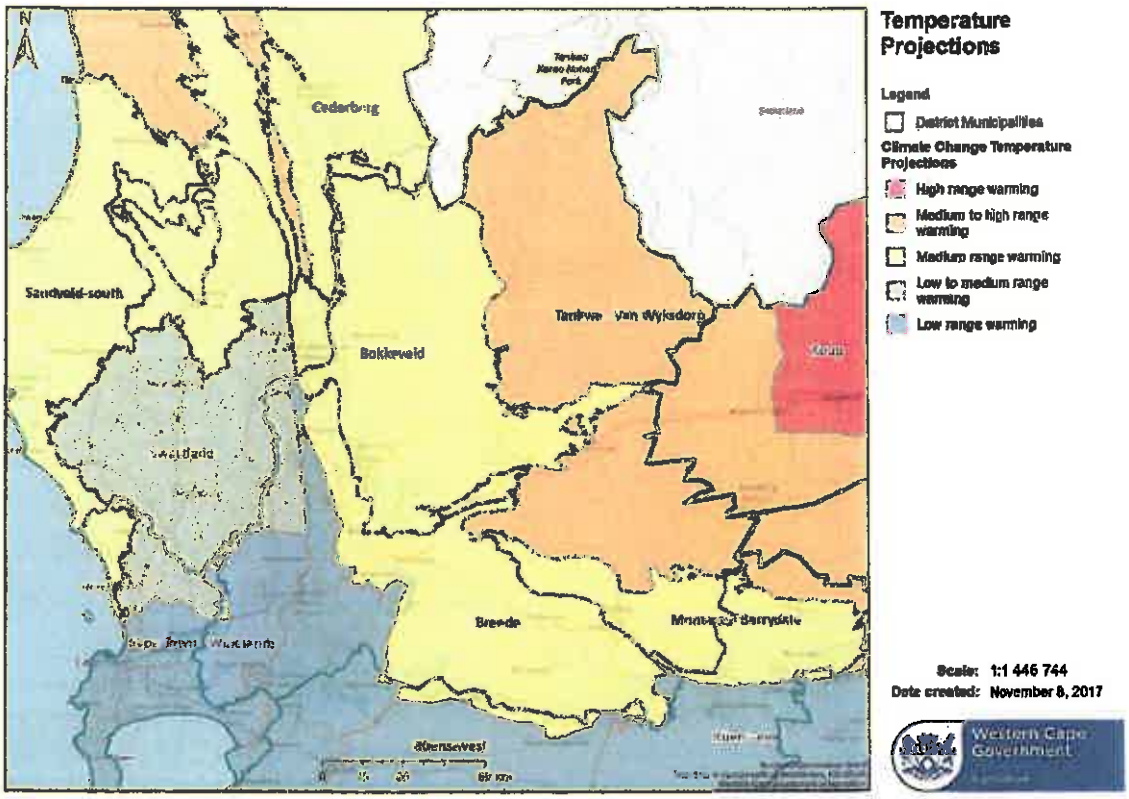

Figure 12: Temperature projections in the District Municipal Area (Western Cape Department of Agriculture 2017)

The mean annual rainfall (average rainfall per year) is highest in the southwest of the Cape Winelands District Municipal Area (Figure 13) and is lowest in the northeast of the district (Western Cape Department of Agriculture 2017). Mean annual rainfall in parts of the southwest of the District Municipal Area are more than double the South African average (approximately 450 millimetres per year) for mean annual rainfall (Department of Water Affairs 2013). However, if the mean annual rainfall is considered with the projected increases in average temperature, it is apparent that evaporation rates are expected to increase, which will increase water insecurity in the District Municipal Area (Western Cape Department of Agriculture 2017).

Furthermore, most of the aquifers in the Cape Winelands District Municipal Area are already either highly or moderately vulnerable to contamination by pollution (Figure 14) (Western Cape Department of Agriculture 2017). If these aquifers were to become polluted or over-utilised, then water security in the District Municipal Area would diminish and the vulnerability of the people who rely on them would increase (Western Cape Government 2016; Cape Winelands District Municipality 2017).

In 2012, groundwater quality in the Cape Winelands District Municipal Area was mostly in the lower categories of electrical connectivity (Figure 15), however, groundwater in some small areas in the west and southeast of the District Municipal Area already had very high levels of electrical connectivity (Western Cape Department of Agriculture 2017). These electrical connectivity categories represent how salty the groundwater is, which is one way of measuring the water quality in the aquifers (Western Cape Department of Agriculture 2017). The higher the level of salts in the water, the poorer the quality of groundwater (Western Cape Department of Agriculture 2017).

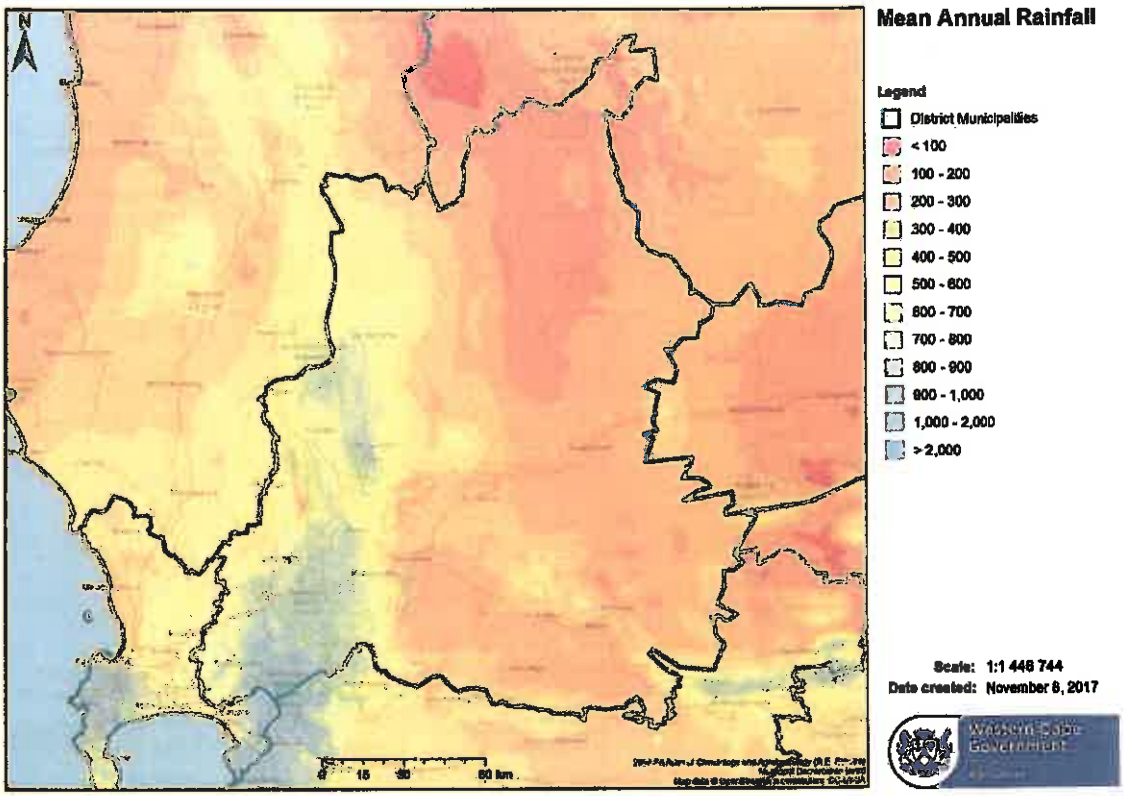

Figure 13: Mean Annual Rainfall in the District Municipal Area (Western Cape Department of Agriculture 2017)

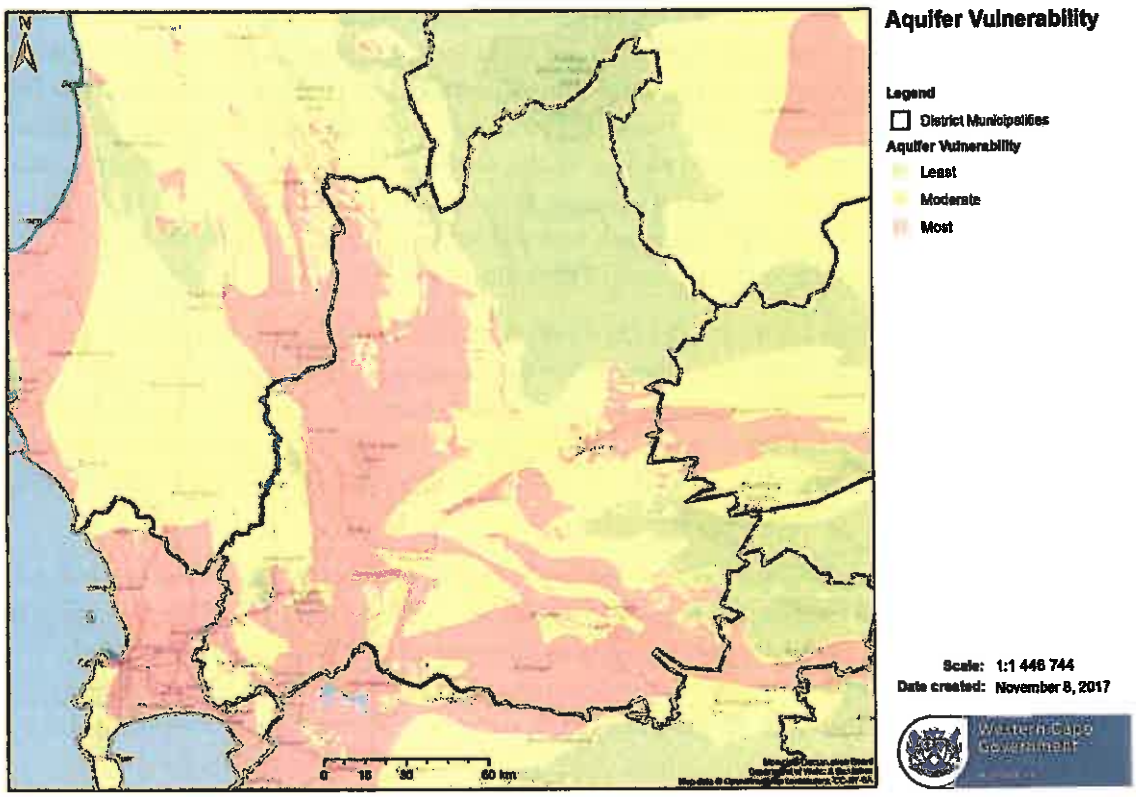

Figure 14: Aquifer vulnerability in the District Municipal Area (Western Cape Department of Agriculture 2017)

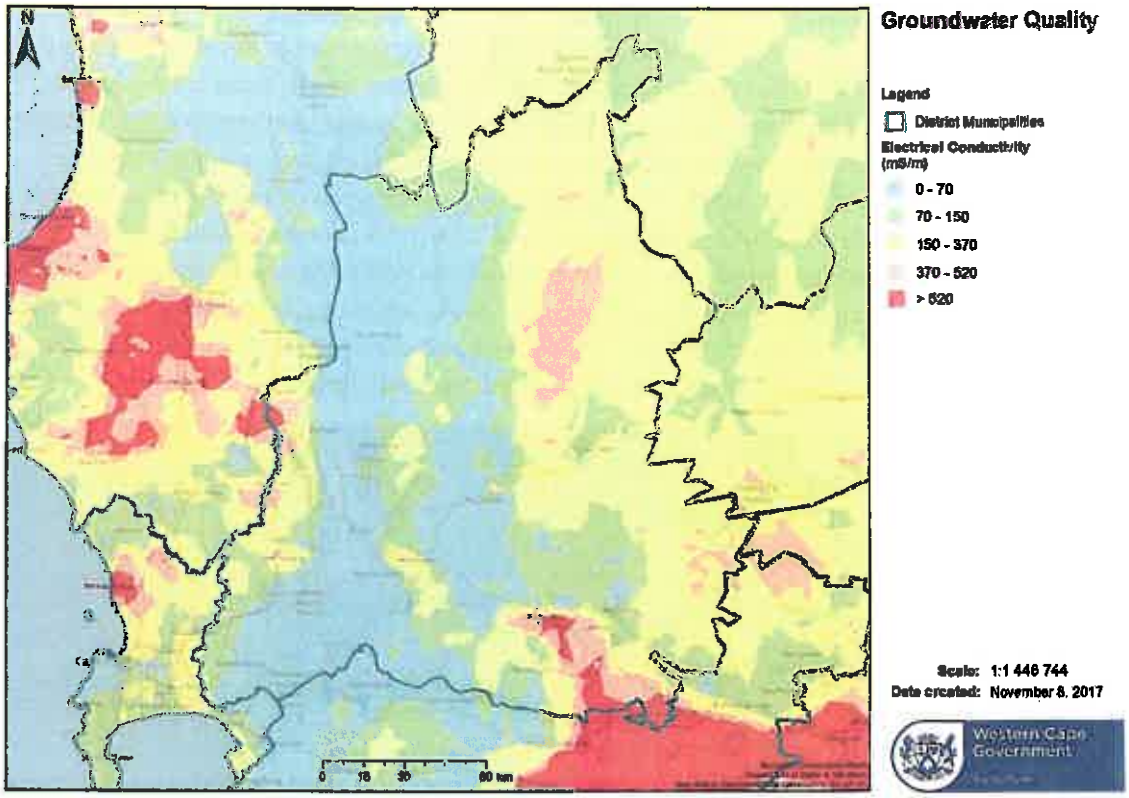

Figure 15: Groundwater quality in the District Municipal Area (Western Cape Department of Agriculture 2017)

These predicted changes in average rainfall and temperature are forecast to reduce the areas that are suitable for viticulture or shift them to areas that are higher or cooler than current locations (Department of Environmental Affairs 2013c). The reduction in rainfall (and runoff) is forecast to reduce the yields of fruit and vegetables, notably deciduous fruit and rain-fed wheat production in the Western Cape (Department of Environmental Affairs 2013c). Furthermore, the production of fruit, such as apples and pears, and sugar cane will be increasingly vulnerable to damage from a predicted expansion of the areas affected by agricultural pests (Department of Environmental Affairs 2013c).

By decreasing agricultural yields, climate change could also impact the agriculture sector by reducing profitability and job opportunities in the sector as well as increasing food security risks, especially amongst subsistence farmers and their dependents (Department of Environmental Affairs 2013c; Cape Winelands District Municipality 2017, 2009). Indeed, the Cape Winelands District Municipality's 2017/2018 Integrated Development Plan has noted that climate change impacts could have dire consequences for the agriculture sector in the District Municipal Area (Cape Winelands District Municipality 2017). Specifically, impacts such as droughts, fires, floods and changes in rainfall patterns are predicted to not only result in agricultural losses but also impact other sectors of the local economy (Cape Winelands District Municipality 2017).

Moreover, these predicted changes are not only future-related considerations. Impacts to the agricultural sector, which have been attributed to climate variability have already been observed in the Cape Winelands District Municipal Area (Cape Winelands District Municipality 2017). For example, during the 2015/2016 municipal financial year, the Witzenberg Local Municipality suffered from an intense drought and was declared a declared a disaster area by the National and Western Cape Governments (Cape Winelands District Municipality 2017).

4.3 Cape Winelands DM Biodiversity Sector Summary

Most of the Cape Winelands District Municipality is covered by the Fynbos Biome (Figure 16). A sizable area of Succulent Karoo Biome is also found in the district, mostly in the north and east. The Fynbos Biome is part of the Cape Floristic Kingdom (one of six recognised floral kingdoms globally), consisting of the fynbos and renosterveld, and includes an extremely high number of species (Mucina and Rutherford 2006). Both the Fynbos and Succulent Karroo Biomes are renowned for their high levels of endemism (Mucina and Rutherford 2006). The Succulent Karoo Biome is extremely dry and is characterised by low winter rainfallwith prevailing vegetation in the Succulent Karoo biome being characterised by dwarf, succulent shrubs, and large displays of flowers (annuals) in the spring (Mucina and Rutherford 2006). For the size and aridity of the Succulent Karoo Biome, it has a very high number of plant and flower species (Mucina and Rutherford 2006).

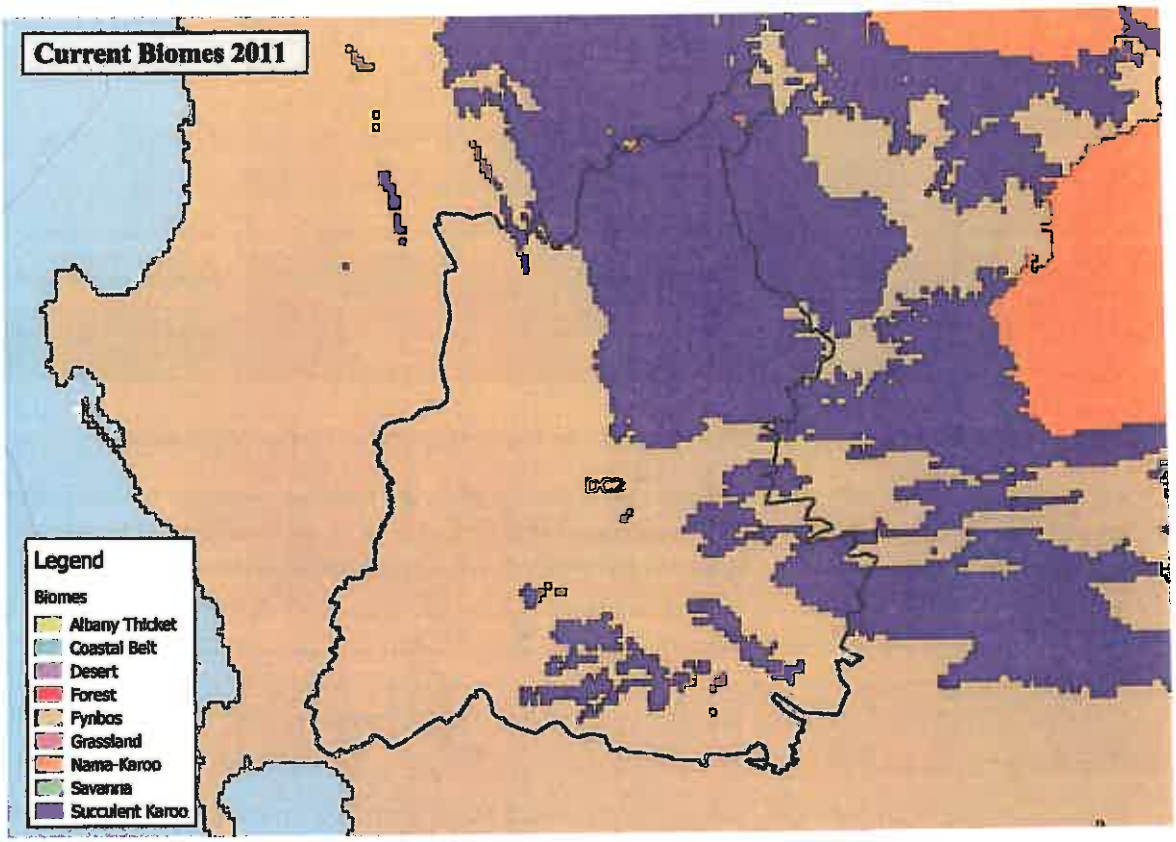

Figure 16: Current biome delineation in the District Municipal Area (South African National Parks 2011a)

Climate change is predicted to shift the biomes in South Africa, resulting in a change to the ecosystems and vegetation found in the Cape Winelands District Municipal Area. The Long Term Adaptation Scenarios Report on biodiversity highlights the following biomes as the most vulnerable and "in need of strong protection, restoration and/or research" (Department of Environmental Affairs 2013b).

- High priority for action: Fynbos and Forest.
- Medium priority for action: Nama Karoo and Succulent Karoo.

The maps below (Figure 17 and Figure 18) show the shift in biomes in the Cape Winelands District Municipal Area given different climate scenarios modelled by the South African National Biodiversity Institute (SANBI) in 2011. It is forecast that under a medium risk climate scenario, the Succulent Karoo Biome will expand into areas currently covered by the Fynbos Biome. Additionally, the Albany

Thicket Biome will appear in the southeast of the Overberg District Municipal Area, at the expense of both the Succulent Karoo and Fynbos Biomes. Under a high-risk climate scenario, it is forecast that the Fynbos Biome will be substantially reduced by the Succulent Karoo Biome. Additionally, the Albany Thicket Biome will decrease (compared to the medium risk climate scenario) and the Nama-Karoo, Desert and Savanna Biomes will appear.

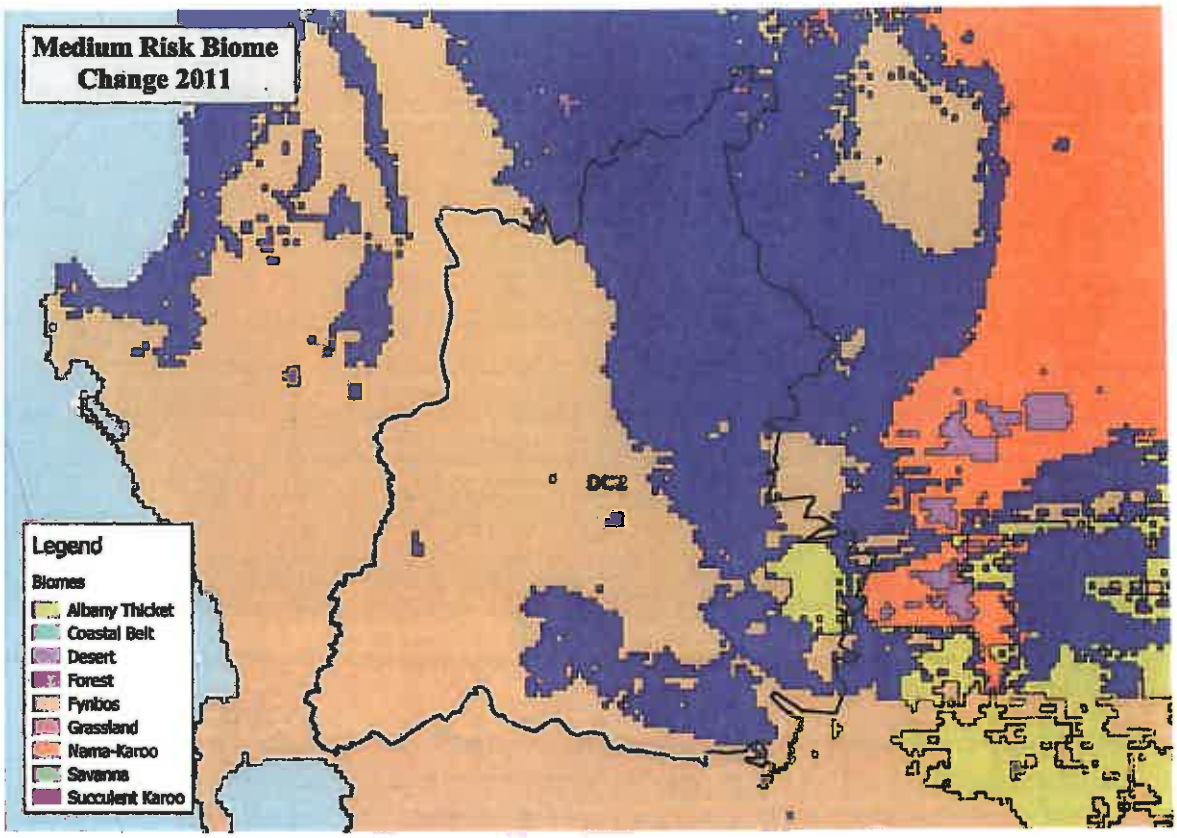

Figure 17: Predicted shift in biomes in the District Municipal Area using a medium risk scenario (South African National Parks 2011c)

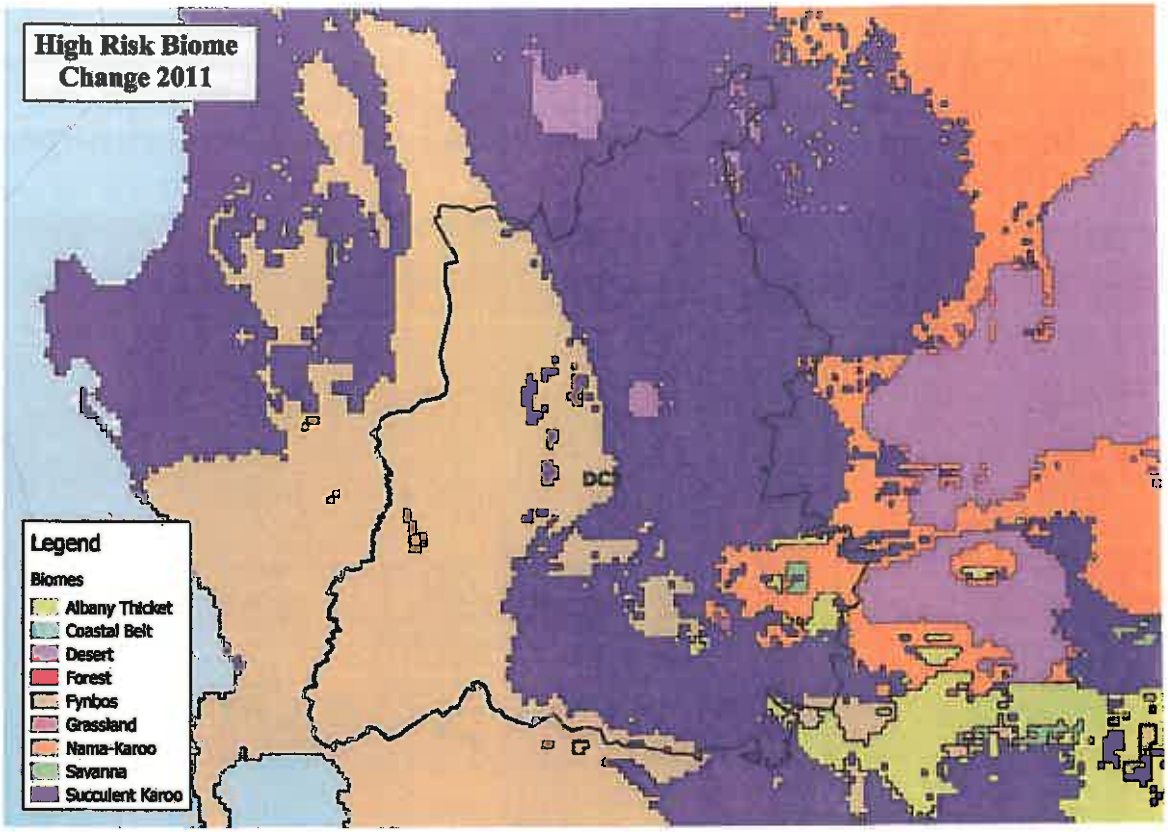

Figure 18: Predicted shift in biomes in the District Municipal Area using a high risk scenario (South African National Parks 2011b)

Within the Biomes found in the Cape Winelands District Municipal Area, there are numerous threatened ecosystem types (Figure 19). The Eastern Rûens Shale Renosterveld, Cape Lowland Alluvial Vegetation, Muscadel Riviere, Elgin Shale Fynbos, Kogelberg Sandstone Fynbos, Swartland Granite Renosterveld, Cape Flats Sand Fynbos, Swartland Alluvium Fynbos, Atlantis Sand Fynbos and Swartland Shale Renosterveld are all categorised as critically endangered ecosystem types (South African National Biodiversity Institute 2011). There are also a few ecosystem types categorised as endangered or vulnerable in the Cape Winelands District Municipal Area (South African National Biodiversity Institute 2011).

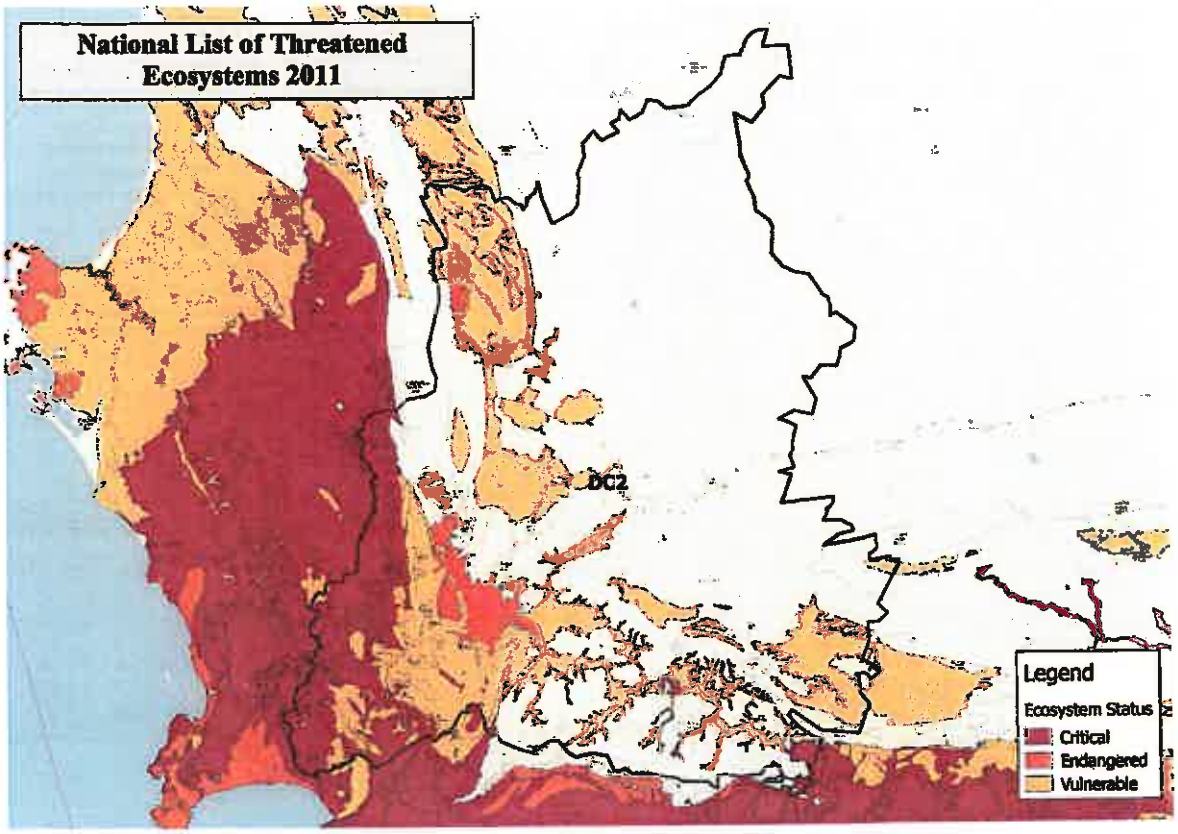

Figure 19: Threatened ecosystem types in the District Municipal Area (South African National Biodiversity Institute 2011)

In South Africa, a 'protected area' is defined as areas of land (e.g. a national park) or ocean (e.g. a marine protected area) that is legally protected and managed for the conservation of biodiversity, as per the National Environmental Management: Protected Areas Act (No. 57 of 2003) (Department of Environmental Affairs 2009). Internationally, the International Union for Conservation of Nature's (IUCN) definition of protected area includes areas that are not legally protected, which the Department of Environmental Affairs refers to as 'conservation areas' (Department of Environmental Affairs 2009). Within the Cape Winelands District Municipal Area there are 50 protected areas (Figure 20).

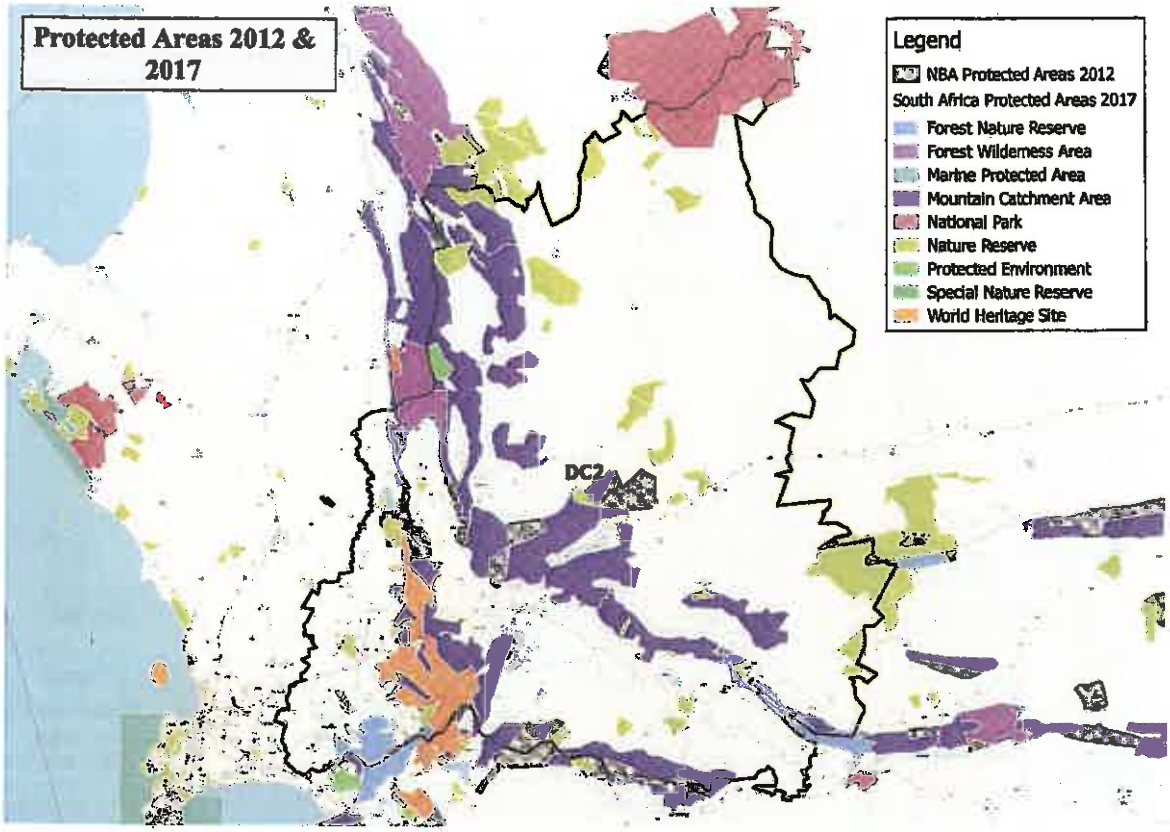

Figure 20: Protected areas in the District Municipal Area (South African National Parks / South African National Biodiversity Institute 2011; Department of Environmental Affairs 2017)

In South Africa, 65% of wetlands are threatened, 48% are critically endangered, 12% are endangered and 5% are vulnerable (Driver, A. et al. 2012). Wetland degradation is caused by inter alia: poor land management practises, spatial developments near urban areas, the spread of invasive alien plants, pollution, agricultural practises and the building of dams (Driver, A. et al. 2012).

In the Cape Winelands District Municipal Area (Figure 21), most wetlands are classified as 'heavily to critically modified' (less than 25% of the wetland land cover is natural) (Council for Scientific and Industrial Research 2011). Wetlands classified as 'moderately modified' (between 25% and 75% of the wetland land cover is natural) are less frequent, and those classified as 'mostly natural or good' (more than 75% of the wetland land cover is natural) are the lowest in number (Council for Scientific and Industrial Research 2011).

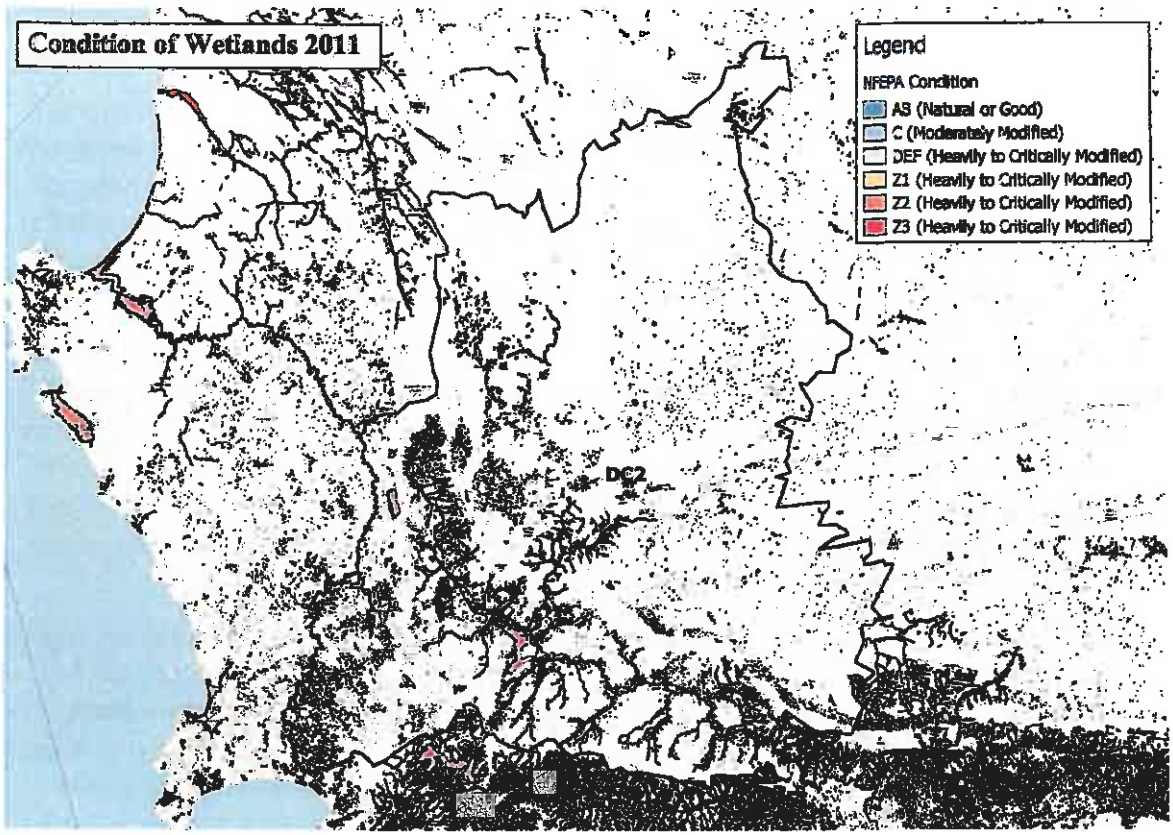

Figure 21: Condition of wetlands in the District Municipal Area (Council for Scientific and Industrial Research 2011)

Most of the Cape Winelands District Municipal Area is mountainous. Land use in the Cape Winelands District Municipality is predominantly agriculture based (Cape Winelands District Municipality 2017, 2016). Other land uses include conservation areas, forestry (plantations), urban areas and some limited mining areas (Cape Winelands District Municipality 2017, 2016). These land uses have had varying effects on the biodiversity of the Cape Winelands District Municipal Area.

Biodiversity in the Cape Winelands District Municipal Area has been positively influenced by the conservation areas. It has been negatively influenced by: the spread of invasive alien species, unsustainable harvesting of natural resources, land degradation (mainly due to poor land management practises and overgrazing), soil erosion, increased pollution, population growth, spatial development (such as the expansion of agricultural and urban areas), an ongoing drought and climate change (Cape Winelands District Municipality 2017, 2016, 2015).

According to the Millennium Ecosystem Assessment (2005) ecosystem services are "the benefits that people obtain from ecosystems", which can be divided into four categories: provisioning (e.g. timber), supporting (e.g. nutrient recycling), regulating (e.g. water purification), cultural (e.g. recreational activities) (Millennium Ecosystem Assessment 2005). The existing challenges that negatively affect the biodiversity in the Cape Winelands District Municipal Area (discussed above) have also reduced ecosystem services (particularly provisioning services and regulating services) in the Area and will continue to do so, if these impacts are not reduced.

If the biodiversity and related ecosystem services in the Cape Winelands District Municipal Area are badly reduced, it could have direct negative consequences for the economy and social structures in the Cape Winelands District Municipality. These consequences could have a detrimental effect on efforts to reduce poverty, inequity and unemployment in the Cape Winelands District Municipality.

Furthermore, it is predicted that climate change will exacerbate these challenges and their effects on the biodiversity and related ecosystem in South Africa.

It is widely accepted that in South Africa, climate change is expected to have an impact on socio-economic development as well as the water and sanitation, food security, health, and energy sectors (Department of Environmental Affairs 2011). In the Cape Winelands District Municipal Area, it is predicted that climate change will increase average temperatures and the variability of rainfall as well as exacerbate the risk and frequency of severe weather events such as floods, droughts, veld fires and damaging storms (Cape Winelands District Municipality 2017, 2016, 2015).

Climate change has been identified as a key issue and major strategic risk for the Cape Winelands District Municipality (Cape Winelands District Municipality 2017, 2016, 2015). Following the publication of the *Western Cape Climate Change Response Strategy* in 2014, the Cape Winelands District Municipality developed the *Framework for a Draft Climate Change Response Strategy* in 2015 (Cape Winelands District Municipality 2015, 2017). The Cape Winelands District Municipality intends to review the *Framework for a Draft Climate Change Response Strategy* annually so that budget-related changes are incorporated (Cape Winelands District Municipality 2017).

The purpose of the *Framework for a Draft Climate Change Response Strategy* is to identify ongoing climate change-related projects and programmes in the Cape Winelands District Municipal Area as well as to provide strategic direction to the various sectors within the Cape Winelands District Municipality (Cape Winelands District Municipality 2015, 2017). The *Framework for a Draft Climate Change Response Strategy* is more focussed on climate change adaptation than on mitigation because of the Cape Winelands District Municipality's limited functions (Cape Winelands District Municipality 2015, 2017).

It has been acknowledged that key barriers to responding to climate change in the Cape Winelands District Municipal Area (as well as other district municipalities in the Western Cape) include a lack of capacity and limited financial resources (Cape Winelands District Municipality 2017, 2015). The Cape Winelands District Municipality has emphasised the need for increased institutional capacity and capacity-building at both district and local municipality levels (Cape Winelands District Municipality 2017, 2015). It also stressed the need for increased awareness campaigns and education programmes in the Cape Winelands District Municipality regarding environmental health, water supply and sanitation, waste management, and climate change and its predicted effects (Cape Winelands District Municipality 2017, 2016, 2015).

4.4 Cape Winelands DM Health Sector Summary

A great proportion (82.4 %) of South Africa's population are dependent on the public health sector for health related services of which there are 3,880 public facilities (Health Systems Trust 2012). These public facilities are divided into two main groups: 3,487 primary health care facilities (consisting of 3,074 clinics, 238 community health centres, 125 satellite clinics, 44 community day centres, four specialised clinics and two health posts) and 391 hospitals (of which six are central hospitals, 10 tertiary, 55 regional, 254 district and 66 specialised hospitals) (Health Systems Trust 2012). 42 clinics, four district hospitals, two regional hospitals and five other hospitals fall within the Cape Winelands District Municipal Area (Massyn et al. 2016).

According to a health care facilities audit by the Health Systems Trust, the Cape Winelands District Municipal Area received a score of 64 % on vital measures in the six ministerial priority areas for health care facilities and 67 % for the infrastructure of health facilities (Health Systems Trust 2012). The score on vital measures in the six ministerial priority areas relates to patient-centred care, specifically focusing on: positive and caring attitudes, waiting times, cleanliness, patient safety, infection prevention and control, and availability of medicines and supplies (Health Systems Trust 2012). The infrastructure score meanwhile is based on the assessment of mainly: building and site infrastructure, facility infrastructure management and standards around the availability of space (Health Systems Trust 2012).

The young (<5yrs age group) and elderly (>64yrs age group) constitute 14.53 % of the total populationand are said to be the most vulnerable to climate change impacts (Statistics South Africa 2011).

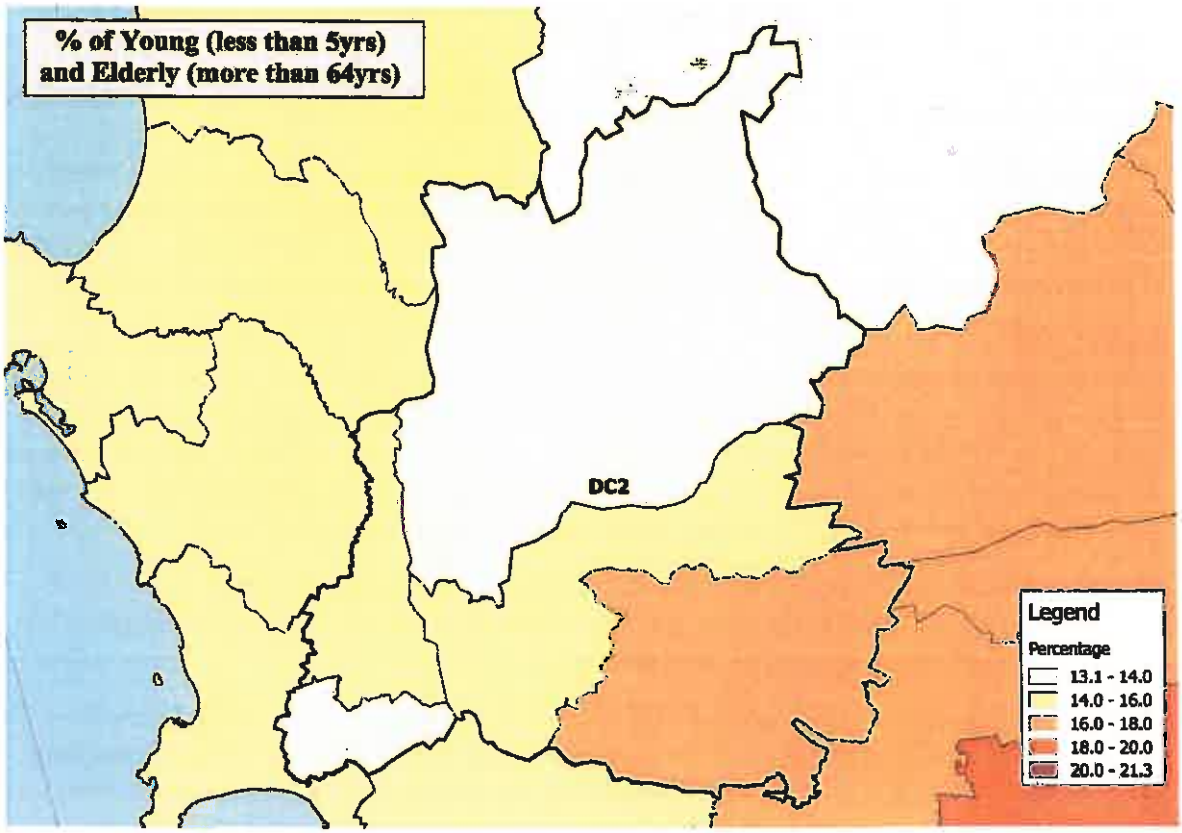

Figure 22: Percentage of young (<5yrs age group) and elderly (>64yrs age group) across the Cape Winelands District Municipal Area. Darker areas indicate a higher percentage of young and elderly people. (Statistics South Africa 2011)

In 2015, the total number of deaths in South Africa was 460,236, of which 6,609 occurred in the Cape Winelands District Municipal Area (Statistics South Africa 2015). The distribution of deaths by age for South Africa revealed that in, 2015, 7 % of the deaths occurred in children under the age of five, while individuals over the age of 64 accounted for 34.4 % of the deaths (Statistics South Africa 2015).

In 2015, the top ten underlying natural causes of death within the Cape Winelands District Municipal Area were: tuberculosis, HIV, cerebrovascular diseases, diabetes mellitus, tuberculosis, chronic lower respiratory diseases, ischaemic heart diseases, malignant neoplasms, malignant neoplasms of respiratory and intrathoracic organs, hypertensive diseases, and other forms of heart disease (Statistics South Africa 2015).

The leading causes of death for children under five years of age, for the 2009 to 2014 period, in the Cape Winelands District Municipal Area were a group of communicable (infectious) diseases together with perinatal, maternal and nutritional conditions (Massyn et al. 2016). Diarrhoeal diseases (17.5 %) were the leading cause of children's (<5yrs age group) deaths, followed by preterm birth complications, which accounted for 16.0 % of deaths (Massyn et al. 2016). The "children under five years diarrhoea case fatality" (that is children under five years who died in hospital from diarrhoeal disease) the District Municipal Area ranked 6th (where 1st represents the best performance and 52nd represents the worst performance in South Africa) with a diarrhoea case fatality rate of 0.1 % during the 2015/16 period (Massyn et al. 2016). The national average for "children under five years diarrhoea case fatality" was 2.2 % over the same time period (Massyn et al. 2016).

Furthermore, for the "Child under 5 years severe acute malnutrition case fatality rate" (that is children under five years who died from acute malnutrition) the Cape Winelands District Municipal Area ranks 7th, with a rate of 2.9 % during the 2015/16 period (Massyn et al. 2016). This is below the national average of 8.9 % over the same time period (Massyn et al. 2016).

Leading causes of death for the elderly (>64yrs age group) in the Cape Winelands District Municipal Area were a group of non-communicable diseases (which cannot be transferred from one person to the next) that accounted for 59.0 % of the deaths between 2009 and 2014 (Massyn et al. 2016). Of these non-communicable diseases, ischaemic heart disease was the leading cause (15.4 %) of deaths, followed by cerebrovascular disease (15.2 %) (Massyn et al. 2016).

With regards to specific non-communicable diseases for 2015/2016, the number of newly diagnosed cases of diabetes mellitus was approximately 0.9 occurrences per 1,000 people in the Cape Winelands District Municipal Area (Massyn et al. 2016). Additionally, the number of newly diagnosed cases of hypertension in 2015/2016 was approximately 8.4 occurrences (in people over the age of 40) per 1,000 people in the District Municipal Area (Massyn et al. 2016).

Furthermore, in the Cape Winelands District Municipal Area between 2009 and 2014, meningitis/encephalitis was ranked as the 7th most common cause of death in the age group 5 to 14 years old, accounting for 2.2 % deaths in this age group (Massyn et al. 2016).

Concerning waterborne and communicable diseases, approximately 21.55 % of the Cape Winelands District Municipal Area's households do not source water from piped water schemes (Statistics South Africa 2011) and are therefore vulnerable to waterborne diseases. Presently the water supply in the District Municipal Area is insufficient with climate change and its associated impacts predicted to exacerbate this water scarcity (Cape Winelands District Municipality 2017).

In terms of risks posed by working conditions, about 53.3 % of the Cape Winelands District Municipal Area's economically active population are employed, of which roughly 16.0 % are employed within the informal sector (Statistics South Africa 2011). Many of the people employed in the informal sector work outdoors in poor conditions, with limited infrastructure and services such as shade, and limited access to amenities such as water and sanitation (Statistics South Africa 2011).

Additionally, 7.60 % of the Cape Winelands District Municipal Area's households are involved in agricultural activities (Statistics South Africa 2011). People who work outdoors, like those involved in agricultural activities, are especially vulnerable to the impacts of extreme weather conditions. Moreover, climate change is forecast to exacerbate the frequency and severity of extreme weather events (Department of Environmental Affairs 2013c). Consequently, predicted impacts for households involved in agriculture include reduced agricultural yields and water security as well as increased food insecurity.

Climate change impacts affect the social and environmental determinants of health which include clean air, secure shelter, safe drinking water, and sufficient food (World Health Organization 2017). Below are some general climate change manifestations and their associated impacts on human health.

- Natural disasters - The frequency and severity of natural disasters has increased. Natural disasters destroy health facilities and homes. People may be forced to vacate their properties leading to increased risk to a wide range of health effects including communicable diseases and mental disorders (World Health Organization 2017).
- Increased storm events - These affect the supply of fresh water consequently increasing the risk of diarrhoeal diseases (World Health Organization 2017).
- Floods - The frequency and intensity of floods has increased. Floods pollute water supplies and increase the risk of water borne diseases. In addition, people lose their lives as a result of drowning or physical injuries, property is damaged and the supply of health services is disrupted (World Health Organization 2017). Climate change will also impact the distribution and causes of several communicable diseases including cold-influenza and dry-meningococcal meningitis among others (Singh and Kistnasamy 2014).
- Changes in climate conditions also affect vector-borne diseases that are transported through organisms such as snails, insects and other cold-blooded animals (World Health Organization 2017). With climate change the transmission season will lengthen and the geographic range of some vector borne diseases will change (World Health Organization 2017).
- Increased temperatures and variable rainfall are likely to reduce agricultural yields consequently increasing the prevalence of malnutrition and hunger as a result of food insecurity (World Health Organization 2017).
- Increased heat stress leads to death which can be attributed to cardiovascular and respiratory diseases (World Health Organization 2017).
- Increased air pollution and increased occupational health problems (World Health Organization 2017).

The main disaster risks that are likely to affect human health in the Cape Winelands District Municipal Area are wild fires, drought, severe storms and floods (SRK Consulting 2011; Cape Winelands District Municipality 2017). It is predicted that these disasters will be exacerbated by climate change (Cape Winelands District Municipality 2015).

From the information above, the predicted impacts of climate change on human health and health services are mostly negative. Hence, there is a need for climate change adaptation (and mitigation)

to limit the negative impacts and encourage any positive effects of climate change on human health in the Cape Winelands District Municipal Area.

4.5 Cape Winelands DM Human Settlements Sector Summary

The Cape Winelands District Municipality population is approximately 787,491 (Statistics South Africa 2011). Of the District Municipalities within the Western Cape, the Cape Winelands District Municipality has the highest population (Cape Winelands District Municipality 2017).. 43.98% of the total population are between 15 and 39 years old, while children under 15 years make up 25.84% of the total population (Statistics South Africa 2011). People between the ages of 40 and 64 constitute 25.05% of the total population, while people over 64 years old constitute the smallest (5.31%) part of the total population (Statistics South Africa 2011). The most populous Local Municipality within the District Municipality is the Breede Valley Local Municipality (SRK Consulting 2011)

Regarding education levels in the District, 35.61% of the population have some secondary schooling, while 21.59% have some or completed primary schooling, 23.33% of the total population have completed matric and 8.56% of the population have earned post-school qualifications (Statistics South Africa 2011). The remaining 10.90% have been classified as "other" in terms of their level of education (Statistics South Africa 2011).

The non-economically active population in the District constitute 35.68% of the District's working-age population (those aged 15 to 64) (Statistics South Africa 2011). Approximately 53.30% of the working-age population is employed (Statistics South Africa 2011). The formal sector is the largest employer, accounting for 76% of employed people (Statistics South Africa 2011). Within the formal sector, the agricultural sector employs the highest proportion of people (23%) in comparison to other sectors (Cape Winelands District Municipality 2017). The unemployed constitute 8.74% of the working-age population, while 2.28% are discouraged work-seekers (Figure 23) (Statistics South Africa 2011).

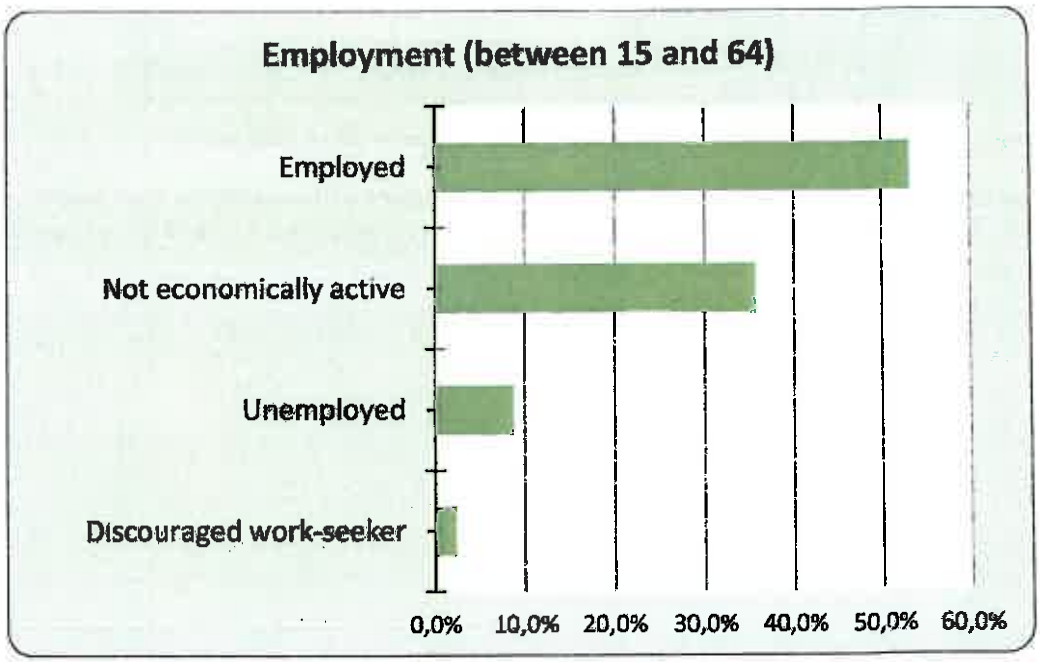

Figure 23: Employment status in the District Municipal Area (Statistics South Africa, 2011)

The District Municipality is described as one of the 'pearls of South Africa's rural and small-town sub-regions' due to its largely agricultural nature (Cape Winelands District Municipality 2017) with only 0.5% of District's land located to towns (SRK Consulting 2011). There are 198,261 households and on average four individuals per household in the District Municipality (Statistics South Africa 2011).

About 64.5% of the District Municipality's dwellings are formal[1] (house) , while 5.4% are apartments, 15% are Informal dwellings and about 15.1% of the dwellings have not been specified (Statistics South Africa 2011) (Figure 24). About 12.16% of the households within the District Municipality use alternatives to electricity for cooking, while 6.60% use alternatives to electricity for cooking, heating and lighting (Statistics South Africa 2011). Furthermore, water service providers are the biggest source of water, they supply 78.45% of the District's population with water (Figure 24) (Statistics South Africa 2011). Additionally, 5.21% of the population get water from boreholes and 1.18% from water tanks.

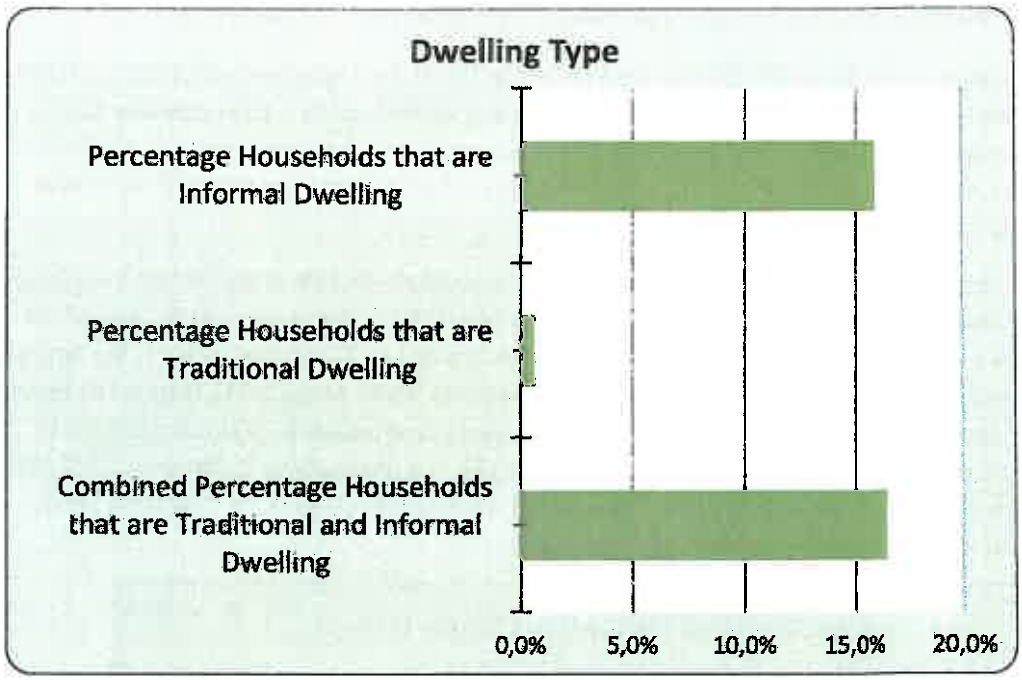

Figure 24: Households by type of dwelling in the District Municipal Area (Statistics South Africa, 2011)

Concerning sanitation services (Figure 26), 91.28% of the population have access to flush toilets, while 0.79% use pit latrines, 5.52% have access to other toilet facilities and 2.41% of the population have no toilet facilities (Statistics South Africa 2011).

[1] "Formal House" includes cluster houses, flat or apartment, house/flat/room in backyards, house or brick/concrete block structure on a separate stand or yard or on a farm, room/flatlet on a property or larger dwelling/servant's quarters/granny flat and semi-detached houses.

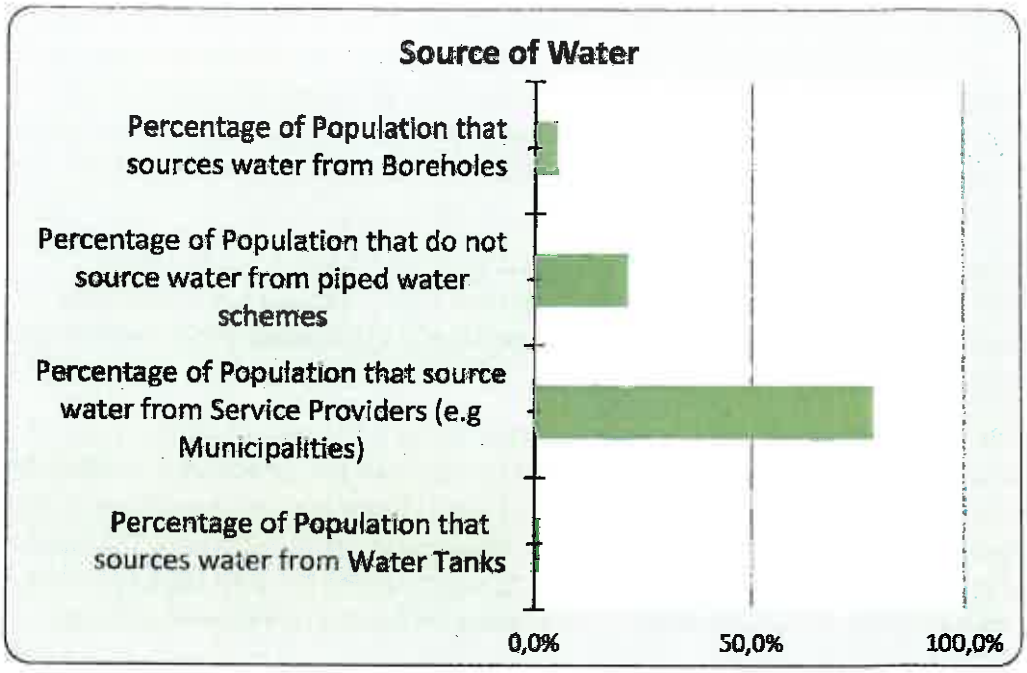

Figure 25: Household water sources in the District Municipal Area (Statistics South Africa 2011)

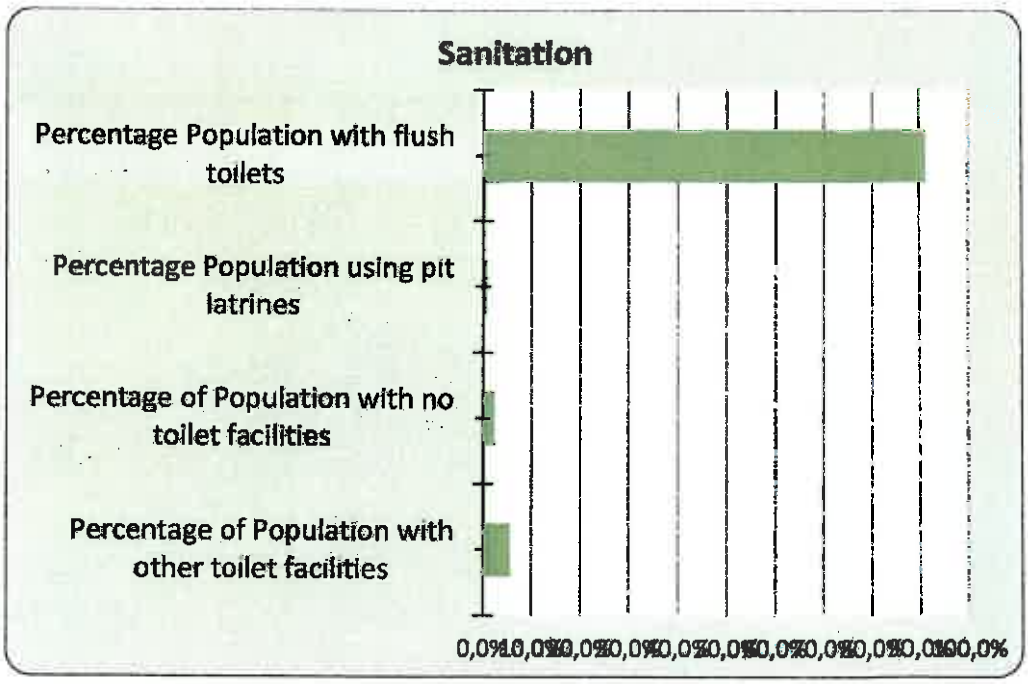

Figure 26: Sanitation facilities in the District Municipal Area (Statistics South Africa 2011)

National, provincial, main, divisional and minor roads facilitate movement within the District Municipality (Cape Winelands District Municipality 2007). Rail routes also traverse through the district (Cape Winelands District Municipality 2017). In addition, two aerodromes are found within the District's boundaries, with one aerodrome at Sanbona and the other at Ceres (Cape Winelands District Municipality 2007). The Sanbona aerodrome is under-developed, not serviced by proper roads or refuelling facilities among other essential services, and is not used to it fullest potential because it is leased to an individual (Cape Winelands District Municipality 2007).

Climate related hazards in the District include: droughts, floods (flood risk in the District is among the highest in the country), severe storms, seismic activity; and veld fires (SRK Consulting 2011). The District is prone to veld fire hazards for about six months of the year (Cape Winelands District Municipality 2017). In addition most of the District has an extremely high veld fire risk, however, there are areas in the north and east that have low veld fire risks (Figure 27) (Department of Agriculture, Forestry and Fisheries 2010).

Climate change predications for the District indicate reduced rainfall and increased average temperatures in the future (SRK Consulting 2011). As water supply is already insufficient in the District, climate change and associated impacts are predicted to exacerbating water scarcity in the future (Cape Winelands District Municipality 2017).

Water scarcity and predicted increases in average temperatures will negatively affect the agricultural sector leading to reduced agricultural production and consequently job and economic losses (Cape Winelands District Municipality 2015). These job losses may increase pressure on social services and infrastructure in the District (Cape Winelands District Municipality 2015). Additionally, the reduced agricultural production coupled with environmental degradation will have direct impacts on benefits derived from the tourism industry leading to further economic losses (Cape Winelands District Municipality 2015).

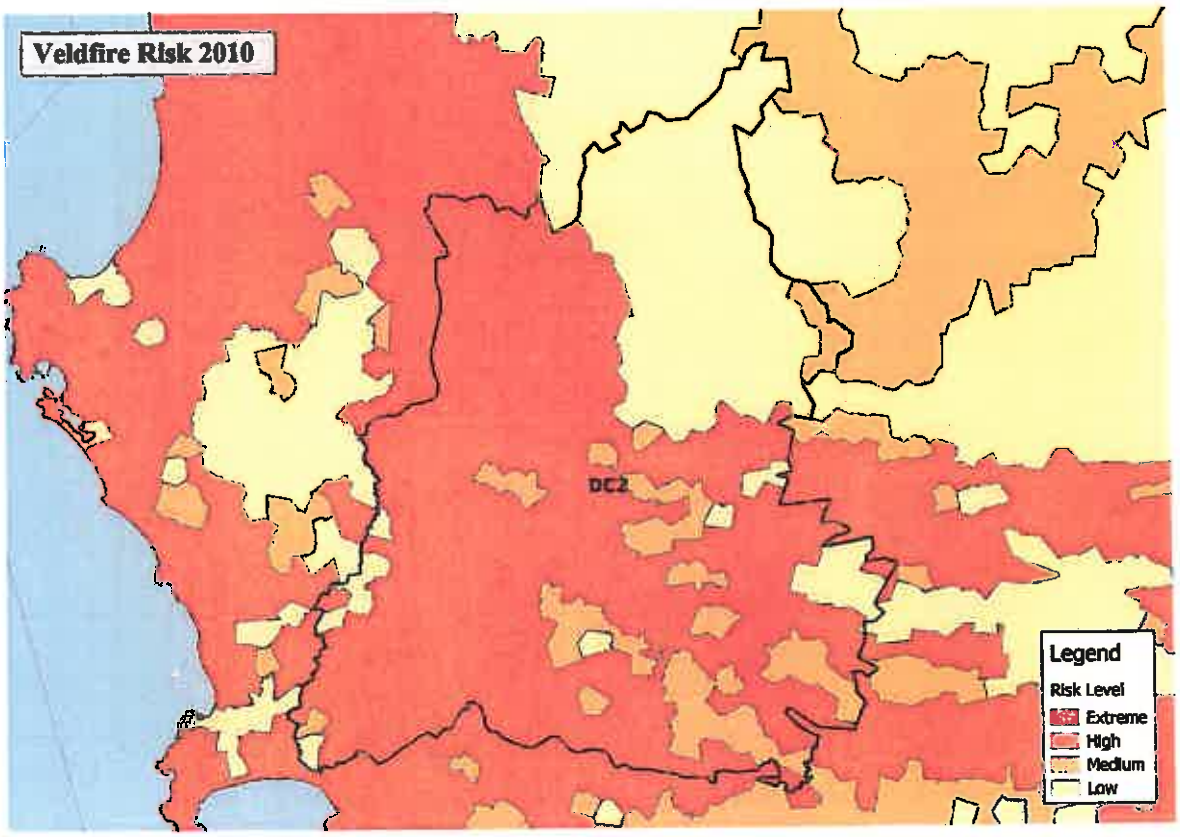

Figure 27: Veld fire risk for District Municipality Area (Department of Agriculture, Forestry and Fisheries 2010).

4.6 Cape Winelands DM Water Sector Summary

The Cape Winelands District Municipality falls under the Breede-Gouritz/Berg Hydrological Zone (Figure 28) (Department of Environmental Affairs 2013d). As outlined above (in Figure 1), in the warmer wetter scenario, the Breede-Gouritz/Berg Hydrological Zone is predicted to experience an increase in rainfall in winter and spring, and a decrease in autumn (Department of Environmental Affairs 2013d). While in the hotter and drier scenario, the region will experience a decrease in rainfall in all seasons and a strong decrease in rainfall in the west of the Hydrological Zone (Department of Environmental Affairs 2013d).

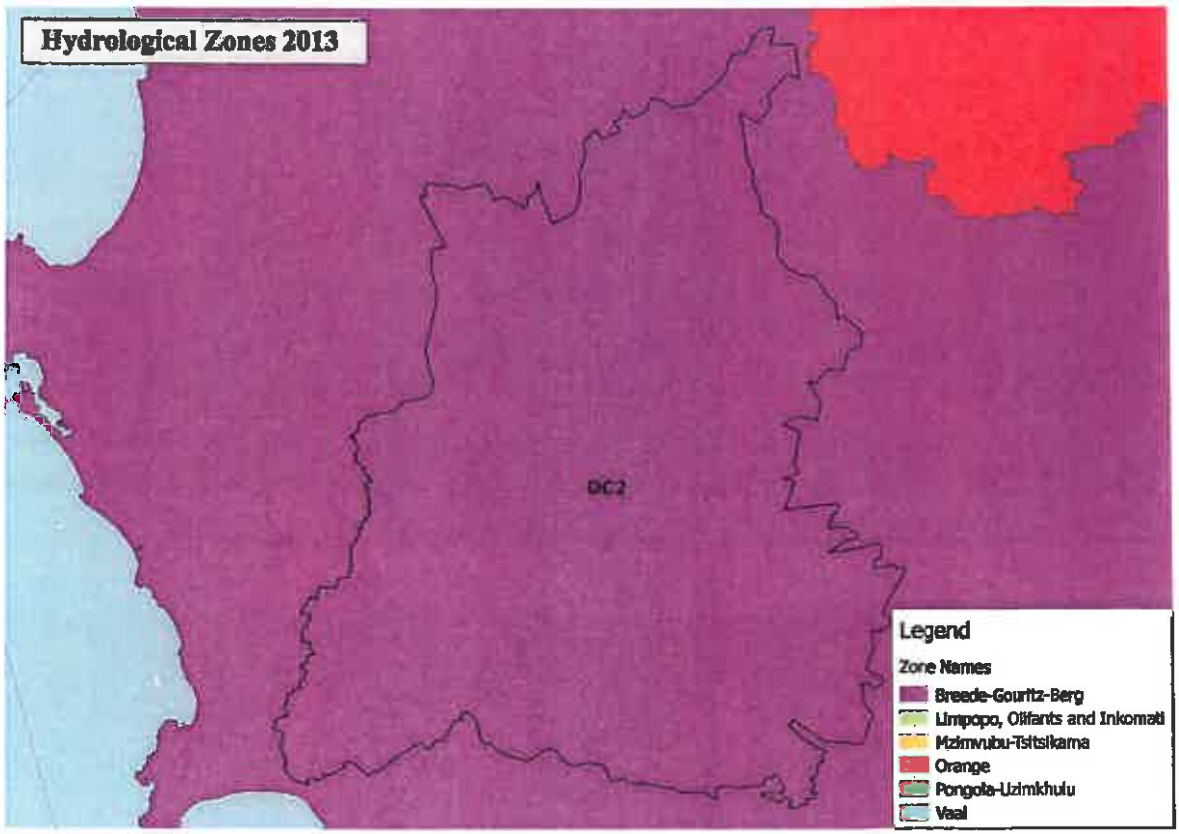

Figure 28: Hydrological Zone for the District Municipal Area (Department of Environmental Affairs 2013d)

Some hydrological zones cover multiple water management areas. The majority of the Cape Winelands District Municipality falls into the Berg-Olifants Water Management Area (Figure 29), while much of the southeast of the District Municipality Area falls into the Breede-Gouritz Water Management Area (Department of Environmental Affairs 2013d). Within the Cape Winelands District Municipal Area there are 18 main water resources (such as dams and lakes), some of which are the: Berg River, Brandvlei, Voelvlei, Keerom and Bushmanskrantz Dams (Department of Water and Sanitation 2016b). These resources are mostly found in the south of the District Municipal Area (Figure 30).

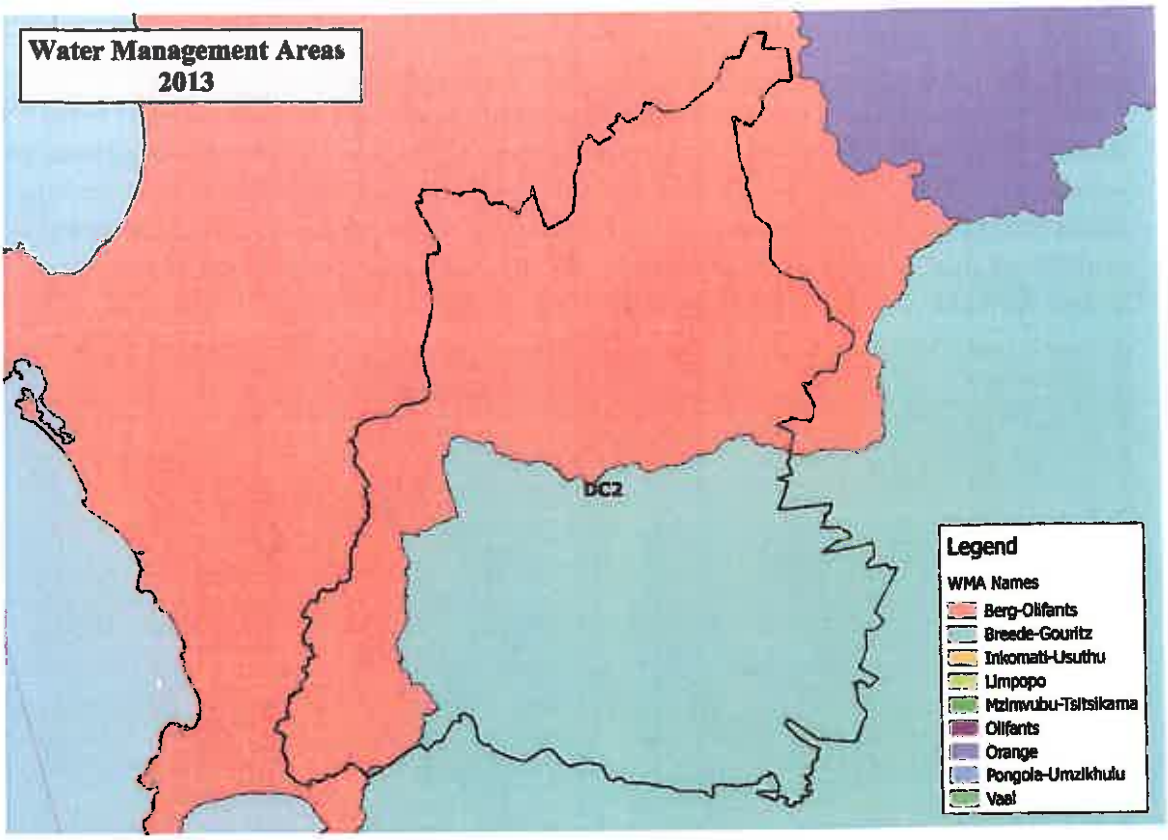

Figure 29: Water Management Area for the District Municipal Area (Department of Water Affairs 2013)

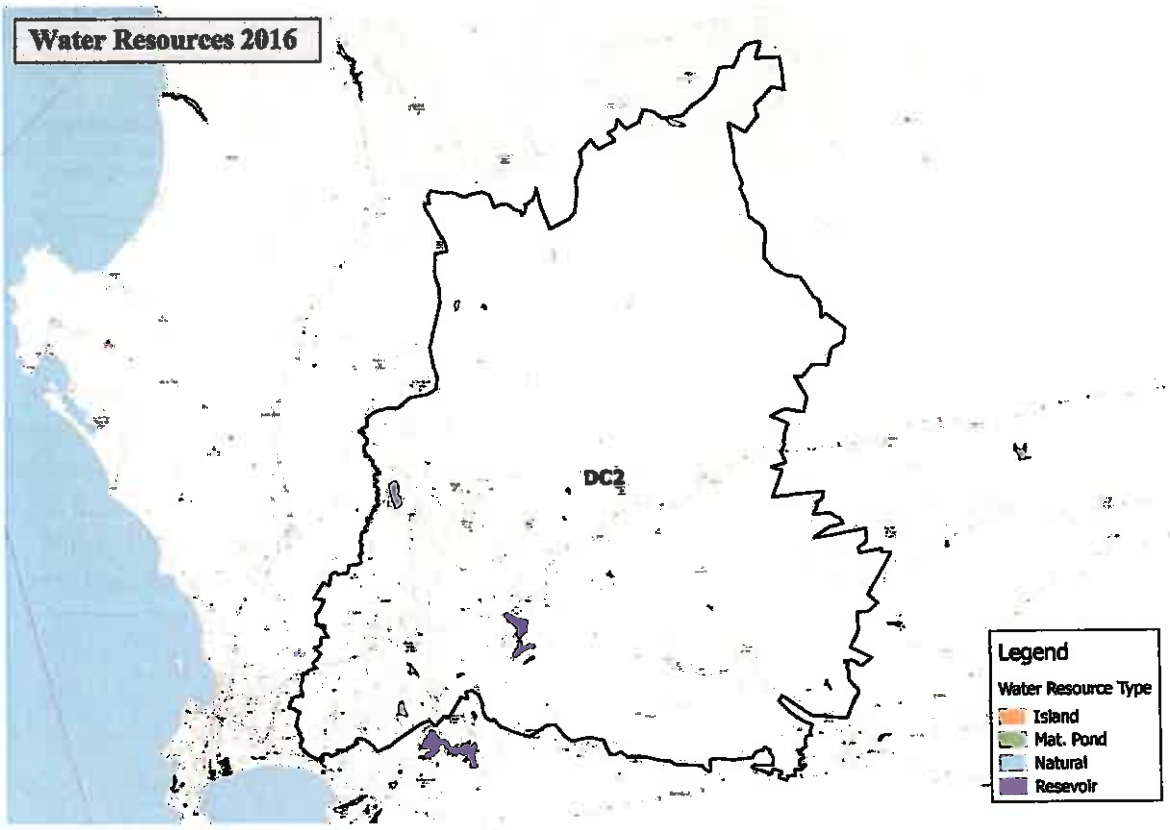

Figure 30: Water resources within the District Municipal Area (Department of Water and Sanitation 2016b)

The river quality within the Cape Winelands District Municipal Area is varied, which means that only some rivers are able to contribute towards river ecosystem biodiversity targets (SANBI 2011). The health of a river system is graded into one of several categories (SANBI 2011). These categories are listed in Text Box 1.

Text Box 1: Freshwater Ecosystem Priority Areas (FEPAs) classification for river ecosystem conditions

River conditions in South Africa have been classified according to the Freshwater Ecosystem Priority Areas (FEPAs) for river ecosystems (SANBI 2011). The different grades are provided below:

A = Unmodified, Natural
B = Largely Natural with Few Modifications
Ab = A or B Above
C = Moderately Modified
D = Largely Modified
E = Seriously Modified
F = Critically/Extremely Modified
Ef = E or F Above
Z = Tributary Condition Modelled as Not Intact, According to Natural Land Cover

Rivers that are unmodified or in their natural state are able to contribute towards river ecosystems biodiversity targets (SANBI 2011). In contrast, rivers that are categorised as 'largely modified' or worse are unable to contribute towards river ecosystems as they are not in a good state.

Some of the main rivers in the Cape Winelands District Municipality Area (Figure 31) such as the Hex and Touws Rivers as well as most of the Berg Rivers are classified as 'largely modified' (SANBI 2011). Additionally, the Breede and Olifants Rivers are classified as 'moderately modified', while the Doring and Riet Rivers and the upper section of the Berg River are classified as 'largely natural with few modifications' (SANBI 2011). Furthermore, most tributaries are classified as 'largely natural with few modifications', while some are classified as 'tributary conditions modelled as not intact, according to natural land cover' (SANBI 2011).

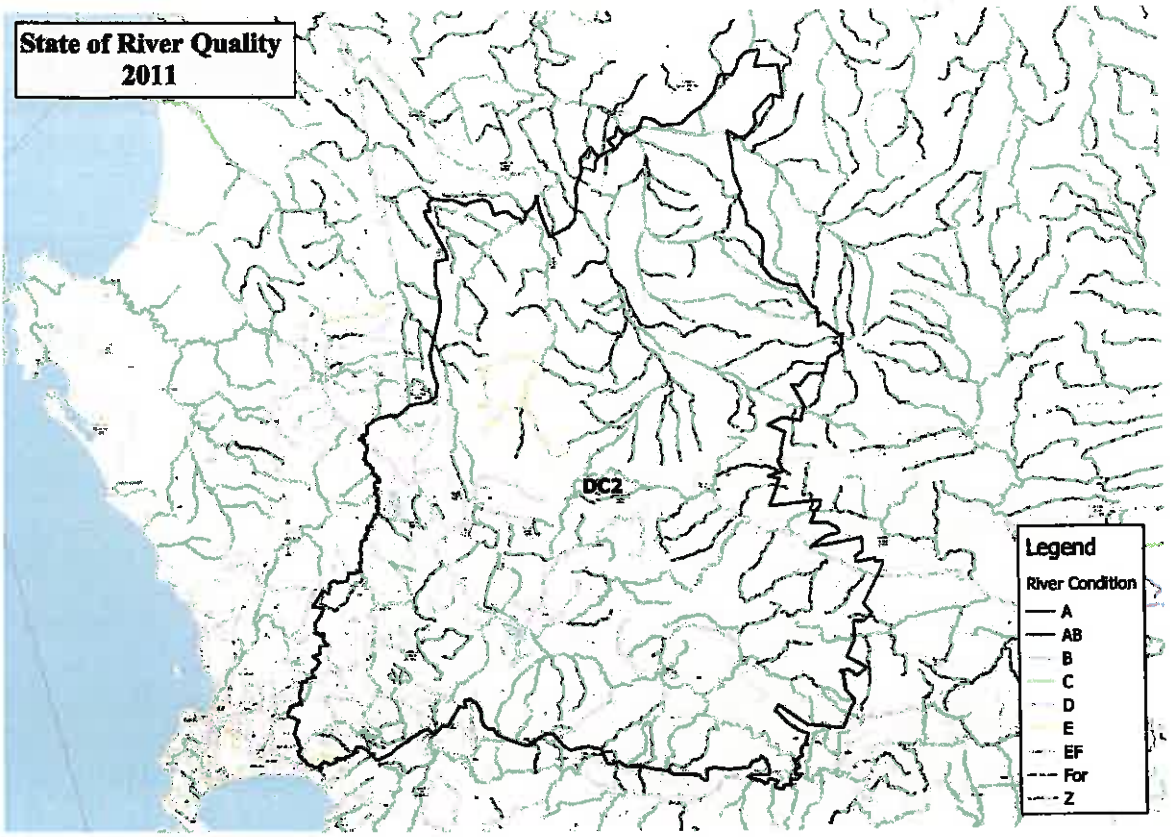

Figure 31: State of water quality in rivers in the District Municipal Area (SANBI 2011)

Water resources in any catchment are largely depended on rainfall. The Historical Climate Monthly Averages include long-term historical monthly average rainfall totals and monthly averaged minimum and maximum temperatures for a particular spot (Climate System Analysis Group 2017b). The Historical Climate Monthly Averages for the Cape Winelands District Municipal Area have been calculated using the nearest weather data station to the Municipality, which is the measuring station at Robertson (Figure 32). The graph (in Figure 32) shows that average temperatures peak in summer while rainfall peaks in winter (Climate System Analysis Group 2017b). The lowest average monthly rainfall historically occurs in January, which averages less than 13 mm (Climate System Analysis Group 2017b).

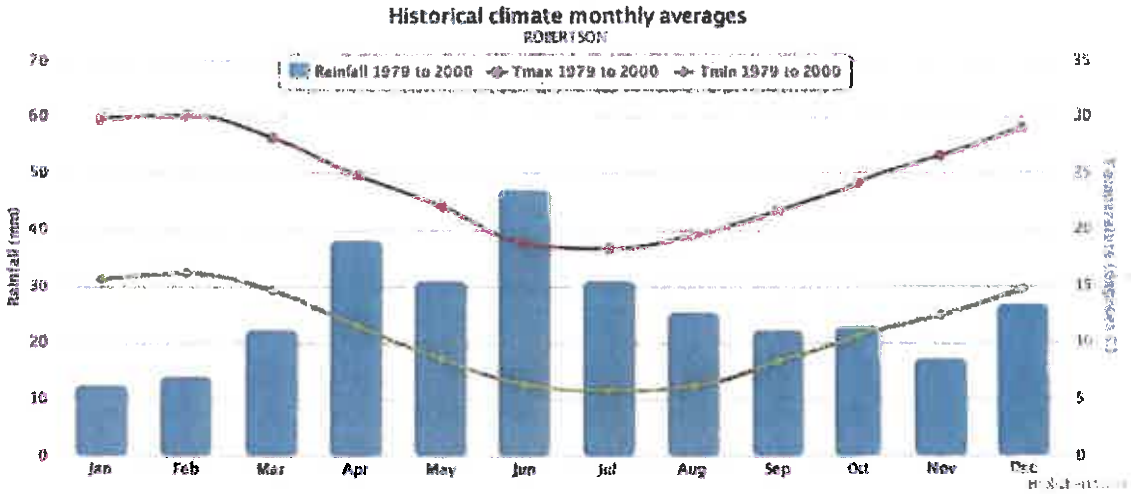

Figure 32: Historical Climate Monthly Averages for Robertson (Climate System Analysis Group 2017b)

Linked to the rainfall and rivers in the Cape Winelands District Municipal Area are the water and sanitation services. Specifically, a total of 21.55 % of households in the Cape Winelands District Municipal Area do not receive their water from piped water schemes, which is slightly lower than the national average of 21.82 % (Statistics South Africa 2011). Furthermore, the percentage of the population with flush toilets in the Cape Winelands District Municipal Area is 91.28 % while the national average is 56.51 % (Statistics South Africa 2011). This indicates a very good spread of sanitation access within the Cape Winelands District Municipal Area.

Although the Cape Winelands District Municipality has high scores for the provision of water and sanitation services to households in the District Municipal Area, there are still issue regarding water quantity and quality in the District Municipal Area. Water resources are very limited in the Cape Winelands District Municipal Area and overconsumption of available water resources has caused sections of some rivers to run dry in mid-summer (Cape Winelands District Municipality 2017). The erosion of river banks (and the resulting siltation of water supply infrastructure) and the invasion of alien plants have also reduced water quantity and quality in the District Municipal Area (Western Cape Department of Environmental Affairs and Development Planning 2013; Cape Winelands District Municipality 2015). Furthermore, pollution from land-fill sites, informal settlements, farming activities and inadequate wastewater treatments works have negatively affected water quality in the Cape Winelands District Municipal Area (Cape Winelands District Municipality 2017).

Directly linked to water and sanitation services in the Cape Winelands District Municipal Area are the Blue and Green Drop scores. Blue Drop scores rate the quality of drinking water, while Green drop scores rate the quality of wastewater. The Blue Drop score can be understood using the following scale: 90 – 100 % = 'Excellent situation'; 75 - <90 % = 'Good status'; 50 - <75 % = 'Average performance'; 33 - <50 % = 'Very poor performance'; and, 0 - <33 % = 'Critical status' (Department of Water Affairs 2011). There is no 2014 Blue Drop score for the Cape Winelands District Municipality, rather there is a Blue Drop score for each local municipality within the Cape Winelands District Municipality (Department of Water and Sanitation 2014).

The 2014 Blue Drop scores of each local municipality within the Cape Winelands District Municipality are as follows: The Breede Valley Local Municipality scored 89.16 %; the Drakenstein Local Municipality scored 72.14 %; the Langeberg Local Municipality scored 72.30 %; Stellenbosch Local

Municipality scored 80.12 %; and the Witzenberg Local Municipality scored 95.77 % (Department of Water and Sanitation 2014).

The Green Drop score rates the quality of wastewater management in municipalities. The Green Drop score can be understood using the following scale: 90 – 100 % = 'Excellent situation'; 80 - <90 % = 'Good status'; 50 - <80 % = 'Average performance'; 30 - <50 % = 'Very poor performance'; and, 0 - <30 % = 'Critical state' (Department of Water and Sanitation 2016a). There is no 2013 Green Drop score for the Cape Winelands District Municipality, rather there is a Green Drop scores for each local municipality within the Cape Winelands District Municipality (Department of Water and Sanitation 2013).

The 2013 Green Drop scores of each local municipality within the Cape Winelands District Municipality are as follows: The Breede Valley Local Municipality scored 90.21 %; the Drakenstein Local Municipality scored 77.79 %; the Langeberg Local Municipality scored 51.58 %; Stellenbosch Local Municipality scored 40.16 %; and the Witzenberg Local Municipality scored 97.96 % (Department of Water and Sanitation 2013). This mix of Green Drop scores indicate that the majority of wastewater services in the Cape Winelands District Municipality are being managed according to the expectations of the Department of Water and Sanitation as assessed by the Green Drop score.

In addition to the Green Drop scores, 82.66 % of households have their refuse removed by local authority/private company in the Cape Winelands District Municipal Area (Statistics South Africa 2011). This is much better than the national average for household refuse removal, which is 59.40 % (Statistics South Africa 2011). Nevertheless, uncollected waste often still ends up in water and sanitation infrastructure, blocking storm water drains and polluting rivers. It is predicted that climate change will affect these water and sanitation challenges.

Climate change is predicted to have an impact on rainfall patterns in South Africa. Future rainfall projections for the Cape Winelands District Municipality (using the measuring station at Robertson) for the period 2020 to 2040 (Figure 33) are made using the Representative Concentration Pathways (RCP) 4.5 greenhouse gas concentration trajectories (Climate System Analysis Group 2017a).

The bar charts (Figure 33) show the potential change in rainfall, with the blue bars indicating a potential increase in average rainfall and the red bars indicate a potential decrease in average rainfall (Climate System Analysis Group 2017a). The grey lines represent the various models used for this projection. It is therefore projected across most of the models that Cape Winelands District Municipality could experience an increase in rainfall in the months of January, February, March, April, August, September, October and December, and a decrease in rainfall during May, June, July and November (Climate System Analysis Group 2017a).

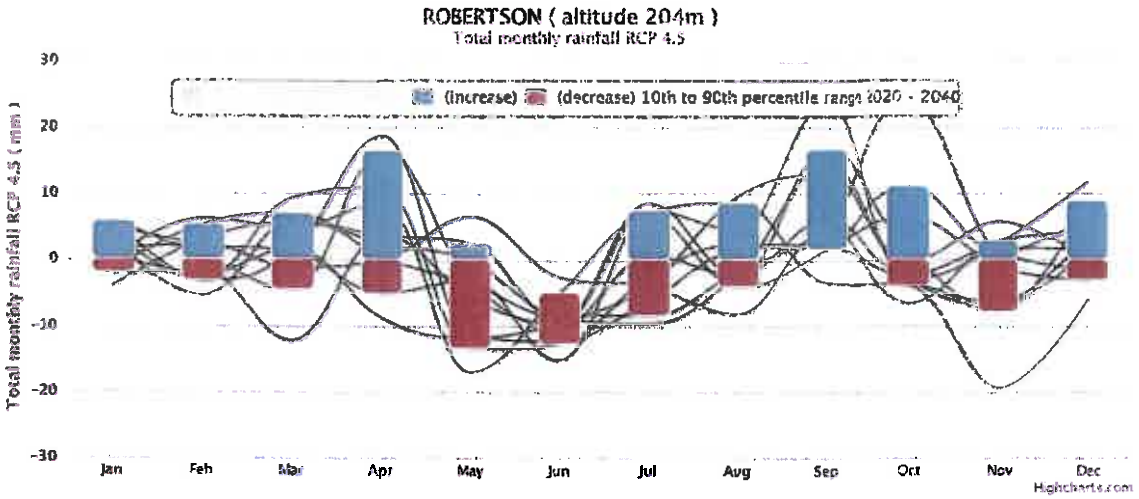

Figure 33: Rainfall Projections for Robertson (Climate System Analysis Group 2017a)

Climate change is predicted to increase the pressure on the Cape Winelands District Municipal Area's already insufficient water supply (Cape Winelands District Municipality 2017, 2015). It is also predicted to increase the variability of rainfall as well as increase the frequency and severity of droughts, wildfires and floods in the Cape Winelands District Municipal Area (Cape Winelands District Municipality 2017, 2015). Increased average temperatures, linked to climate change, are also predicted to lead to an increase of bacteria concentrations such as E. Coli within the Cape Winelands District Municipal Area (Cape Winelands District Municipality 2015). These increases could put additional strain on the human health and water sectors within the Cape Winelands District Municipal Area (Cape Winelands District Municipality 2015).

5 Vulnerability Assessment Results

The following section provides a summary of the Vulnerability Assessment conducted for Cape Winelands District Municipality.

5.1 Agriculture

Table 5: Agriculture Vulnerability Indicator Table Cape Winelands District Municipality

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comments
1	Change in grain (maize, wheat & barley) production	Areas towards the west of RSA are likely to become less suitable for grain production	Do you grow or have potential to grow grains in your area?	Yes	Wheat is grown on a small scale.	How important is grain to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low	Low	Wheat is a low priority crop in the District. SmartAgri Document for the Province notes that conservation agriculture has increased production and profit from wheat farming.		

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No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
2	Change in Sorghum production	Sorghum yields are projected to increase in parts of western KZN, inland areas of the Eastern Cape and the eastern Free State, with some areas in the north registering losses compared with present climatic conditions.	Do you grow or have potential to grow Sorghum in your area?	No	Sorghum is currently not grown, and we do not foresee it being grown in the future.	How important is sorghum to the local economy and livelihoods? High Priority Crop = High, Medium Priority Crop = Medium, Low/No Priority Crop = Low				
3	Change in Soya Bean Production	Areas in the east of RSA lost to potential production, with an expansion of suitable areas inland towards the central/west or RSA.	Do you grow or have potential to grow Soya Bean in your area?	No	Soya Bean is currently not grown, and we do not foresee it being grown in the future in the District.	How important is soya bean to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low				

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
4	Change in Sugarcane Production	Increase in <10% in many parts of the present cane growing areas, but by up to 30% in new growth areas further inland	Do you grow or have potential to grow Sugarcane in your area?	No	Sugarcane is currently not grown, and we do not foresee it being grown in the future in the District.	How important is sugarcane to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low				
5	Change in viticulture (grapes) production	Areas suitable for viticulture could be substantially reduced or shift to higher altitudes and currently cooler, more southerly locations	Do you grow or have potential to grow grapes in your area?	Yes	Throughout the District, except in Langeberg and Witzenberg based on temperature, rainfall and chill units.	How important is viticulture (grapes) to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low /No Priority Crop = Low	High	Viticulture is a high priority crop in the District with 56 % of all South African wine grapes, and 68 % of South Africa's wine, grown in the District. The District is the most important viticulture and winemaking area in South Africa	Low	Risks highlighted in the W-Cape CC Response Framework, but implementation not clear. SmartAgri, Climate Change Response Strategy. Research has been done on the impacts of climate change on the wine sector in South Africa.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
6	Change in fruit production	Projected reduction of the area suitable for fruit production (e.g. 28% reduction in apple and pears) by as early as 2020.	Do you grow or have potential to grow fruit in your area?	Yes	Throughout the entire District, except in Langeberg and Witzenberg based on temperature, rainfall and chill units. Includes apples and citrus.	How important is fruit to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low	High	Already strained by restricted water supply. Impacted more by extreme events than by changes in averages.	Low	Risks highlighted in the W-Cape CC Response Framework, but implementation not clear. SmartAgri, Climate Change Response Strategy.
7	Change in other crop production areas (e.g. vegetables, nuts, etc.)	Crop production may vary depending on a warmer wetter or warmer drier climate	Do you grow or have potential to grow other crops in your area?	Yes	Vegetables are grown in Witzenberg and Langeberg. Nuts can be found in Langeberg (there are even some farms in Montagu).	How important are other crops to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low	Medium	Other crop production is of medium contribution to the agricultural sector within the District.	Medium	SmartAgri, Climate Change Response Plan

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
8	Increased areas for commercial plantations	The total area suitable for commercial forestry plantations would increase along the eastern seaboard and adjacent areas	Do you have or have potential for commercial forestry plantations in your area?	Yes	Small commercial plantations consisting of Pinus species	Is there capacity for commercial plantation expansion (water use licence, land availability, demand for plantation products)? High Potential for Expansion = High; Medium Potential for Expansion = Medium; Low/No Potential for Expansion = Low	Low	Not a priority crop		

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No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
9	Increased exposure to pests such as eldana, chilo and codling moth	Exposure to eldana would increase in areas suitable for sugarcane by ~10% to > 30%. The area subject to damage by chilo would increase substantially (sugarcane). The area subject to damage by codling moth would increase substantially (apples, pears, walnuts and quince)	Are you or will you be exposed to agricultural pests in your area?	Yes	This is relevant throughout the entire District. This is due to change in climate variables: higher temperatures and less rainfall.	How important are crops that are vulnerable to pests to the local economy and livelihoods? High Priority Crop = High; Medium Priority Crop = Medium; Low/No Priority Crop = Low	High	The production of fruit is increasingly vulnerable to damage due to projected expansion of areas affected by agricultural pests.	Medium	The SmartAgri - Regional and Commodity Briefs highlights the need for innovative responses in order to increase sector resilience to pests and diseases, leading to greater cohesion and giving rise to new industries. SmartAgri.
10	Increased risks to livestock	Projected decreases in rainfall and hence herbage yields would result in negative health impacts for livestock	Do you or will you have livestock in your area?	Yes	Intensive livestock production- chickens, eggs, pigs.	How important is livestock farming to the local economy and livelihoods? High Priority = High; Medium Priority = Medium; Low/No Priority = Low	High	Poultry farming is one of the most important agricultural activities in the District.	Low	Some adaptive responses highlighted in SmartAgri Plan. Climate Change Response Strategy.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
11	Reduced food security	Reduced food security, particularly of subsistence farmers, and resultant increase in malnutrition	Do you or will you have food insecurity in your area?	No		Percentage households involved in agricultural activities More than 20% = High; Between 20% & 10% = Medium; Less than 10% = Low				
53	Reduced food and feed security	Reduced food security, particularly of subsistence farmers, and resultant increase in malnutrition.	Do you or will you have food insecurity and feed insecurity in your area?	Yes	Subsistence, emerging and smallholder farming systems are expected to be at high risk due to their poorer access to irrigation water and technologies, financial support and other resources.	Percentage households involved in agricultural activities More than 20% = High; Between 20% & 10% = Medium; Less than 10% = Low	Low	Only 7.6% of households are involved in agricultural activities.	High	The District's 2016/2017 IDP acknowledges the need for a more integrated system-wide response with all role players as this would help the agricultural sector to scale up effective strategies, innovate, and move towards a longer-term transformation.

5.2 Biodiversity and Environment

Table 6: Biodiversity Vulnerability Indicator Table Cape Winelands District Municipality

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
12	Loss of High Priority Biomes	High Priority Biomes (including Grasslands, Nama-Karoo, Indian Ocean Coastal Belt, Fynbos, Forest) to be replaced by other biomes such as savanna and desert.	Do you currently have high priority biomes in your area?	Yes	Throughout the entire District. This is due to higher temperatures, less rainfall, fire frequencies and invasive alien species.	How much of this High Priority Biome will be lost due to climate change? A significant amount= High; A moderate amount= Medium; None/a low amount = Low	High	It is forecast that the Fynbos Biome will be substantially reduced by the Succulent Karoo Biome.	Low	The 2016 Fynbos Forum: Ecosystem Guidelines document covers the lowland, midland and mountain Fynbos ecosystems in-depth, discussing the current state of the Fynbos biome, how it is being damaged and what is needed to reduce and reverse future degradation and change. Langeberg: The National Fire Protection Agency assisted the municipality with preparing plans and maps on where to implement fire breaks. Langeberg now needs support and financial resources to implement. The Succulent Karoo is currently "taking a punch" due to the increased incidents of veld fires and lower rainfall. There is not enough research being done in the District on the specific impacts of climate change with regards to the loss of high priority biomes. The District needs to understand what the impacts of this loss will be on each sector, e.g. tourism, agriculture, economy etc. Provincial SoER, SDFs, EMF's.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
13	Increased impacts on threatened ecosystems	Loss of threatened ecosystems due to changes in climate	Do you currently have threatened ecosystems in your area? (Classified as critically endangered, endangered or vulnerable)	Yes	The entire District due to higher temperatures and less rainfall.	How much of your Municipality is covered by threatened ecosystems? A significant amount= High; A moderate amount= Medium, None/a low amount = Low	High	There are numerous threatened ecosystems types present in the District which are categorised as critically endangered. There are also quite a few ecosystems categorised as endangered or vulnerable.	Medium	The District's IDP states the need for a joint management approach with adjacent authorities regarding sensitive ecosystems and protected areas. If indicator number 12 (Loss of priority biomes) is prioritised, this indicator will indirectly be covered. Provincial SoER, SDFs, EMF's.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
14	Increased impacts on environment due to land-use change	Loss of biodiversity and degradation of natural habitat due to significant land use change (such as alien invasion, soil erosion and urbanisation) which impacts on ability to respond to climate change	Are you currently experiencing land use change?	Yes	The entire District due to farming practices, urbanisation, population growth etc.	Have you experienced significant loss of habitat since 1990? Above 10% = High; Between 5-10% = Medium; Under 5%= Low	High	The natural environment is under pressure from intensive agricultural practices, coastal population growth and the expansion of urban areas.	Low	Although there is a lack of statistics regarding land use change and degradation, the Provincial State of the Environment Report highlights the need of provincially developed programmes to achieve more sustainable land management practices for the future. Provincial SoER, SDFs, EMF's.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
15	Loss of Priority Wetlands and River ecosystems	Changes in rainfall patterns and temperature are likely to impact on wetlands and the ecosystem services they provide	Do you have priority wetlands and river ecosystems in your area?	Yes	The entire District, due to development and changes in climate variables (rainfall/temperature). Increase in alien invasive species and animals, plants and animals also play a role.	How important are wetlands and river ecosystems in providing ecosystem services in your Municipality? A significant amount= High, A moderate amount= Medium, None/a low amount = Low	High	Wetlands provide important ecosystem services and have been degraded or irreversibly lost as a result of human activities. A significant number of wetlands in the District have been heavily to critically modified.	Medium	The Working for Wetlands Programme focuses on the rehabilitation of wetlands and has increasingly shifted its emphasis to the protection of targeted wetlands and promoting sustainable use of others. Working for Wetlands is however not active throughout all local municipalities across the District. Funding for these types of programmes is not continuous. The focus of these types of programmes is that most of the emphasis is placed on job creation and sometimes loses focus of the aim of the project. Provincial SoER, SDFs, EMF's.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
55	Loss of Soil Fertility	Changes in rainfall and temperature will impact on the biology, chemistry and physical properties of soil	Are you expecting drastic changes in rainfall and temperature that may impact on soil fertility?	Yes	Soil conditions are a contributing factor to plant growth and therefore food production.	How important is soil fertility in supporting ecosystems and livelihoods in your Municipality? A significant amount= High; A moderate amount= Medium; None/a low amount = Low	High	Agriculture and infrastructural development have led to the pollution and erosion of soil (particularly on the lower mountain slopes).	Medium	The Department of Agriculture's LandCare Program is an integrated community-based approach to the sustainable management and use of agricultural natural resources, including detailed sections in the guidelines which cover soil and land management.

5.3 Human Health

Table 7: Health Vulnerability Indicator Table Cape Winelands District Municipality

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
21	Health impacts from increased storm events	Increased storms will result increased risk of drowning, injuries and population displacement impacts.	Are you or will you experience increased storm events in your area?	Yes	Areas within the District expect severe climate change impacts and are experiencing increased vulnerability to extreme weather events.	How populated are areas vulnerable to storms events (e.g. flood zones)? Densely populated = High; Partially populated = Medium; Sparsely or not populated = Low	High	Increased flood impacts along and adjacent to river course in the District due to a change in the magnitude and frequency of extreme rainfall events.	High	Key interventions include a disaster management plan (complete) and review of a disaster risk assessment. Also, the National Disaster Management Act sets a solid regulatory basis for efficient and effective responses. Infrastructure - housing projects. Finance projects. Black frost. Decision support tool - WC Disaster Management Centre.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
22	Increased heat stress	Increases in average temperatures and extreme events (such as heat waves) are projected to induce heat stress, increase morbidity, and result in respiratory and cardiovascular diseases.	Are you or will you experience increased heat waves in your area?	Yes	The entire District, due to a change in higher temperatures.	Is there a high percentage of young and elderly in the area? More than 20% = high; Between 15% & 20% = Medium; Less than 15% = low	Medium	Almost 15% of the District's population is young or elderly.	Medium	The District has resources e.g. 40 ambulances, 3 responses and 5 rescue vehicles as well as 83 public health care facilities. Construction, agriculture, impact on burden of diseases. Climate info portal. SmartAgri- doc. WC Climate Change Response Strategy.

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No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comments
23	Increased vector borne diseases from spread of mosquitoes, ticks, sandflies, and blackflies	Vector borne diseases such as malaria is projected to spread within regions bordering current malaria areas, which are presently too cold for transmission.	Are vector borne diseases present or likely in your area?	No	The District does not border any current malaria regions.	Are you in or neighbouring an area with vector borne diseases (e.g. malaria)? Already in a vector borne disease area = High; Neighbouring a vector borne disease area = Medium, Not near a vector borne disease area = Low				
24	Increased water borne and communicable diseases (e.g. typhoid fever, cholera and hepatitis)	Favourable conditions for the incubation and transmission of waterborne diseases may be created by increasing air and water temperatures.	Are waterborne and communicable diseases present or likely in your area?	No		Have you had an incidence of waterborne and communicable diseases (e g typhoid fever, cholera and hepatitis) in the past 3 years Yes = High: No = Low				

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
25	Increased malnutrition and hunger as a result of food insecurity	Climate Change will affect food systems, compromising food availability, access and utilisation, leading to food insecurity (particularly of subsistence farmers)	Do you or will you have food insecurity in your area?	Yes	At a very small scale due to increases in temperature and reduced rainfall. Stunted growth, unemployment, substance abuse, more of an economic impact (Climate change will exacerbate these).	Child under 5 years severe acute malnutrition case fatality rate More than 10% = high; Between 5% & 10% = Medium, Less than 5% = low	Low	2.9% fatality rate of children under 5 years with malnutrition.	Low	Despite the low number of recorded malnutrition cases, the District's 2016/2017 IDP shows concern with where most cases have occurred (Breede Valley). SmartAgri- doc.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
26	Increased air pollution	Health impacts in resulting from exposure to air pollutants include eye irritation, acute respiratory infection, chronic respiratory diseases and TB, and sometimes death.	Do you or will you have air pollution in your area?	Yes	Increasing frequency of fires, air temperature inversions, drier periods, increases in particulate matter, effects of spraying regimes. Urbanisation: Indoor air pollution, particularly in informal dwellings as a result of cooking indoor.	Would you consider your area a high priority in terms of air pollution (e.g. SAAQIS Priority Areas)? Yes = High; Somewhat = Medium; No = Low	Low	CWDM is not a high priority area.	Medium	Air pollution priority areas (already identified and potential sources) or 'hotspots' have been identified in the District, and include agricultural areas, landfills, industries and domestic fuel burning areas. 13 industries in CWDM, all of them have AEL's, emitters are controlled. WC Health Impact Report on air quality. AQMP, SoER, Provincial Health Air Quality Report.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
27	Increased Occupational health problems	Temperature is a common climatic factor that affects occupational health (for example, agricultural labourer's productivity) by causing heat stress and dehydration.	Do people work outside or are in conditions that cannot be cooled in your area?	Yes	Occupational health problems may occur throughout the District in various sectors and may affect farm workers, construction workers and municipal labourers.	Do a significant percentage of people work outside or are in conditions that cannot be cooled? Significant = High; Some = Medium; Low/No = Low	High	The agricultural sector alone is responsible for 23% of formal employment opportunities.	Medium	Occupational health services will be required in all workplaces with heat risks. Informal systems in place. Develop SOP's specific conditions (e.g. morning or night spraying). UCT Research in progress on impacts of climate change on health.

5.4 Disaster Management, Infrastructure and Human Settlements

Table 8: Disaster Management, Infrastructure and Human Settlements Vulnerability Indicator Table Cape Winelands District Municipality

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptative Capacity Answer	Adaptative Capacity Comments
28	Loss of industrial and labour productivity	Direct impacts of weather on construction, electricity generation and other industries, resulting in loss of productivity	Do you have industrial activities in your area?	Yes	The entire District is affected including the various types of agricultural production, wine and brandy processing, juice products, dried and tinned fruits.	How significant is the Mining/Industrial/Manufacturing sector for the local economy? Significant = High, Somewhat = Medium; Low/No = Low	High	The manufacturing sector is vulnerable to changes in the economy. Climate change is a threat, but this sector may also be affected through government policies (such as carbon taxes), an increase in production costs and varying customer behaviour.	Low	Limited systems in place to deal with impacts on productivity. SmartAgri-, LED strategies, Local Municipalities and District Municipalities, Provincial Economic Review Outlook.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
29	Increased impacts on strategic infrastructure	Increased disruptions to key strategic infrastructure (e.g. WWTW, storm water, roads, rail, bridges) as a result of extreme weather events	Do you have strategic infrastructure in your area?	Yes	The entire District, due to fires and severe weather events.	How important is this strategic infrastructure to the functioning of your municipality? Significant amount = High; Moderate amount = Medium; Minimal or no = Low	High	Floods and fires are disaster risk priorities with reference to the current and future condition of strategic infrastructure.	Low	Additional input from other municipalities and departments is required. Lack of capacity (Disaster Management). Budget constraints. Risk Assessment, Provincial Disaster Risk Profile. Uncertainty around implementation of policies and plans. District's Climate Change Response Adaptation Strategy.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
30	Increased impacts on traditional and informal dwellings	Increased risk of extreme weather events to already vulnerable traditional and informal dwellings, that are often unplanned, and without extensive service or infrastructure	Do you have traditional and informal dwellings in your area?	Yes	Only informal dwellings (including backyard dwellings). Areas across all municipalities.	What percentage of households are in traditional and informal dwellings in your area? More than 15% = high; Between 15% & 10% = Medium; Less than 10% = low	High	15.96% of the households within the District are informal settlements. Informal settlements are often located in areas prone to flooding and other natural hazards.	Low	District's Climate Change Response Adaptation Strategy. Specific information is required from all local municipalities. Additional input from other municipalities and departments is required. Lack of capacity (Disaster Management). Budget constraints. SDFs, Provincial Informal Settlement Plan.

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No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
31	Increased isolation of rural communities	Physical isolation of rural communities as a result poor rural roads and increased flooding and erosion.	Do you have isolated rural communities in your area?	Yes	Farming areas, Witzenberg, Langeberg, and remote towns.	Is your area predominantly Rural? Mostly Rural = High Equally Urban and Rural = Medium Mostly Urban = Low	High	Majority of the area is agricultural land. Remote towns.	Low	District's Climate Change Response Adaptation Strategy. Specific information is required from all local municipalities. Additional input from other municipalities and departments is required. Lack of capacity (Disaster Management). Budget constraints. SDFs, Provincial Informal Settlement Plan.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
32	Increased migration to urban and peri-urban areas	Increased migration from rural settlements to urban and peri-urban settlements	Do you have rural urban migration in your area?	Yes	Throughout the District people migrate from rural to urban areas due to lack of opportunities.	Is there a strong rural economy? Low opportunities in rural areas = High; Some opportunities in rural areas = Medium; Strong rural economy = Low	Medium	There has been limited transformation of the rural economy which contrasts strongly with the formal sector.	Low	The District has a strategic objective to empower the poor and rural communities using developed programmes such as the Small Farmer Support Programme. Impacts/success of projects in rural areas to be established. Impact of drought on agricultural sector (seasonal workers). Provincial informal settlement support plan, PERO, MERO.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
33	Increased risk of wildfires	Increased risk of wildfires linked to higher ambient temperatures, dry spells and more frequent lightning storms.	Is this or will this take place in your area?	Yes	Veldfires occur between December and April when temperatures are at their highest with the 2017 season being particularly bad (more than 1500 fires reported costing the District approximately R17 million).	What is the Veld Fire Risk Status of the area? Extreme or High = High; Medium; Low	High	About 75% of the District's land area has a high risk level of veldfires.	Medium	The District's Fire Services prides itself on efficient and effective service delivery and works closely with various role-players (such as Henley Air (helicopter services), SAAF and members of the Winelands Fire Protection Association). Availability of water in firefighting is a challenge. Role of FPA. Risk assessment, Fire Services Seasonal Preparedness Plan.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
34	Decreased income from tourism	Reduced income from tourism as a result of reduced recreational opportunities and increased impact on tourism-supporting infrastructure, such as conservation area access roads	Do you have tourism assets that can be impacted by climate change in your area?	Yes	Wine tourism (both domestic and overseas) and Fynbos Biome.	How significant is tourism to the local economy? Significant contributor = High; Some contribution = Medium; Low/No contribution = Low	High	The wine industry is a large contributor to the tourism sector (tourism real estate, wine activities, culinary events, wine competitions, harvest festivals etc). Cultural experiences.	Medium - Low	The provincial Climate Change Response Strategy highlights the importance of safeguarding the unique cultural, scenic and coastal resources on which the tourism economy depends. Biodiversity Strategy and Action Plan, SmartAgri.

5.5 Water

Table 9: Water Vulnerability Indicator Table Cape Winelands District Municipality

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
35	Decreased quality of drinking water	Deterioration in water quality due to increased salt concentrations in dams, wetlands and soil/plant systems from enhanced evaporation rates	Is this or will this take place in your area?	Yes	The entire District is under pressure due to reduced rainfall, invasive alien species, intensive and poorly managed agricultural activities as well as lime production.	What is the Blue Drop Score for the area (2012 Report)? Less than 50% = high; Between 50% & 90% = Medium; More than 90% = low	Medium - High	Blue Drop scores 2014: Witzenberg LM: 96% Breede Valley LM: 89% Langeberg LM: 72% Drakenstein LM: 72% Stellenbosch LM: 80% Control of water supply is dependent on City of CPT.	Low	The District's Climate Change Adaptation Strategy (draft) highlights various key interventions for securing future water quality such as the Working For Water Programme, Cape Winelands Invasive Alien Vegetation Management Programme and the Cape Winelands River Rehabilitation Programme. Source more information from what local municipalities are doing. Possibility of water augmentation from CPT. Alien cleansing mechanical plans. WC Climate Change Response Strategy. WC Sustainable Water Management Plan. Risk Assessment.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
36	Decreased water quality in ecosystem due to floods and droughts	More frequent floods result in increased effluent overflow into rivers. Increased drought means less water is available to dilute wastewater discharges and irrigation return flows to rivers.	Is this or will this take place in your area?	Yes	In the entire District, due to reduced rainfall, invasive alien species, agricultural activities and lime production. Increased pressure on infrastructure as a result of informal settlements.	What is the Green Drop Score for the area? Less than 50% = high; Between 50% & 90% = Medium; More than 90% = low	High	Green Drop Scores for 2013: Witzenberg LM: 97.96% Breede Valley LM: 90.21% Langeberg LM: 51.58% Drakenstein LM: 77.79% Stellenbosch LM: 40.16% Water quality has been identified as a major risk within the District.	Low	The River Health Programme primarily makes use of biological indicators to assess the condition or health of river systems, which is useful for detecting, identifying and reporting on emerging problems facing aquatic ecosystems. Research source of pollution - agriculture fertilisers as source of pollution. Invasive aquatic weeds. Alien cleansing mechanical plans. WC Climate Change Response Strategy. WC Sustainable Water Management Plan. Risk Assessment.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
37	Less water available for irrigation and drinking	Increased periods of drought mean less water is available.	Is this or will this take place in your area?	Yes	The entire District is affected because of reduced rainfall and extended periods of drought, uncontrolled invasive alien species, poorly managed agricultural activities as well as increased pressure on infrastructure as a result of informal settlements. Another challenge is the transportation of sewage effluent due to reduced water availability.	Years of drought over the past 20 years More than 7 incidence = High; Between 7 & 2 incidence = Medium; Less than 2 incidence = Low;	High	Water availability is closely linked to climate variability and rainfall is unevenly distributed across the province, this limits development.	Low	The District's Climate Change Adaptation Strategy (draft) highlights that to combat tightening water supply conditions, adaptation regarding the efficiency of water use is required. Possibility of water augmentation from CPT. Alien cleansing mechanical plans. WC Climate Change Response Strategy. WC Sustainable Water Management Plan. Risk Assessment.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
38	Increased impacts of flooding from litter blocking storm water and sewer systems	Human health and ecosystem impacts, associated with increased rainfall intensities, flash floods and regional flooding resulting in litter and washed-off debris blocking water and sanitation systems.	Is this or will this take place in your area?	Yes	Increased pressure on infrastructure and service delivery as a result of informal settlements.	Percentage of Households using no rubbish disposal More than 10% = High; Between 10% & 5% = Medium; Less than 5% = Low	Low	Only 1.45% of households no access to rubbish disposal services. Not utilised properly by the community. Informal settlements do not have adequate services.	High	Regarding refuse removal, the District's IDP (2016/2017) shows that it is currently performing better than the national infrastructure performance. Awareness and education campaigns and programmes. Landfill sites capacity decreasing Alien cleansing mechanical plans. WC Climate Change Response Strategy. WC Sustainable Water Management Plan. Risk Assessment.

No	Indicator Title	Indicator Description	Exposure Question	Exposure Answer	Exposure Comment	Sensitivity Question	Sensitivity Answer	Sensitivity Comment	Adaptive Capacity Answer	Adaptive Capacity Comment
39	Increased fish mortality	Increased freshwater fish mortality due to reduced oxygen concentrations in aquatic environments and mortality of temperature-sensitive fish species.	Do you have fresh water fish in your area?	Yes	Less rainfall, Increased pollution of freshwater resource, and uncontrolled spread of invasive fish species.	How significant is fresh water fish to livelihoods? Significant to livelihoods = High; Some dependence = Medium; Low/No dependence = Low	Medium	Investments are being made in the aquaculture sector and it has become an emerging industry throughout the province.	Medium	The Western Cape State of the Environment Outlook Report states that with careful management, it is possible to support aquaculture farming without compromising the conservation of indigenous fish species. WC SoER, State of River Health Report, Biodiversity Strategy and Action Plan.
52	Less groundwater availability	Increased extraction of ground water results in boreholes collapse and lower water table levels	Is this or will this take place in your area?	Yes	The Breede-Gouritz Water Management Area has a high UGEP (utilisable groundwater exploitable potential) of 362.9 million cubic metres per annum (m3/annum).	If it takes place how significant will it be?	Medium	Regions in the Western Cape have only localised threats of over-abstraction (predominantly in farming areas).	Medium	The District's Climate Change Adaption Strategy (draft) describes how the National Water Policy and the National Water Act will be achieved through the Catchment Management Agencies which have been established in each of the country's Water Management Areas.

5.6 Vulnerability Assessment Summary

The tables below list the high and medium priority climate change indicators for the municipality.

5.6.1 High Priority Climate Change Indicators

Based on the above vulnerability assessment the following indicators were identified as high priority climate change vulnerabilities for the municipality. These were shortlisted by answering "yes" to exposure, "high" to sensitivity and "low" to adaptive capacity.

Table 10: High Priority Indicators Cape Winelands District Municipality

No	Sector	Name Indicator Title	Exposure Answer	Sensitivity Answer	Adaptive Capacity Answer
5	Agriculture	Change in viticulture (grapes) production	Yes	High	Low
6	Agriculture	Change in fruit production	Yes	High	Low
10	Agriculture	Increased risks to livestock	Yes	High	Low
12	Biodiversity and Environment	Loss of High Priority Biomes	Yes	High	Low
14	Biodiversity and Environment	Increased impacts on environment due to land-use change	Yes	High	Low
28	Human Settlements, Infrastructure and Disaster Management	Loss of industrial and labour productivity	Yes	High	Low
29	Human Settlements, Infrastructure and Disaster Management	Increased impacts on strategic infrastructure	Yes	High	Low
30	Human Settlements, Infrastructure and Disaster Management	Increased impacts on traditional and informal dwellings	Yes	High	Low
31	Human Settlements, Infrastructure and Disaster Management	Increased isolation of rural communities	Yes	High	Low
36	Water	Decreased water quality in ecosystem due to floods and droughts	Yes	High	Low
37	Water	Less water available for irrigation and drinking	Yes	High	Low

5.6.2 Medium Priority Climate Change Indicators

Based on the above vulnerability assessment the following indicators were identified as medium priority climate change vulnerabilities for the municipality. These were shortlisted by answering "yes" to exposure, "medium" or "high" to sensitivity and "low" or "medium" to adaptive capacity.

Table 11: Medium Priority Indicators Cape Winelands District Municipality

No	Sector	Name Indicator Title	Exposure Answer	Sensitivity Answer	Adaptive Capacity Answer
7	Agriculture	Change in other crop production areas (e.g. vegetables, nuts, etc.)	Yes	Medium	Medium
9	Agriculture	Increased exposure to pests such as eldana, chilo and codling moth	Yes	High	Medium
53	Agriculture	Reduced food and feed security	Yes	Low	High
13	Biodiversity and Environment	Increased impacts on threatened ecosystems	Yes	High	Medium
15	Biodiversity and Environment	Loss of Priority Wetlands and River ecosystems	Yes	High	Medium
55	Biodiversity and Environment	Loss of Soil Fertility	Yes	High	Medium
21	Human Health	Health impacts from increased storm events	Yes	High	High
22	Human Health	Increased heat stress	Yes	Medium	Medium
25	Human Health	Increased malnutrition and hunger as a result of food insecurity	Yes	Low	Low
26	Human Health	Increased air pollution	Yes	Low	Medium
27	Human Health	Increased Occupational health problems	Yes	High	Medium
32	Human Settlements, Infrastructure and Disaster Management	Increased migration to urban and peri-urban areas	Yes	Medium	Low
33	Human Settlements, Infrastructure and Disaster Management	Increased risk of wildfires	Yes	High	Medium
34	Human Settlements, Infrastructure and Disaster Management	Decreased income from tourism	Yes	High	Medium - Low

No	Sector	Name Indicator Title	Exposure Answer	Sensitivity Answer	Adaptive Capacity Answer
35	Water	Decreased quality of drinking water	Yes	Medium - High	Low
38	Water	Increased impacts of flooding from litter blocking storm water and sewer systems	Yes	Low	High
39	Water	Increased fish mortality	Yes	Medium	Medium
52	Water	Less groundwater availability	Yes	Medium	Medium

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6 Sector Response Plans

6.1 Agriculture

6.1.1 Introduction

	Project Name
	Agriculture Sector Adaptation to Climate Change
	Project Custodian/Driver
	Overview of key issues
	The South African agricultural sector is highly diverse in terms of its activities and socio-economic context. This sector can be described as two-tiered (commercial vs. small-holder and subsistence farmers), with activities across a wide variety of climatic conditions (especially of rainfall). Roughly 90% of the country is sub-arid, semi-arid, or sub-humid, and about 10% is considered hyper-arid. Only 14% of the country is potentially arable, with one fifth of this land having high agricultural potential. Climate is important in determining potential agricultural activities and suitability across the country, especially in smallholding and homestead settings. Irrigation and conservation tillage practices can overcome rainfall constraints, especially in the high-value commercial agricultural sector. Irrigation currently consumes roughly 60% of the country's surface water resources, with important implications for agricultural exports, and food and water security in the context of climate change.
	Objectives
5	Manage the change in viticulture (grapes) production
6	Manage the change in fruit production
10	Manage increasing risks to livestock

6.1.2 Responses

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
5	**Manage the change in viticulture (grapes) production**	Commission research and improve understanding of climate change impacts on viticulture production.				25%	50%	75%	100%
		Optimise climate resilient land-uses of existing agricultural areas.				25%	50%	75%	100%
		Promote knowledge generation, knowledge sharing, stakeholder participation and awareness-raising regarding the alternative agricultural production in the western and southern Cape.				25%	50%	75%	100%
		Promote knowledge generation, knowledge sharing, stakeholder participation and awareness-raising regarding viticulture in new growth areas.				25%	50%	75%	100%
6	**Manage the change in fruit production**	Generate and share scientific, social and indigenous knowledge that will minimise the loss of areas suitable for the growth of fruit.				25%	50%	75%	100%
		Identify climate resilient land-uses that will support new agricultural opportunities that will minimise the new areas and new crops thus reducing climate change impacts on current agricultural potential.				25%	50%	75%	100%
		Implement evidence based monitoring initiatives that feed into the management systems for fruit production.				25%	50%	75%	100%
		Promote knowledge generation, knowledge sharing, stakeholder participation and awareness-raising regarding the decline in suitable areas for the growth of fruit.				25%	50%	75%	100%
		Research and improve understanding of climate change impacts on fruit.				25%	50%	75%	100%

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
10	**Manage increasing risks to livestock**	Strengthen management plans, to enable continuous monitoring and the ability to effectively respond to the change.				25%	50%	75%	100%
		Commission research and improve understanding of climate change impacts livestock and land availability				25%	50%	75%	100%
		Develop a framework that will assist and educate farmers with adjusting to reduced rainfall.				25%	50%	75%	100%
		Generate and share scientific, social and indigenous knowledge that will assist with adapting to the reduction in herbage yields.				25%	50%	75%	100%
		Improve collaboration and partnership on existing programs (e.g. LandCare Programme, EPWP and River Health Programmes)				25%	50%	75%	100%
		Strengthen management plans, to enable continuous monitoring of water and herbage availability for livestock.				25%	50%	75%	100%

6.2 Biodiversity and Environment

6.2.1 Introduction

	Project Name
	Biodiversity and Environment Sector Adaptation to Climate Change
	Project Custodian/Driver
	Overview of Key Issues
	Biodiversity is crucial to ecosystem health, and healthy ecosystems are central to human well-being. Healthy ecosystems interlinked with working landscapes and other open spaces form the ecological infrastructure of the country and are the foundation for clean air and water, fertile soil and food. All South Africans depend on healthy ecosystems for economic and livelihood activities, including agriculture, tourism and a number of income generating and subsistence level activities. These natural ecosystems are under pressure from land use change and related processes causing degradation, as well as invasive alien species. Accelerated climate change (resulting in increasing temperature, rising atmospheric CO2 and changing rainfall patterns) is exacerbating these existing pressures. Well-functioning ecosystems provide natural solutions that build resilience and help society adapt to the adverse impacts of climate change. This includes, for example, buffering communities from extreme weather events such as floods and droughts, reducing erosion and trapping sediment, increasing natural resources for diversifying local livelihoods, providing food and fibre, and providing habitats for animals and plants which provide safety nets for communities during times of hardship. Sustainably managed and/or restored ecosystems help in adapting to climate change at local or landscape level.
	Objectives
12	Manage Loss of High Priority Biomes
14	Manage Increased impacts on environment due to land-use change

6.2.2 Responses

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
12	**Manage Loss of High Priority Biomes**	Implementation of fire breaks in local municipalities (Langeberg) by 2022 through the Disaster Management Unit.				25%	50%	75%	100%
		Identification/Inclusion of high priority biomes in local Spatial Development Frameworks during the review process.				25%	50%	75%	100%
14	**Manage Increased impacts on environment due to land-use change**	Develop program to diversify community livelihoods strategies to earn income from other activities such as ecotourism and other non-farming activities.				25%	50%	75%	100%
		Incentivize small scale farmers to practice sustainable and conservative agriculture				25%	50%	75%	100%
		Incorporate sustainable land use management and planning into other sectors plans.				25%	50%	75%	100%
		Research and improve understanding of land use change in the municipality.				25%	50%	75%	100%
		Strengthen institutional capacity to deal with pressure on land use change				25%	50%	75%	100%

6.3 Disaster Management, Infrastructure and Human Settlements

6.3.1 Introduction

	Project Name
	Human Settlements, Infrastructure and Disaster Management Sector Adaptation to Climate Change
	Project Custodian/Driver
	Overview of Key Issues
	South Africa is a diverse country, not just in terms of populations and biodiversity, but also in terms of its human settlements. These settlements face severe challenges, even before climate change is taken into account. The implications of the compounding impacts of climate change will be profound, and human settlements therefore represent a crucial part of national adaptation strategies. The overarching strategic framework for the development of human settlements is described in the National Development Plan (NDP) and, more specifically in relation to the implications for climate change, in the National Climate Change Response (NCCR). However, to develop appropriate adaptation responses a more nuanced understanding of the challenges and options for human settlements is required, building on the insights of the NCCR. This understanding needs to take into account the unusually diverse urban forms of human settlement in the South African context, and the importance of ecological infrastructure in supporting service delivery and building resilient communities.
	Objectives
28	Manage potential loss of industrial and labour productivity.
29	Manage potential increased impacts on strategic infrastructure.
30	Manage increased impacts on traditional and informal dwellings
31	Manage potential increased isolation of rural communities.

6.3.2 Responses

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
28	**Manage potential loss of industrial and labour productivity.**	Research and implement water efficiency projects in industrial processes to improve the efficiency of water usage.				25%	50%	75%	100%
29	**Manage potential increased impacts on strategic infrastructure.**	Implement a water augmentation project that will help reduce reliance on surface water and seek alternative sources of water (e.g. recycling of water).				25%	50%	75%	100%
		Upgrade and maintain stormwater infrastructure so that it considers extreme weather events such as flooding.				25%	50%	75%	100%
		Upgrading and maintenance of road infrastructure.				25%	50%	75%	100%
30	**Manage increased impacts on traditional and informal dwellings**	Develop and upgrade informal settlements.				25%	50%	75%	100%
		Partner with research institutions to implement a research project to develop a model aimed at achieving sustainable informal settlements with lower risk exposure.				25%	50%	75%	100%
31	**Manage potential increased isolation of rural communities.**	Build Climate change resilient road infrastructure that serves as a link for rural areas.				25%	50%	75%	100%
		Develop economic nodes and improved service provision in rural areas to improve connectivity.				25%	50%	75%	100%

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
		Identify alternative access routes to rural communities.				25%	50%	75%	100%
		Identify local responses that will reduce isolation of rural communities.				25%	50%	75%	100%
		Identify roads at risk of flooding and erosion and prioritise those for upgrading and maintenance.				25%	50%	75%	100%
		Implement flooding drainage systems that will reduce impacts on rural roads.				25%	50%	75%	100%

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6.4 Water

6.4.1 Introduction

	Project Name
	Water Sector Adaptation to Climate Change
	Project Custodian/Driver
	Overview of Key Issues
	South Africa's climate is generally arid to semi-arid, with less than 9% of annual rainfall ending up in rivers, and only about 5% recharges groundwater in aquifers. In addition, rainfall and river flow are unpredictable in time and unevenly distributed in space, with only 12% of the land area generating 50% of stream flows. Decadal rainfall variability also results in extended dry and wet periods across the country. The main users of surface water resources are agricultural irrigation, domestic, industrial, mining and power generation, while plantation forestry intercepts and reduces runoff before it reaches the rivers and groundwater. Surface water resources were already over-allocated by the year 2000 in five of nineteen water management areas historically used for water planning and management purposes. The potential demand for water is expected to increase with economic growth, increased urbanisation, higher standards of living, and population growth. Because of the critical importance of water in the South African economy the country has a sophisticated water resources planning capacity, founded on a good understanding of the country's variable rainfall. This planning capacity will be a key capability for adaptation planning under ongoing and future climate change.
	Objectives
36	Manage decreased water quality in ecosystem.
37	Manage the quantity of water available for irrigation and drinking.

6.4.2 Responses

No	Project	Sub-Project	DAO	Activity Manager	Annual Target	Q1 Target	Q2 Target	Q3 Target	Q4 Target
36	**Manage decreased water quality in ecosystem.**	Invasive aquatic weeds removal and management in Berg and Breede Rivers by the Cape Winelands District Municipality, B municipalities, DOWA, property/landowners and water user associations. Continuous clearing should be done annually between September and April. The specific area to be targeted is between the R45 and Herman.				25%	50%	75%	100%
37	**Manage the quantity of water available for irrigation and drinking.**	Cape Winelands District Municipality to facilitate research into the re-use of wastewater within the District Municipality, with B-municipalities indicating which towns should be included in the research. The economic viability and quantities are important selection criteria. The replenishment of aquifers by infusion of purified waste water should form part of the research. Implementation by relevant Engineering Departments of B-municipalities.				25%	50%	75%	100%
		Cape Winelands District Municipality to facilitate the assessment of existing infrastructure for water storage. Implementation by Engineering Departments of B-municipalities.				25%	50%	75%	100%
		Increase alien clearing in catchments located throughout the entire District and B municipalities in partnership with Department of Water and Sanitation and LandCare Programme.				25%	50%	75%	100%

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ANNEXURE "Q"

INTEGRATED WASTE MANAGEMENT PLAN

CAPE WINELANDS DISTRICT MUNICIPALITY

CAPE WINELANDS DISTRICT
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INTEGRATED WASTE MANAGEMENT PLAN
(3rd Generation)

(*Final Report*)

Compiled by:

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JULY 2015

CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

INDEX

ANNEXURES:

ABBREVIATIONS

DEA	Department of Environment Affairs
D:EA&DP	Department of Environmental Affairs and Development Planning
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
Haz	Hazardous
HCGW	Health Care General Waste
HCRW	Health Care Risk Waste
HCW	Health Care Waste
HDPE	High Density Polyethylene
kg	kilogram
kℓ	kilolitre
ℓ	litre
m^3pa	cubic meter per annum
t/a	ton per annum
VWMF	Vissershok Waste Management Facility
CNC	Cape Nature Conservation
IWMP	Integrated Waste Management Plan
JPCE	Jan Palm Consulting Engineers
IPWIS	Integrated Pollutant and Waste Information System
NWMS	National Waste Management Strategy
WCIWMP	Western Cape Integrated Waste Management Plan
IDP	Integrated Development Plan
SDF	Spatial Development Framework
CWDM	Cape Winelands District Municipality

CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

EXECUTIVE SUMMARY

INTRODUCTION AND GENERAL DESCRIPTION

The third generation of this Integrated Waste Management Plan (IWMP) has been formulated by Jan Palm Consulting Engineers (JPCE) on behalf of the Cape Winelands District. The second generation IWMP was developed in 2011 and was subsequently commented on and evaluated by the Department: Environmental Affairs and Development Planning (D:EA&DP). This update incorporates the comments and recommendations made on the 2011 IWMP as well as the latest checklist for IWMPs by the D:EA&DP.

The IWMP is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that has been promulgated and came into effect on 1 July 2009 and that has as its goal the transformation of the current methodology of waste management, i.e. collection and disposal, to a sustainable practice focussing on waste avoidance and environmental sustainability. Implementation of this IWMP will be through municipal by-laws and in accordance with an implementation schedule. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP and the National Waste Management Strategy (NWMS 2011).

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all residents within the Cape Winelands District.

The Plan takes particular note of importance of local authority waste management planning. This document underlines the following principles of the National Waste Management Strategy:

- The prevention of waste generation;
- The recovery of waste of which the generation cannot be prevented, and
- The safe disposal of waste that cannot be recovered

The general topography, geology and hydrogeology of the area is discussed in section 1.3 and the demographic details in section 1.4. The current population estimate of the Cape Winelands is 860 671 people, based on the Census 2011 population of each local Municipality and each respective annual growth rate.

POLICY AND LEGISLATION

All applicable waste management legislation is listed and discussed under section 2 of the IWMP. The latest published legislation have been added in the IWMP update, which mainly consists of Norms & Standards published under the Waste Act since the 2011 IWMP.

EXISTING WASTE MANAGEMENT

Awareness and Education

Apart from each local Municipality's awareness and education initiatives, the District Municipality has ongoing annual awareness and education projects in the form of theatre performances, greening projects, river rehabilitation and EPWP cleaning projects.

Waste Quantities and Types

Where available, weighbridge data from the local Municipalities were included in calculating the total waste generated in the District. From areas where this information is not available, the totals were estimated from using waste generation rates per capita and applied to current and future estimated population figures.

The total waste for the District for 2015 was estimated at 317 639 tonnes with a future estimated total of 348972 tonnes for 2019. This equates to an average waste generation factor of 1.1kg/person/day.

Waste characterisation was based on the 2007 study by the D:EA&DP and the 2012 study by the Stellenbosch Municipality. The percentages and estimated total recyclables are shown below:

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	36%	9%	9%	6%
Drakenstein	34%	22%	11%	5%
Langeberg	33%	16%	8%	6%
Stellenbosch	16%	15%	8%	2%
Witzenberg	26%	27%	6%	7%

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	14995	3749	3749	2499
Drakenstein	26092	16883	8442	3837
Langeberg	10483	5082	2541	1906
Stellenbosch	17979	16856	8990	2247
Witzenberg	10707	11119	2471	2883
CWDM	80256	53688	26192	13372

The above theoretical figures give a total of approximately 173 509 tonnes per annum, which is 55% of the generated waste stream. It should be noted that this reflects the recyclable portion of the waste stream only as the mathematical representation. The full 58% cannot be seen as recoverable in the practical sense at this stage.

Waste Collection

The District does not render waste collection services as this is a function of the Local Municipalities. The IWMP gives a summary of each Local Municipal solid waste collection service and the level of free basic services rendered.

Waste Management Facilities

The District does not operate any waste management facilities at this stage. All identified waste management facilities such as transfer stations, disposal facilities and recycling facilities are discussed for each Local Municipality.

Identified Gaps

The following gaps were identified in the District

- Public Awareness and Education
- Recycling and waste minimisation
- Area cleaning
- Lack of information regarding waste generation types and volumes
- Aging collection fleet
- Law enforcement
- Disposal sites (condition and operation) and lack of disposal airspace
- Vacant positions in waste management departments

Strategic Objectives

Being a District Municipality and not "owning" any waste, these strategies are more focussed on supporting the local municipalities with their individual strategies and in the event of developing a district landfill, to develop action plans to ensure safe disposal. The District Municipality does not collect waste with the result that strategies for waste avoidance and waste reduction are not really applicable.

The Waste Management Strategic Objectives for Cape Winelands District Municipality on which this Plan is based, commits the municipality to:

- Create an atmosphere in which the environment and natural resources of the region are conserved and protected.

- Develop a communication/information/education strategy to help ensure acceptance of 'ownership' of the strategic objectives among members of the public and industry throughout the municipality and to promote co-operative community action.

- Provide solutions for the three main objectives:
  - The avoidance of waste generation
  - The reduction of waste volumes
  - The safe disposal of waste

IMPLEMENTATION

The IWMP has an implementation plan which is part of 7 main goals. These goals have each been divided into actions and years of implementation with estimated costs in order to achieve the main goals. These goals are:

Goal 1: Awareness and Education

Goal 2: Improve Waste Information Management

Goal 3: Effective Solid Waste Service Delivery

Goal 4: Promote and Ensure Waste Minimisation

Goal 5: Improve Regulatory Compliance

Goal 6: Ensure Safe and Integrated Management of Hazardous Waste

Goal 7: Ensure Sound Budgeting For Integrated Waste Management

MONITORING AND REVIEW

The IWMP acts as a planning guide and requires regular updates and reviews in order to stay relevant, especially the projects for implementation. Each project must be reviewed to measure its success, shortcomings or reasons for failure. The IWMP must be updated to reflect the progress of projects or to adapt strategies. The review will also assist in budgeting for upcoming waste management projects.

As the IWMP is a sectoral plan of the IDP, the following projects are recommended to be included in the IDP:

All implementation actions requiring Capital Expenditure not already contained in the IDP:
- The establishment of the regional integrated waste management facility following the issuing of the license

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CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

1. PREFACE

1.1 INTRODUCTION

The third generation of this Integrated Waste Management Plan (IWMP) has been formulated by Jan Palm Consulting Engineers (JPCE) on behalf of the Cape Winelands District Municipality to address the challenge of waste management in the District, home to some 860 660 people (Estimated 2015 population, refer to Section 1.4). The second generation IWMP was developed in 2011 and was subsequently commented on and evaluated by the Department: Environmental Affairs and Development Planning (D:EA&DP). JPCE was appointed by the Cape Winelands District Municipality to develop the third generation IWMP for 2015.

The November 2012 assessment report of the 2nd generation, 2011 IWMP is summarised as follows, which identified topics which should be addressed with the new IWMP revision:

- The Introduction and general description requires reference to recommendations made in the assessment report.
- In terms of strategic linkages, the IWMP must make reference to the municipal SDF.
- The plan must show the link with the IDP and what will be incorporated into the IDP.
- The IWMP must be aligned to the Western Cape IWMP and the National Waste Management Strategy of 2011.
- Public participation: The IWMP must follow a public participation process.
- The latest solid waste legislation must be included in the IWMP.
- The latest demographic information must be used from Census 2011.
- The IWMP must indicate the level of free basic services in the District.
- The District needs to ensure that the local Municipalities conduct waste characterisation studies.
- The organisational structure needs to be included in the IWMP.
- The IWMP must indicate how the Municipality intend to implement waste awareness and education with cost implications.
- The District must monitor the local Municipalities and ensure that they register their waste facilities and report to IPWIS.
- Gaps and needs related to solid waste management in the District must be identified.
- The implementation of the plan must show budget and human resources.
- The IWMP should include a monitoring and review programme.

The terms of reference for the development of the Cape Winelands third generation IWMP include a status quo analysis, strategic objectives and an implementation plan.

The IWMP is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that has been promulgated and came into effect on 1 July 2009 and that has as its goal the transformation of the current methodology of waste management, i.e. collection and disposal, to a sustainable practice focussing on waste avoidance and environmental sustainability. Implementation of this IWMP will be through municipal by-laws and in accordance with an implementation schedule.

The development of the IWMP is necessary as it is an integral tool to identify current needs and act as a guide towards sustainable waste management. With regular updates of this document the changing needs as well as progress in the waste management field can be tracked and strategies adapted accordingly. It also provides a framework for budgeting purposes. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP and the National Waste Management Strategy (NWMS 2011).

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all residents within the Cape Winelands District.

The Plan takes particular note of importance of local authority waste management planning. This document underlines the following principles of the National Waste Management Strategy:

- The prevention of waste generation;
- The recovery of waste of which the generation cannot be prevented; and
- The safe disposal of waste that cannot be recovered

1.2 IWMP DEVELOPMENT

The planning phase of the third generation IWMP included the following:

A project meeting was held at the District offices in Worcester on 17 March 2015, which was attended by the consultant and Mr F. van Eck of Cape Winelands District Municipality. The purpose of the meeting was to discuss the scope of the project and the updating of the IWMP to the 3rd generation and to acquire the necessary information in order to update the IWMP. The scope of the IWMP will follow the D:EA&DP's checklist for Integrated Waste Management Planning. The checklist is attached as **Annexure 1**.

The public participation phase of the development of the IWMP was in the form of advertisements in the local newspapers and Die Burger. The draft document was available at the public libraries and at www.jpce.co.za for the public to view and comment on. The draft IWMP served as base on which to provide comment and input. See **Annexure 3** for the advertisements that were placed. Comment was received from Green Cape after the closure date for comments. However, comments applicable to a District IWMP will be addressed during and as part of the annual IWMP review report.

The participants in the Cape Winelands District IWMP third generation process are Mr F van Eck (Executive Director: Technical Services, Cape Winelands District Municipality), Solid Waste Managers and Waste Management Officers of the local municipalities and Jan Palm Consulting Engineers (Consulting Civil Engineers specializing in Solid Waste Management). During the public comment phase, other participants have the opportunity to contribute to the IWMP development before the release of the final document, e.g. NGO's. The IWMP will form part of the Integrated Development Plan of the Municipality and will have to be approved by Council.

The waste streams and quantities discussed in this IWMP include household waste, garden (green) waste, commercial and industrial waste and builder's rubble. Medical waste and hazardous wastes are also discussed, but quantities are unknown.

1.3 GENERAL DESCRIPTION

Cape Winelands District Municipality is the eastern neighbour of the City of Cape Town and the West Coast District Municipality. It is an area noted for its vineyards, veld flowers, fruit farming and sheep farming.

The Cape Winelands area hosts many industries, but the agriculture and agriculture related industries are the main streams. Tourism is also a fast growing industry in the Cape Winelands.

The Cape Winelands District Municipality was established in December 2000 and includes the local municipalities of Stellenbosch, Drakenstein, Breede Valley, Langeberg and Witzenberg.

Refer to Figure 1-1 for a Plan of the Study Area.

1.3.1 Topography and Climate

The municipal area consists of mountainous topography in the central and eastern regions.

The area falls within the Western Cape Mediterranean climate zone and is known for its hot and dry summer days. Average annual rainfall, mainly during the winter months, is approximately 500 mm.

Winds are seasonal and generally North-west or South-east.

1.3.2 Geology and Hydrogeology

1.3.2.1 Geology

(Refer Figure 1-2)

Figure 1-1 shows the extent of the above area, major towns, roads and surface water features. Paarl and Worcester are the main towns and the Berg and Breede Rivers and Brandvlei Dam are the main surface water features in the area.

Figure 1-2 is a simplified geological map adapted from the 1:500 000 scale hydrogeological map Cape Town (Department of Water Affairs and Forestry). There are seven geological formations present in the area. From oldest to youngest in age these are the Malmesbury Group, intruded by the Cape Granite Suite, Table Mountain, Bokkeveld and Witteberg Groups, Karoo Supergroup and superficial alluvial deposits.

The Malmesbury Group rocks are very old (>600 million years) and have been extensively deformed and reconstituted (metamorphosed). They comprise shale, phyllite and impure sandstones. Some minor dolerite and granitic intrusions (dykes) are present. These rocks give rise to low, undulating topography. Granites of the Cape Granite Suite have intruded into these rocks and form elevated topography such as Paarl Mountain, for example.

The Table Mountain Group (TMG) rocks consist predominantly of resistant quartzitic sandstones and form the characteristic grey, craggy mountains of the Western Cape. Two main formations are present, the upper Nardouw Subgroup and the lower Peninsula Sandstone Formation. These are separated by the Cedarberg Formation, a shaley more easily weathered horizon that forms a prominent green to brown (seasonal) marker band between the grey sandstones. These rocks form the mountainous areas in the central and eastern parts of the study area.

The Bokkeveld and Witteberg Groups comprise alternating shale and sandstone horizons, with shale being more dominant in the former and the latter being generally more quartzitic.

The lower formations of the Karoo Supergroup occur in the north-northwest of the area and comprise rocks of Ecca and Dwyka age. These are mainly shaley and also comprise tillite in the case of the latter.

Alluvial deposits occur mainly along the course of the Berg River from Franschhoek to Hermon and Breede River from south of Ceres to east of Robertson. These reach up to 30 m in thickness and comprise clay, silty sand, sand and boulders.

The study area straddles the western N-S trending and eastern, E-W trending limbs of the Cape Fold Belt. The convergence zone or syntaxis of these two limbs is in the Ceres area. A series of sub-parallel faults trending NW-SE cut across the western part of the area, some of which extend >100 km into the Saldanha and Piketberg areas. In the eastern areas, faulting is predominantly E-W, with the regionally important Worcester Fault bisecting the area.

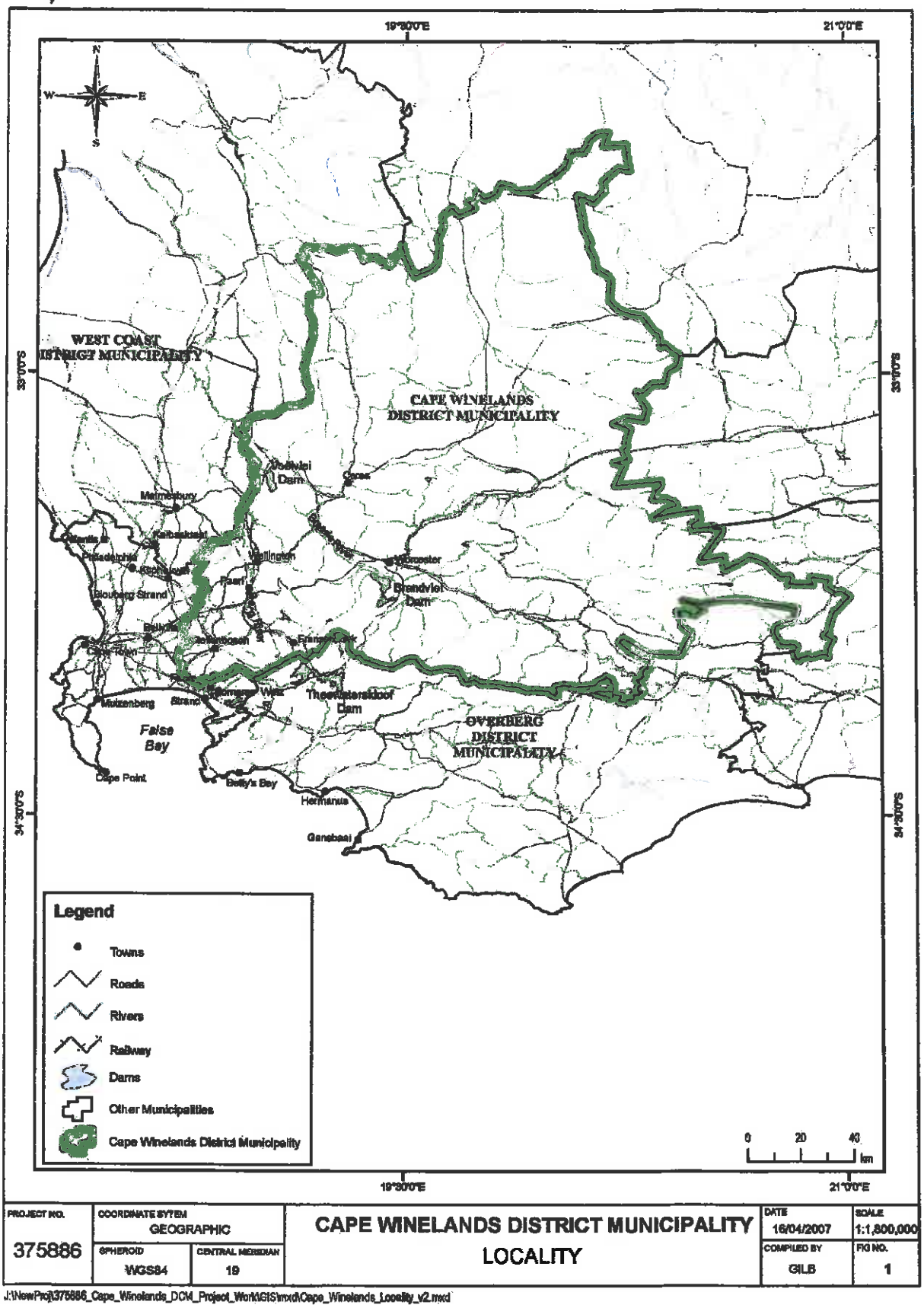

Figure 1-1: Study Area – Cape Winelands District Municipal Area

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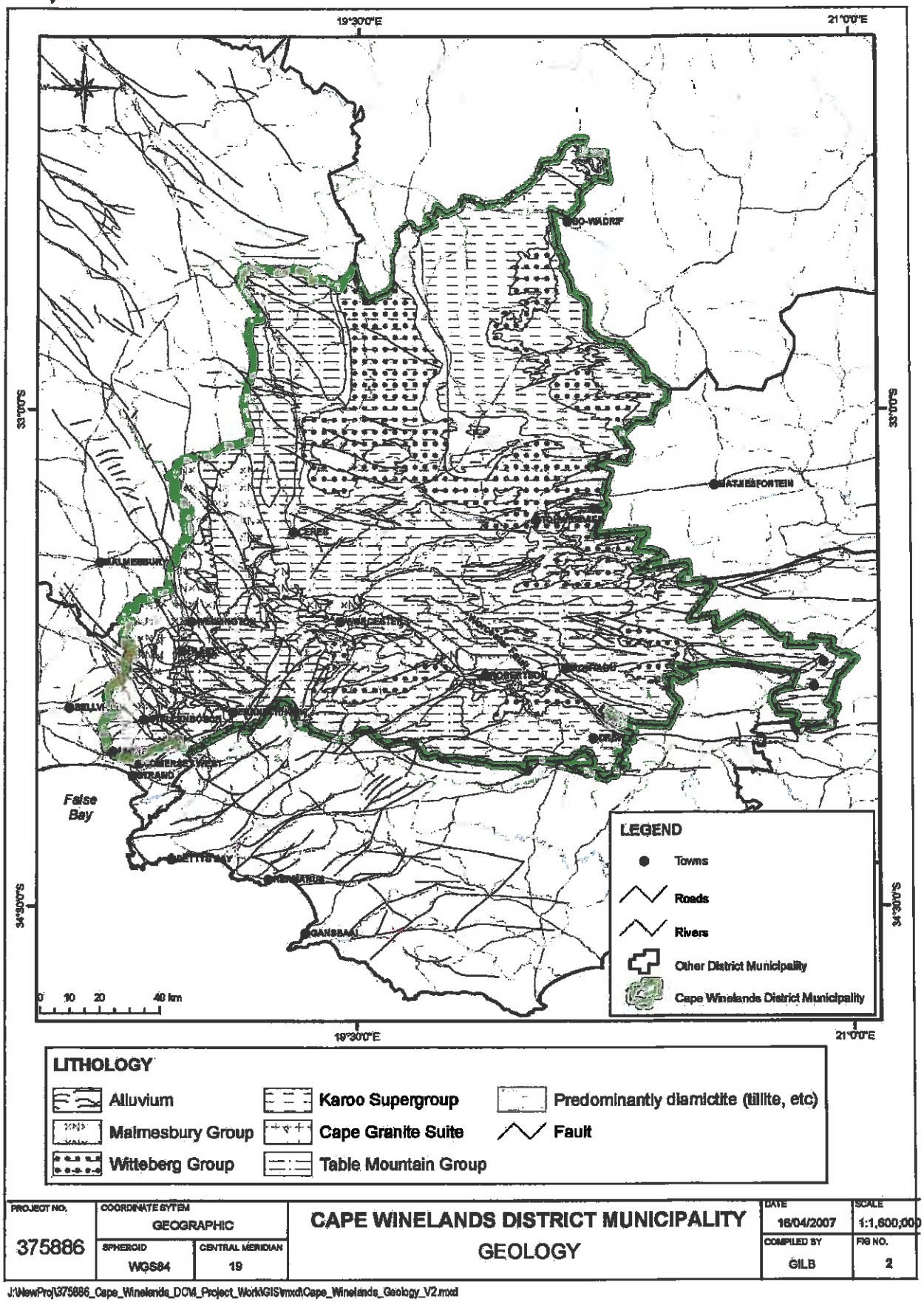

Figure 1-2: Geology of Cape Winelands District Municipal Area

1.3.2.2 Groundwater

(Refer to Figure 1-3 and Figure 1-4)

Figures 1-3 and 1-4 are adapted from the Cape Town hydrogeological map referred to above.

In broad terms, any aquifers developed in rocks of the Malmesbury, Table Mountain, Bokkeveld, Witteberg and Karoo rocks will be of the fractured or secondary type. These are shown as shades of green on Figure 1-3. Aquifers developed in the alluvium will be of the intergranular or primary type. These are shown as shades of violet on Figure 1-3. Aquifers developed in the Cape Granite Suite are a combination of fractured and weathered (intergranular) zones and are coloured yellow on Figure 1-3.

The Malmesbury, Karoo and Cape Granite Suite rocks generally have the lowest potential, generally being classified as B2 and D2, respectively, which implies a median borehole yield of 0.1 to 0.5 ℓ/s. However, some very high yielding boreholes have been established in the Malmesbury Aquifer at the Pearl Valley and Val de Vie developments between Paarl and Franschhoek. Sustainable yields of up to 15 ℓ/s have been obtained here.

The Table Mountain Group (TMG) is usually regarded as the major regional aquifer of the Western Cape. In the study area it is uniformly classified as B4, i.e. a median borehole yield of 2.0 to 5.0 ℓ/s. However, much of this aquifer is inaccessible for drilling and exploitation. One of the strongest flowing (125 l/s) and hottest (62^0C) springs emerges from a fault zone in this aquifer at Brandvlei.

The TMG Aquifer of the Wemmershoek area is being investigated by the City of Cape Town to augment water supply to Cape Town. This is designated as Target Area W7. Yields of 100 ℓ/s per borehole have been put forward as being feasible, but it is unlikely that such yields would be sustainable or not cause unacceptable environmental impacts.

The Bokkeveld Group forms locally important aquifers in the Hex, Ceres and Agter Witzenberg Valleys but is a poor aquifer elsewhere. Approximately 20 million m^3/a are abstracted in the Hex Valley. The Witteberg Group generally forms a moderate to poor aquifer.

The alluvial aquifer is well developed in the Rawsonville area to the west of Worcester and ~20 million m^3/a is abstracted from this aquifer. On a local scale the very shallow water table causes problems of waterlogging, e.g. on the east bank of the Berg River between Paarl and Franschhoek. Subsurface drainage systems have had to be installed at developments in this area such as Pearl Valley and Val de Vie.

Groundwater quality is mostly good on account of the relatively high rainfall and therefore recharge and the influence of the TMG Aquifer. Consisting mostly of silica, these rocks contain very pure groundwater with electrical conductivity (EC) mostly <10 mS/m. The drawback with such unbuffered groundwater is that it has a low pH, usually <6, which is aggressive and corrosive. High iron content is also a characteristic aesthetic problem. Over most of the area EC is <70 mS/m, increasing above this in the Malmesbury and Granite Aquifers to the west, i.e. away from the TMG, and also to the east as rainfall and recharge decrease and under the influence of more shaley lithologies.

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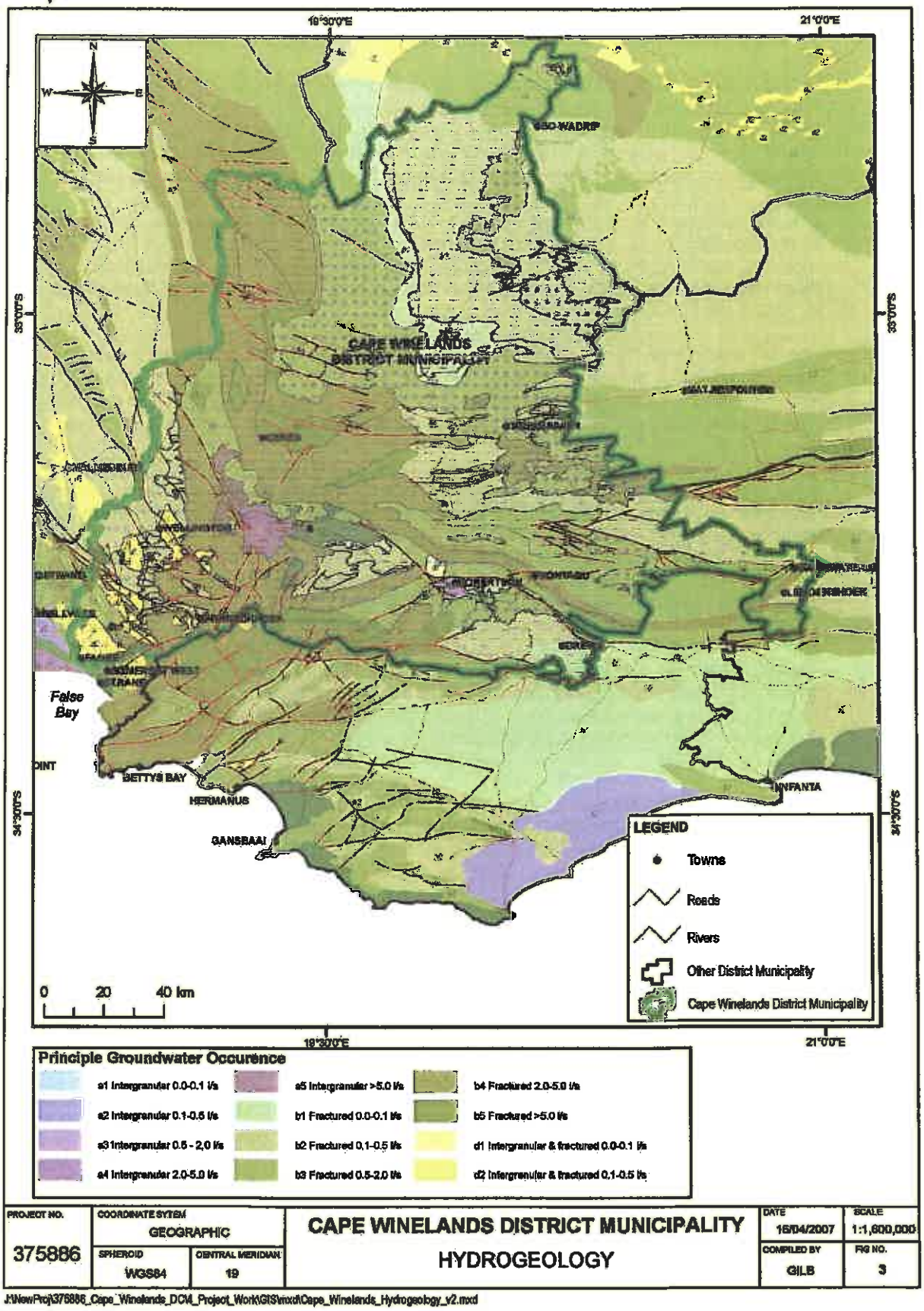

Figure 1-3: Hydrogeology of Cape Winelands District Municipal Area

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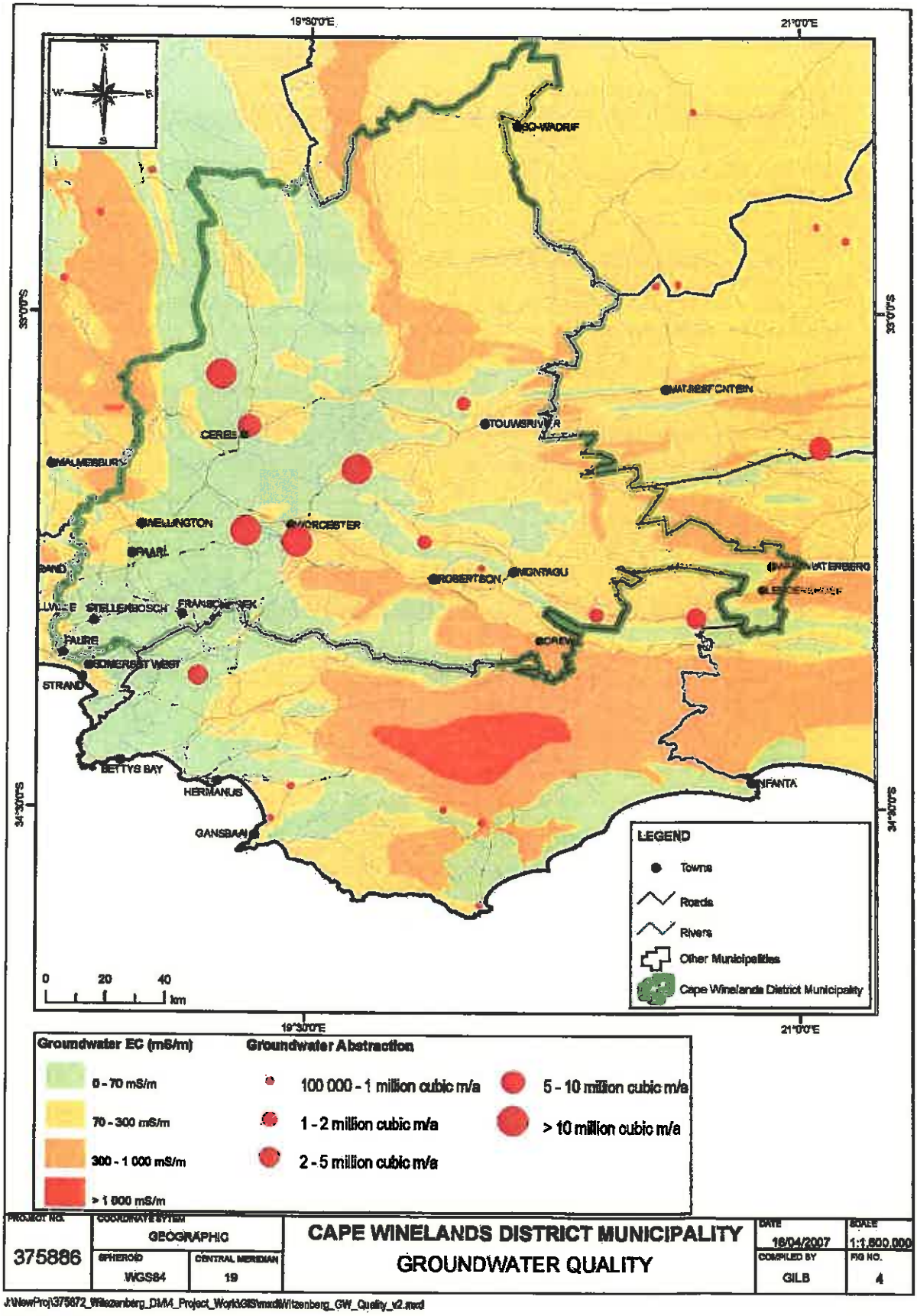

Figure 1-4: Groundwater Quality of the Cape Winelands District Municipal Area

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1.4 DEMOGRAPHICS

The statistics relating to population were taken from Statistics SA. The latest 2011 Census population figures were used. The total population of each local municipality with its respective annual growth rate since 2001 is shown in Table 1-1 below. The growth rates were applied to each total to estimate the current and future population of each municipality and the total population for the District.

Table 1-1: Population Figures

Municipality	Growth rate (%)	2011	2015	2020
Breede Valley	1.31%	166836	175751	187569
Drakenstein	2.56%	251268	278003	315456
Langeberg	1.79%	97728	104915	114648
Stellenbosch	2.71%	155733	173313	198105
Witzenberg	2.64%	115950	128688	146595
CWDM		787506	860661	962362

The 2015 number of households in Table 1-2 were estimated from the 2011 figures, with the assumption that the average household size per sub-area would remain constant.

Table 1-2: Population Profile according to Household Income

Municipality	No of Households (2015)	Population (2015)	Average Persons per Household	Very Low and Low Income	Middle Income	High and Very High Income
Breede Valley	44 839	175 751	3.9	53.81%	18.96%	27.23%
Drakenstein	66 046	278 003	4.2	45.70%	18.39%	35.91%
Langeberg	26 995	104 915	3.9	56.86%	19.97%	23.18%
Stellenbosch	48 269	173 313	3.6	52.89%	15.55%	31.56%
Witzenberg	30 444	128 688	4.2	56.65%	20.86%	22.49%
CWDM	216 593	860 671	4.0	53.15%	18.74%	28.07%

From the graph below it can be seen that the population is divided 52% in the Cape Winelands West (Stellenbosch & Drakenstein) and 48% in the Cape Winelands East (Breede Valley, Witzenberg & Langeberg)

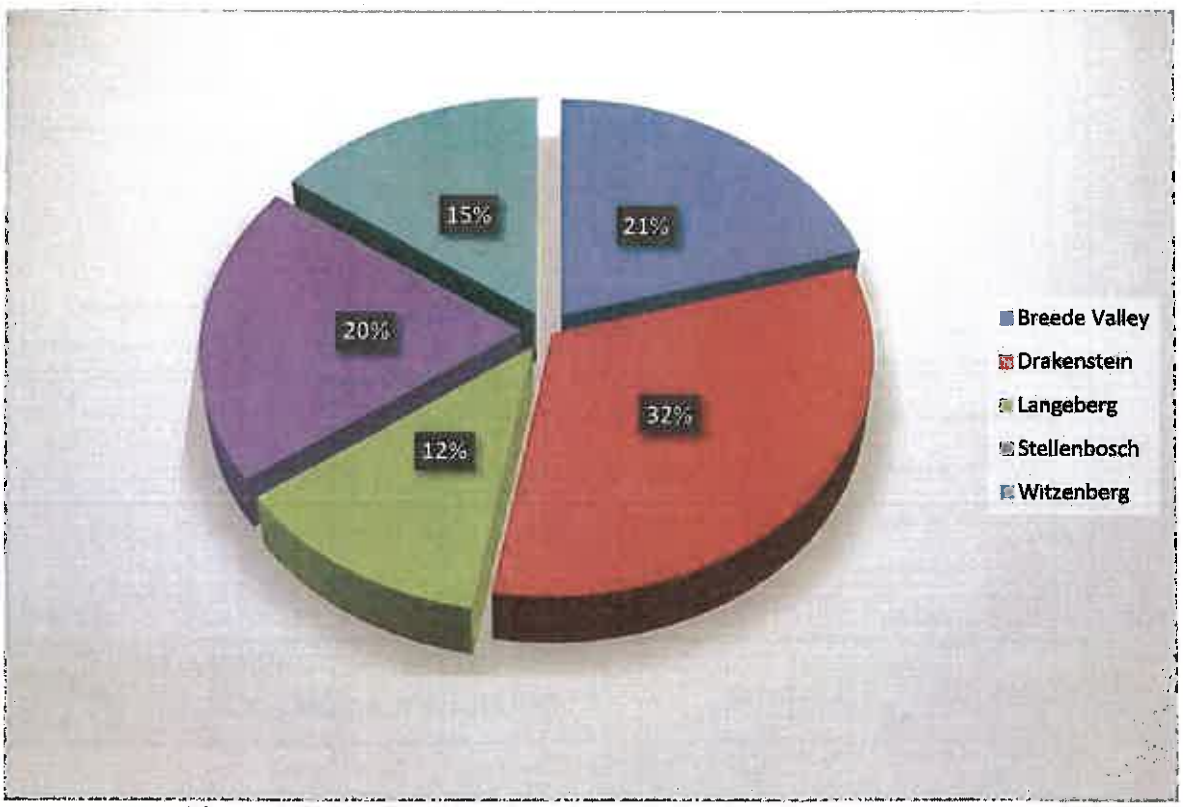

Figure 1-5: Graphical Display of Population Distribution

The Human Development Index for the Cape Winelands District compared to that of the Western Cape and the whole of South Africa is shown in Table 1-3 below.

Table 1-3: Human Development Index

Population Group	Cape Winelands	Western Cape	RSA
Black	0.52	0.58	0.50
White	0.86	0.87	0.88
Coloured	0.66	0.66	0.66
Asian	0.76	0.79	0.76
Total	0.65	0.71	0.59

Source: Cape Winelands District IDP 2014-2015; HIS Global Insight Regional Explorer, 2013

1.5 TRANSPORT INFRASTRUCTURE

The major routes in the Cape Winelands District are the N1, R44, R46 and R60. The R44 connects Stellenbosch with Drakenstein. The N1 connects Drakenstein with Breede Valley. The R60 connects Breede Valley and Langeberg and the R43 connects Breede Valley with Witzenberg. All waste is transported by road.

1.6 STRATEGIC LINKAGES

Western Cape IWMP	NWMS (2011)	CWDM IWMP	CWDM SDF	CWDM IDP
Goal 1: Educate, strengthen capacity and raise awareness in integrated waste management	Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment	Goal 1: Public Awareness & Education	To promote sustainable resource use and responsible rural development	SO1: 1.1.4: A well informed local government that will be able to make evidenced-based decision-making with regard to sectoral interventions
Goal 2: Improve waste information management	Goal 5: Achieve integrated waste management planning	Goal 2: Waste Quantification & Information		
Goal 3: Promote sound, adequate and equitable waste management	Goal 2: Ensure the effective and efficient delivery of waste services	Goal 3: Effective Solid Waste Service Delivery		SO2: Promoting sustainable infrastructure services and transport system which fosters social and economic opportunities
				2.2.1.3: Investigate and planning of regional solid waste disposal sites
				2.2.1.4: Developing/maintain of regional solid waste disposal sites
Goal 4: Mainstream Integrated Waste Management Planning in municipalities and industry	Goal 5: Achieve integrated waste management planning	Goal 4: Promote and Ensure Waste Minimisation	To promote sustainable resource use and responsible rural development	
	Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste	Goal 1: Public Awareness & Education		

Western Cape IWMP	NWMS (2011)	CWDM IWMP	CWDM SDF	CWDM IDP
Goal 5: Mainstream sustainable waste management practices	Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste	Goal 4: Promote and Ensure Waste Minimisation		
	Goal 3: Grow the contribution of the waste sector to the green economy	Goal 3: Effective Solid Waste Service Delivery		
Goal 6: Strengthen the waste regulatory system/framework	Goal 8: Establish effective compliance with and enforcement of the Waste Act	Goal 5: Improve Regulatory Compliance	To improve and conserve the district's natural environment	SO1: 1.1.2 To ensure effective environmental pollution control via the identification, evaluation, monitoring and prevention of the pollution of soil, water and air, in as far as it relates to health; and to institute remedial action accordance with Regulation 37 of the CWDM Municipal Health By-Law.
	Goal 2: Ensure the effective and efficient delivery of waste services			
	Goal 7: Provide measures to remediate contaminated land			
Goal 7: Ensure the safe and integrated management of hazardous waste	Goal 7: Provide measures to remediate contaminated land	Goal 6: Ensure the safe and integrated management of hazardous waste	To improve and conserve the district's natural environment	SO1: 1.1.2 To ensure effective environmental pollution control via the identification, evaluation, monitoring and prevention of the pollution of soil, water and air, in as far as it relates to health; and to institute remedial action accordance with Regulation 37 of the CWDM Municipal Health By-Law.
		Goal 5: Improve Regulatory Compliance		
		Goal 1: Public Awareness & Education		
Goal 8: Facilitate access to funds to implement Integrated Waste Management	Goal 6: Ensure sound budgeting and financial management for waste services	Goal 7: Ensure sound budgeting for integrated waste management	To foster the inclusion of an economic perspective in land use management and land development	SO3: To provide an effective and efficient financial and strategic support services to the Cape Winelands District Municipality

2. BACKGROUND POLICY AND LEGISLATION

The fragmented and uncoordinated way pollution and waste has been dealt with, as well as insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa. Through the promulgation and implementation of various pieces of policies, legislation, standards and guidelines as well as the implementation of co-operative governance as envisaged in the Constitution this situation will be improved. The current fragmentation, duplication and lack of co-ordination will be eliminated.

Pollution and waste management is not the exclusive preserve of government. The private sector and civil society have crucial roles to play. The fostering of partnerships between government and the private sector is a prerequisite for sustainable and effective pollution and waste management to take place. Similarly, the spirit of partnerships and co-operative governance between organs of state is equally important due to the crosscutting nature of pollution and waste management.

2.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

In 1996 the new Constitution created the right to the environment as a fundamental right. This fundamental right to the environment ensures everyone's right to an environment that is not harmful to their health or well-being. South African law, the environment and all South Africans have a constitutional right to have the environment protected for present and future generations.

This means that there must be reasonable legal and other measures to prevent ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

All legislation has to fall within the stipulations of the Constitution. The following sections are of particular relevance where waste is concerned:

- **Section 24(a)**

  Provides everyone the right to an environment that is not harmful to a person's health and well-being.

- **Section 24(b)**

  Provides everyone the right to have the environment protected through reasonable legislative and other measures. The implementation of section 21, 22 and 26 of the Environment Conservation Act, 1989 is such a legislative measure to protect the environment.

- **Section 25**

  Provides for property rights. The Constitution makes provision for both property rights and the right to a healthy environment. A situation may arise in extreme cases where there is a conflict due to rejecting an application for a listed activity from taking place. In such cases it will be up to the court to decide whether the interest of the community (right to a healthy environment) weights heavier than the right of the individual.

- **Section 32**

  Provides the right to access to information. The lack of information is one of the major obstacles in environmental impact management. Provision has been made in the regulations in terms of section 26 of the Environment Conservation Act, 1989, that any report submitted becomes a public document.

- **Section 38**

  Provides *locus standi* or the 'right to get involved" to any member of the public. This means that any member of the public has the right to take appropriate action to prevent environmental damage. This may include taking action against the relevant authority for failing to perform its duties in preventing environmental damage or an individual or authority who is in the process of undertaking listed activities in terms of section 21 of the Environment Conservation Act, 1989, without the necessary authorisation to undertake such activities.

- **Section 41**

  Provides principles for co-operative governance and intergovernmental relations. The Constitution allocates legislative authority as well as executive and administrative powers to all three levels of government. Schedules 4 and 5 determine the functional areas of government. The environment is a cross-sectoral matter and it is therefore important that co-operation between government on all levels is necessary. Furthermore, Chapter 7 of the Constitution of South Africa (Act 108 of 1996) describes the role and responsibilities of Local Government, which include the objectives in Section 152:

"The objects of local government are:

- to promote social and economic development.
- to promote a safe and healthy environment...".

These principles are further developed in the National Environmental Management Act 1998 (Act 107 of 1998).

The Constitution (Act No. 108 of 1996) is relevant to pollution and waste management for two reasons. Firstly, the Bill of Rights (Chapter Two of the Constitution) contains a number of rights relevant to integrated pollution and waste management, to the extent that an Act or particular statutory provision that does not uphold these rights, is unconstitutional. Secondly, the Constitution provides the legal basis for allocating powers to different spheres of government, and is thus relevant to the institutional regulation of integrated pollution and waste management.

Sovereign

The Constitution states that South Africa is a sovereign, democratic State. In terms of environmental management, it is important to recognize that sovereignty includes the ability to limit sovereign powers by entering into international agreements where the need arises.

The Bill of Rights

The most pertinent fundamental right in the context of integrated pollution and waste Management is the Environmental Right (Section 24), which provides that:

"Everyone has the right

(a) to an environment that is not harmful to their health or well-being; and
(b) to have the environment protected, for the benefit of present and future generation through reasonable legislative and other measures that –

(i) prevent pollution and ecological degradation;
(ii) promote conservation; and
(iii) secure ecologically sustainable development and the use of natural resources while promoting sustainable economic and social development. "

This section of the Bill of Rights specifically imposes a duty on the State to promulgate legislation and take other steps to ensure that the right is upheld and that, among other things, pollution and ecological degradation are prevented.

2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The NEMA provides for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

As the principal framework act for environmental issues, it has direct relevance to the implementation of the National Waste Management Strategy, one of the key implications being the designation of the DEAT as lead agent for the environment. Chapter 7 of NEMA has important direct implications for the achievement of the NWMS initiative.

The environment as defined in NEMA is the natural environment along with its physical chemical, aesthetic and cultural properties that influence human health and well-being.

NEMA contains the following environmental principles:

- Environmental management must put people and their needs at the forefront, and must serve their interest fairly.

- Development must be socially, environmentally and economically sustainable. This means that the following things must be considered before there is development:

  a) Disturbance of ecosystems and loss of biodiversity
  b) Pollution and degradation of the environment
  c) Disturbance of landscapes and sites where the nation's cultural heritage is found
  d) Non-renewable resources must be used responsibly
  e) The precautionary principle must be applied
  f) Negative impacts must be anticipated and prevented and if they can't be prevented they must be minimized or remedied.

- Environmental management must be integrated. The best practical environmental option must be pursued.
- Environmental justice must be pursued so that there is not unfair discrimination in the way that negative environmental impacts are distributed
- There should be equitable access to environmental resources, benefits and services to meet basic human needs. Special measures may be taken to ensure access for persons disadvantaged by unfair discrimination.
- Responsibility for environmental health and safety of any policy, programme or project must continue throughout the life cycle of a project
- Public participation in environmental decision-making must be promoted. The participation of vulnerable and disadvantaged groups must be ensured
- Decisions must take into account the interests, needs and values of all interested and affected parties. This includes recognizing all forms of knowledge including traditional and ordinary knowledge
- Community well-being and empowerment must be promoted through environmental education
- The social, economic and environmental impacts of the activities must be assessed
- The rights of workers to refuse to do work that is harmful to human health or the environment and to be informed of dangers must be respected
- Decisions must be taken in an open and transparent manner and access to information provided in accordance with the law
- There must be inter government co-ordination and harmonization of policies and laws
- Actual or potential conflicts of interest between organs of state must be resolved through conflict resolution procedures
- Global and international responsibilities relating to the environment must be discharged in the national interest
- The environment is held in a public trust for the people and the use of environmental resources must serve the public interest, and be protected as the people's common heritage
- The polluter must pay for the costs of remedying pollution, environmental degradation and adverse health impacts
- The vital role of youth and women in environmental management must be recognized and their full participation promoted
- Sensitive or stressed ecosystems must receive special attention in planning which might affect them especially when they are subject to significant resource usage and development pressure.

NEMA also stipulates in Section 24 that there must be an environmental impact assessment before any activity or development that needs permission by law and which may significantly affect the environment.

Section 28 places a specific duty of care on every person to prevent, or mitigate and remediate, environmental damage and pollution. Any person, who was responsible for, or directly or indirectly contributed to the pollution, can be held liable. This includes the owner of the land at the time the pollution occurred or their successor in title, a person in control of the land at that time, or any person who negligently failed to prevent the situation.

The public can use NEMA to exercise their rights when they believe that the right procedures were not followed. Therefore it is extremely important to make sure that when there is a proposed development where the municipality is involved e.g. change of land-use – to make sure that the consultant and/or developers follow the right procedures.

The NEMA Environmental Impact Assessment Regulations

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities that may not commence without environmental authorisation or existing activities in respect of which an application for environmental authorisation is required. In this context, EIA Regulations contained in three General Notices in terms of NEMA (GN R385, 386 and 387) (came into force on 3 July 2006.)

The 2006 Regulations were repealed by the June 2010 EIA Regulations (GN R543). The purpose of the Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment, or where it can con be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.

2.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT: FEES FOR CONSIDERATION AND PROCESSING OF APPLICATIONS FOR ENVIRONMENTAL AUTHORISATIONS AND AMENDMENTS THERETO (GOVERNMENT NOTICE 28 FEBRUARY 2014)

These regulations apply to the above applications excluding community based projects funded by government grants or applications made by organs of state. The commencement date is 1 April 2014. Payment details are discussed regarding the different applicable fees which are listed as follows:

Application	Fee
Application for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations	R2000.00
Application for an environmental authorisation, for which a S&EIR is required in terms of the Environmental Impact Assessment Regulations	R10000.00
Application dealt with in terms of section 24L of the Act	(a) 100% of the most expensive application, namely, R10 000 (Ten Thousand Rand) if S&EIR is triggered and R2000 (Two Thousand Rand) if the basic assessment is triggered;
	(b) 50% of the other application, namely, R5000 (Five Thousand Rand) if the S&EIR is triggered or R1000 (One Thousand Rand) if the basic assessment is triggered)
Amendment of an environmental authorisation on application by the holder of an environmental authorisation.	R2000.00

2.4 ENVIRONMENT CONSERVATION ACT, 1989 (ACT NO. 73 OF 1989)

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("the Waste Act") came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) ("ECA") and introduces new provisions regarding the licensing of waste management activities.

The Environment Conservation Act, 1989 Waste Tyre Regulations (2009) which were published on 13 February 2009 came into effect on 30 June 2009, and makes provision for effective and integrated management of waste tyres in the country. It provides regulations for tyre producers, tyre dealers and waste tyre stockpile owners.

The regulations furthermore require the compilation of industry waste tyre management plans and waste tyre stockpile abatement plans and details the requirements for waste tyre storage areas.

2.5 THE WESTERN CAPE HEALTH CARE WASTE MANAGEMENT AMENDMENT ACT, 2007 (NO 6 OF 2010)

Act 7 of 2007 was amended in 2010 so as to align the terminology with that used in the National Environmental Management: Waste Act, 2008; to define or redefine certain expressions; to delete certain unnecessary definitions; to provide for the issuing of compliance notices; to amend the provisions relating to offences and penalties; to make further provision regarding regulations; to effect certain textual changes; and to provide for matters incidental thereto. The Health Care Management Bill provides for the effective handling, storage, collection, transportation, treatment and disposal of health care waste by all persons in the Province of the Western Cape; and provides for matters incidental thereto.

The object of this Act is to promote integrated health care waste management and thereby—

(a) reduce the risks of health care waste to human health;
(b) prevent the degradation of the environment;
(c) prevent the illegal dumping of health care waste;
(d) promote sustainable development, and
(e) ensure responsible management of health care waste within the Province.

Under this Act a Municipality must:

(a) enforce the relevant provisions of this Act within its area of jurisdiction;
(b) perform audits of generators, transporters, treaters or disposers of health care waste within its area of jurisdiction to ensure compliance with the provisions of this Act;
(c) report annually to the Provincial Minister on the number of incidents of illegal dumping of health care risk waste within its area of jurisdiction, the number of incidents of illegal dumping of health care risk waste pursued in a court of law, and the number of incidents of illegal dumping of health care risk waste successfully convicted in a court of law.

Health Care Waste is produced by hospitals, clinics, physicians, offices, dentists, funeral homes, veterinary clinics and medical- and research laboratories.

Currently only 10-15% of medical waste is considered infectious. The enormous volumes of health care waste requiring special handling and disposal for all infectious and pathological waste are responsible for the current re-evaluation of the terminology for health care waste.

The modern trend in infection control is dictated by the risk posed by the procedure and not by the diagnoses. Thus health care waste is divided into Health Care General Waste (HCGW) and Health Care Risk Waste (HEALTH CARE RISK WASTE). Health Care Risk Waste generally indicates infectious waste, pathological waste, sharps, chemical and pharmaceutical waste, radioactive and cytotoxic waste.

2.6 THE WESTERN CAPE HEALTH CARE WASTE MANAGEMENT AMENDMENT ACT, 2007: WESTERN CAPE HEALTH CARE RISK WASTE MANAGEMENT REGULATIONS, 2013

These regulations were published in the Western Cape: Provincial Gazette Extraordinary 15 March 2013. These are the regulations set out in the Schedule under section 14 of the Western Cape Health Care Waste Management Act, 2007.

The regulations address the requirements for packaging, storage, internal transport, external transport, vehicles, drivers, treatment and disposal of health care risk waste. Furthermore the required training, registration of health care risk waste generators, transporters, treaters and disposers, reporting, auditing and record keeping is discussed. Health care waste management plans must be prepared by those who meet the criteria listed. The required actions regarding compliance notices are also listed.

All addressed forms in the regulations are given in the Annexures:

Annexure 1: Minimum Requirements for health care risk waste containers
Annexure 2: Minimum Requirements for storage of health care risk waste in terms of regulation 3
Annexure 3: Form 1, Minimum Requirements for a tracking document
Annexure 4: Minimum Requirements for information to be contained in a Health Care Waste Management Plan
Annexure 5: Form 2.1, IPWIS registration form for health care risk waste generators, transporters, treaters and disposers

Annexure 6: Form 2.2, Registration Certificate; Form 3.1, Monthly record keeping form for generators; Form 3.2 Monthly record keeping form for transporters, treaters and disposers
Annexure 7: Form 4.1, Compliance Notice; Form 4.2, Compliance certificate

2.7 NATIONAL WATER ACT (ACT NO. 36 OF 1998)

The purpose of the Act is to ensure that the Municipality's water resources are protected, used, developed and conserved in ways which take into account the protection of aquatic and associated ecosystems; that addresses basic human needs; that ensures the reduction and prevention of pollution; and that meets international obligations.

Section 19 of the NWA deals with landowners and users involved in any activity or process which causes, has caused or is likely to cause pollution of water resources. Such landowners and users are obliged to take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. This includes measures to comply with any prescribed waste standard or management practice.

Furthermore, the NWA requires anyone who intends undertaking a water use, as defined, to obtain a licence. The water uses that may be relevant to waste management activities are:

- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; and
- disposing of waste in a manner which may detrimentally impact on a water resource.

The applications for permits, licenses and exemptions made before the promulgation of this Act could still be dealt with in terms of the Water Act 1956 (Act No. 54 of 1956).

2.8 NATIONAL ENVIRONMENT MANAGEMENT: AIR QUALITY ACT 2004 (ACT NO. 39 OF 2004)

This Act has been promulgated in order to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development. It also provides for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

The object of this Act is:

a) to protect the environment by providing reasonable measures for-

   (i) the protection and enhancement of the quality of air in the Republic;
   (ii) the prevention of air pollution and ecological degradation; and
   (iii) securing ecologically sustainable development while promoting justifiable economic and social development; and

b) generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

2.9 NATIONAL WASTE MANAGEMENT STRATEGY

The National Waste Management Strategy (2011) presents Government's strategy for integrated waste management for South Africa and is a legislative requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) The purpose of the Strategy is to achieve the objectives of the Waste Act.

The National Waste Management Strategy presents a long-term plan (up to the year 2016) for addressing key issues, needs and problems experienced with waste management in South Africa. The strategy gives effect to the Bill of Rights, Constitution of South Africa, Act 107 of 1998, on the basis of which the people of South Africa have the right to an environment that is not detrimental to their health. Furthermore, the strategy translates into action Government's policy on waste as set out in the Draft White Paper on Integrated Pollution and Waste Management for South Africa (published in 1998).

The objective of integrated pollution and waste management is to move away from fragmented and uncoordinated waste management to integrated waste management. Such a holistic and integrated management approach extends over the entire waste cycle from cradle to grave, and covers the prevention, minimisation, generation, collection, transportation, treatment and final disposal of waste. Integrated waste management thus represents a paradigm shift in South Africa's approach to waste management, by moving away from waste management through impact management and remediation and establishing instead a waste management system which focuses on waste prevention and waste minimisation.

The Strategy is built around a framework of eight goals, as listed below, along with specific goals that must be reached by 2016. All listed targets must be reached by 2016:

Goal 1: Promote waste minimisation, reuse, recycling and recovery of waste.
- 25% of recyclables diverted from landfill sites for re-use, recycling or recovery.
- All Metropolitan Municipalities, secondary cities and large towns have initiated separation at source programmes.

Goal 2: Ensure the effective and efficient delivery of waste services.
- 95% of urban households and 75% of rural households have access to adequate levels of waste collection services.
- 80% of waste disposal sites have permits.

Goal 3: Grow the contribution of the waste sector to the green economy.
- 69 000 new jobs created in the waste sector.

Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment.
- 80% of municipalities running local awareness campaigns.
- 80% of schools implementing waste awareness programmes.

Goal 5: Achieve integrated waste management planning.
- All Municipalities have integrated their IWMPs with their IDPs and have met the targets set in the IWMPs.
- All waste management facilities required to report to SAWIS have waste quantification systems that report information to WIS.

Goal 6: Ensure sound budgeting and financial management for waste services.
- All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs.

Goal 7: Provide measures to remediate contaminated land.
- Assessment complete for 80% of sites reported to the contaminated land register.
- Remediation plans approved for 50% of confirmed contaminated sites.

Goal 8: Establish effective compliance with and enforcement of the Waste Act.
- 50% increase in the number of suocessful enforcement actions against non-compliant activities.
- 800 EMIs appointed in the three spheres of government to enforce the Waste Act.

The strategy aims to reduce both the generation and the environmental impact of waste. It presents a plan for ensuring that the socio-economic development of South Africa, the health of its people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management. It establishes a waste management system that concentrates on avoiding, preventing and minimising waste and makes provision for waste management services for all by extending an acceptable standard of waste collection, as well as transportation, treatment and disposal services to all communities.

While the long-term objective of the strategy is waste prevention and minimisation, a number of remedial actions such as improved waste collection and waste treatment are required in the shorter term due to prevailing inadequate waste management practices.

The Strategy is an institutionally inclusive strategy because its achievement relies on participation by numerous role-players in the public sector, private sector and civil society.

To implement the Waste Act, government must:
- Draft legislation, regulations, standards and Integrated Waste Management Plans.
- Regulate waste management activities through licenses and enforce their conditions.
- Implement the South African Waste Information System (SAWIS)
- Coordinate waste management activities using a system of Waste Management Officers.
- Give effect to multilateral agreements and ensure proper import and export controls.
- Progressively expand access to at least a basic level of waste services and plan for future needs.
- Facilitate the establishment of a national recycling infrastructure.
- Provide the framework for the remediation of contaminated land.
- Work in partnership with the private sector and civil society.

2.10 WHITE PAPER ON EDUCATION AND TRAINING (1995)

The 1995 *White Paper on Education and Training* states that "environmental education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of **all levels and programmes of the education and training system**, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources".

The White Paper advocates environmental education and training **at all levels.** This would include the local government sphere, particularly when it comes to the environmental education & training of government officials and workers.

The education of the youth is the responsibility of national and provincial government. However, the Constitution does state that where the capacity exists, functions can be delegated to local government, and that the spheres of government, while distinctive, are interdependent and interrelated. Local government should support the other spheres of government (such as the national Department of Education, DoE) in areas of its own focus, such as environmental management and sustainable development.

2.11 THE MUNICIPAL SYSTEMS ACT (ACT 32 OF 2000)

This policy outlines the role and responsibilities of local governments as to:

- Provide democratic and **accountable** government for local communities;
- Ensure the provision of services to communities in a **sustainable** manner;
- Promote **social** and economic development;
- Promote a safe and healthy **environment**;
- Encourage the **involvement** of communities and community organisations in the matters of local government, and
- Strive, within its financial and administrative capacity, to achieve the objectives above.

These responsibilities indicate a need for an environmentally educated work force (accountable) as well as an environmentally educated public (involvement). The Municipal Systems Act (32 of 2000) requires municipalities to promote public participation and to build the capacity of residents, councillors and municipal officials to engage in participatory processes. As a means of tracking progress in this area, the executive of a municipality is obliged to report annually on the level of public participation in municipal matters.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan. The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

2.12 THE MUNICIPAL STRUCTURES ACT, 1998 (ACT NO. 117 OF 1998)

This Act makes provision for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality. It establishes criteria for determining the category of municipality to be established in an area and defines the types of municipality that may be established within each category.

The Act furthermore provides for an appropriate division of functions and powers between categories of Municipality and regulates the internal systems, structures and office-bearers of the municipalities. It also provides for appropriate electoral systems for matters in connection therewith.

2.13 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008) ("THE WASTE ACT")

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("the Waste Act") came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) ("ECA") and introduces new provisions regarding the licensing of waste management activities.

Provision has been made in the form of legislative and regulatory tools to facilitate and ensure implementation of the Act by all spheres of government.

The Waste Act was published to reform the law regulating waste management in order to protect the health of the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The purpose of this Act is to protect health, well-being and the environment by providing reasonable measures for –

- the minimisation of the consumption of natural resources;
- the avoidance and minimisation of the generation of waste;
- the recovery, re-use and recycling of waste;
- the treatment and safe disposal of waste as a last resort;
- the prevention of pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm;
- achieving integrated waste management reporting and planning;
- to ensure that people are aware of the impacts of waste on health and the environment;
- to provide for compliance and generally to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to the health and well-being of people.

The interpretation and application of this Act must be guided by the national environmental management principles set out in section 2 of the National Environmental Management Act.

The Waste Act allows for the compilation of a Waste Management Strategy, national, provincial and local standards.

Municipalities must in terms of their by-laws:

- establish service standards and levels of service for the collection of waste;
- may identify requirements in respect of the separation, compacting and storage of waste;
- may identify requirements for the management of waste, including requirements in respect of the avoidance of the generation of waste and the recovery, reuse and recycling of waste;
- the requirements in respect of the directing of waste to specific treatment and disposal facilities.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan.

The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

Municipalities must also in terms of the Act:

- conduct municipal activities in accordance with the National Waste Management Strategy and any national or provincial norms and standards;
- compile an integrated waste management plan;
- ensure that waste management services are provided within the municipality in a manner which prioritises the recovery, re-use or recycling of waste and provides for the treatment and safe disposal of waste as a last resort;
- designate a waste management officer;
- ensure that provision is made for the management and collection of litter;
- secure compliance with the objects of this Act that are in the domain of the municipality; and
- implement any other measures that are necessary for securing the objects of this Act that are within the domain of the municipality.

Duty to provide collection services - Every municipality has an obligation to progressively ensure that efficient, effective and affordable waste collection services are provided in its area.

A municipality may, by notice, require any person making use of the municipal collection service to separate specified types of waste from the general waste for the purposes of recovery, re-use or recycling.

In terms of Section 19(1) of the Waste Act, the Minister may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. In terms of Section 20 of the Waste Act no person may commence, undertake or conduct a waste management activity except in accordance with the following:

- the requirements or standards determined in terms of Section 19(3) of the Waste Act for that activity; or
- a waste management license issued in respect of that activity, if a license is required.

On 3 July 2009 a list of waste management activities were published. These activities were published in Government Notice 178 in Government Gazette No. 32368 of 3 July 2009. No person may commence with, undertake or conduct these activities unless a waste management license is issued in respect of the activity.

A person who wishes to commence, undertake or conduct an activity listed under Category A must conduct a Basic Assessment process whilst activities listed under Category B requires a Scoping and EIA process to be undertaken.

In terms of Section 49(2) of the Waste Act a decision to grant a waste management license in respect of a waste disposal facility is subject to the concurrence of the Minister responsible for Water Affairs. The Waste Act further specifies that the issuing of a waste management license for a waste disposal facility is subject of the inclusion in the license of any conditions contained in a Record of Decision issued by the Minister responsible for Water Affairs regarding any measures that the Minister responsible for Water Affairs considers necessary to protect a water resource as defined in the National Water Act, 1998 (Act No. 36 of 1998).

2.14 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): LIST OF WASTE MANAGEMENT ACTIVITIES THAT HAS, OR IS LIKELY TO HAVE A DETRIMENTAL EFFECT ON THE ENVIRONMENT. GOVERNMENT NOTICE 37083, 29 NOVEMBER 2013

This notice replaces the 3 July 2009 list of activities that trigger a waste license requirement and because of its impact on financial budgets and budget scheduling, all the activities, quoted verbatim (except where grammatically corrected) from the notice, are listed below:

"GENERAL

No person may commence, undertake or conduct a waste management activity listed in this schedule unless a licence is issued in respect of that activity.

CATEGORY A

3. A person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a basic assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application.

Storage of waste

(1) The storage of general waste in lagoons.

Recycling or recovery of waste

(2) The sorting, shredding, grinding, crushing, screening or baling of general waste at a facility that has an operational area in excess of 1000m^2.

(3) The recycling of general waste at a facility that has an operation area in excess of 500m^2, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(4) The recycling of hazardous waste in excess of 500kg but less than 1 tonne per day calculated as a monthly average, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(5) The recovery of waste including the refining, utilisation, or co-processing of the waste in excess of 10 tonnes but less than 100 tonnes of general waste per day or in excess of 500kg but less than 1 tonne of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process with in the same premises.

Treatment of waste

(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tonnes but less than 100 tonnes.

(7) The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 tonne per day excluding the treatment of effluent, wastewater or sewage.

(8) The remediation of contaminated land.

Disposal of waste

(9) The disposal of inert waste in excess of 25 tonnes and with a total capacity of 25 000 tonnes, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.

(10) The disposal of general waste lo land covering an area of more than 50m^2 but less than 200m^2 and with a total capacity not exceeding 25 000 tonnes.

(11) The disposal of domestic waste generated on premises in areas not serviced by the municipal service where the waste disposed exceeds 500kg per month.

Construction, expansion or decommissioning of facilities and associated structures and infrastructure

(12) The construction of facilities for waste management schedule activity listed in Category A of this Schedule (not in isolation to associated activity).

(13) The expansion of waste management activity listed in Category A or B of this Schedule which does not trigger an additional waste management activity of this Schedule

(14) The decommissioning of facility for a waste management activity listed in Category A or B of this Schedule.

CATEGORY B

4. A person who wishes to commence, undertake or conduct a waste management activity listed under this Category, must conduct a scoping and environmental impact reporting process, set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application contemplated in section 45 read with section 20(b) of this Act.

Storage of hazardous waste

(1) The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage.

Reuse, recycling and recovery of waste

(2) The reuse and recycling of hazardous waste in excess of 1 tonne per day, excluding reuse or. Recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(3) The recovery of waste including the refining, utilisation or co-processing of waste at a facility with a facility that processes in excess of 100 tonnes of general waste per day or in excess of 1 tonne of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.

Treatment of waste

(4) The treatment of hazardous waste in excess of 1 tonne per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.

(5) The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.

(6) The treatment of general waste in excess of 100 tonnes per day calculated as a monthly average, using any form of treatment.

Disposal of waste on land

(7) The disposal of any quantity of hazardous waste to land.

(8) The disposal of general waste to land covering an area in excess of 200m^2 and with a total capacity exceeding 25 000 tonnes.

(9) The disposal of inert waste to land in excess of 25 000 tonnes, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.

Construction of facilities and associated structures and infrastructure

(10) The construction of facilities for a waste management activity listed in Category B of this this Schedule (not in isolation to associated waste management activity).

CATEGORY C

5. A person who wishes to commence, under take or conduct a waste management activity listed under this Category, must comply with the relevant requirements or standards determined by the Minister listed below-
   (a) Norms and Standards for Storage of Waste, 2013 or
   (b) Standards for Extraction, Flaring or recovery of Landfill Gas, 2013; or
   (c) Standards for Scrapping or Recovery of Motor Vehicles, 2013.

Storage of waste

(1) The storage of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.

(2) The storage of hazardous waste at a facility that has the capacity to store in excess of 80m^3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.

(3) The storage of waste tyres in a storage area exceeding 500m^2.

Recycling or recovery of waste

(4) The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m^2.

(5) The extraction, recovery or flaring of landfill gas."

2.15 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL DOMESTIC WASTE COLLECTION STANDARDS, GOVERNMENT NOTICE 33935, 21 JANUARY 2011

The purpose of this publication is to redress past imbalances in the provision of waste collection services. The provision of waste collection services improves the quality of life of the entire community and ensures a clean and more acceptable place to live and work in. The lack of or poor quality waste collection services can however result in a number of environmental and human health problems.

It is recognised that South Africa is a developing country and the purpose of the setting of standards is to ensure a service to all while complying with health and safety regulations without unnecessarily changing current creative collection processes as long as they function well and deliver a service of acceptable standard to all households. These National Domestic Waste Collection Standards are therefore applicable to all domestic waste collection services throughout the country.

This notice distinguishes between the levels of service relating to waste collection. It further states that equitable waste collection services must be provided to all households within the jurisdiction of the municipality. In areas where travelling distances and the resulting costs may render regular waste collection services impractical, the municipality, through by-laws, must allow for more feasible alternative ways of waste handling, such as on-site disposal.

From here regulations and guidelines on separation at source, collection of recyclable waste, receptacles, bulk containers, communal collection points, frequency of collection, drop-off centres and collection vehicles are given.

Existing Occupational Health and Safety legislation must be adhered to and the general health of waste collection workers must be addressed by ensuring they receive:
(i) regular medical check-ups to ensure their health and well-being;
(ii) appropriate personal protective equipment e.g. gloves, masks, overalls and raincoats, gumboots; and
(iii) on-going training on health and safety issues.

The role of the Waste Management Officer regarding waste awareness and the handling of complaints are prescribed. The municipality must create awareness amongst households about the following:
(i) the types of waste collection services provided;
(ii) separation at source - the removal of recyclables and re-usable waste from the general household waste;
(iii) the potential of composting of some of the household waste and the benefit of such to the household;
(iv) the unacceptability of illegal dumping and littering;
(v) measures to be taken against individuals that litter and dump waste illegally;
(vi) the cost of cleaning up illegal dumping and littering, and the implications on household waste collection rates; and
(vii) the advantages of reporting illegal dumping activities.

The municipality must provide clear guidelines to households about the following:
(i) the different types of waste generated in households;
(ij) separation of non-recyclable and non-reusable household waste from compostable waste and recyclable waste;
(iii) appropriate containers for each type of waste;
(iv) removal schedules for each type of waste; and
(v) what to do with waste other than those waste forming part of the regular schedule of waste collection services.

Awareness raising and guideline communications must be done at regular intervals to ensure that all households are well informed about the issues listed above.

The Waste Collection customer service standards for Kerbside collection are described with respect to collection schedule, interruptions, the replacement of bins, collection during holidays and general points.

2.16 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL WASTE INFORMATION REGULATIONS, GOVERNMENT NOTICE 35583, 13 AUGUST 2012

The purpose of the Regulations is to regulate the collection of data and information to fulfil the objectives of the national waste information system set out in section 61 of the Act.

The Regulations apply uniformly to all persons conducting an activity listed in Annexure 1 of the Regulations. A person who conducts an activity in a province that has an established waste information system in terms of section 62 of the Act and collects the minimum information required by the Regulations must submit the information to the provincial waste information system.

Where a province has developed waste information regulations that are compatible with the Regulations, a person who conducts an activity contemplated in Annexure 1 to the Regulations must comply with the provincial waste information regulations.

2.17 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): WASTE CLASSIFICATION AND MANAGEMENT REGULATIONS, GOVERNMENT NOTICE 36784, 23 AUGUST 2013

The purpose of the Regulations is to regulate the classification and management of waste in a manner which supports and implements the provisions of the Act; to establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management License; to prescribe requirements for the disposal of waste to landfill; to prescribe requirements and timeframes for the management of certain wastes and to prescribe general duties of waste generators, transporters and managers.

Chapter 2 of the Notice covers Waste Classification and Safety Data Sheets. Chapter 3 covers Waste Management in General, Waste Treatment and Waste Disposal to Landfill. Chapter 4 covers Waste Management Activities that do not require a Waste Management License. Chapter 5 covers the Record Keeping and Waste Manifest System. Chapter 6 covers General Matters which includes Implementation and Transitional Provisions and Offences and Penalties.

Chapter 7 contains the following Annexures:
Annexure 1: Wastes that do not require Classification or Assessment
Annexure 2: Waste Manifest System Information Requirements

2.18 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE ASSESSMENT OF WASTE FOR LANDFILL DISPOSAL, GOVERNMENT NOTICE 36784, 23 AUGUST 2013

The purpose of the Norms and Standards is to prescribe the requirements for the assessment of waste prior to disposal to landfill in terms of Regulation 8(1)(a) of the Regulations.

The Standard Assessment Methodology to assess waste for the purpose of disposal to landfill the following are required:

- Identification of chemical substances present in the waste
- Sampling and analysis to determine the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in section 6 of the Norms and Standards.

Within 3 years of the date of commencement of the Regulations, all analyses of the TC and LC must be conducted by labs accredited by SANAS. The TC and LC limits must be compared to the threshold limits specified in section 6 of these Norms and Standards. Based on the TC and LC limits the specific type of waste for disposal to landfill must be determined in terms of section 7.

2.19 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR DISPOSAL OF WASTE TO LANDFILL, GOVERNMENT GAZETTE NO 36784, 23 AUGUST 2013

The purpose of the Norms and Standards are to determine the requirements for the disposal of waste to landfill as contemplated in regulation 8(1)(b) and (c) of the Regulations.

Chapter 2 describes and illustrates the Landfill Classification and corresponding minimum engineering design requirements for the Containment Barriers. These are for Class A to Class D landfills. The requirements that are to be included in an application for a waste management license are stipulated.

The waste acceptance criteria for disposal to landfill are summarised as follows:

Waste assess in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of section 7(1) of the Act must be disposed to a licensed landfill as follows:

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Waste Type	Landfill Disposal Requirements
Type 0	Disposal to landfill not allowed
Type 1	Disposed at Class A landfill or H:h/H:H landfill as specified
Type 2	Disposed at Class B landfill or G:L:B+ landfill as specified
Type 3	Disposed at Class C landfill or G:L:B+ landfill as specified
Type 4	Disposed at Class D landfill or G:L:B- landfill as specified

Waste listed in section 2(a) of Annexure 1 to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Domestic waste. Business waste not containing hazardous waste or hazardous chemicals. Non-infectious animal carcasses. Garden waste.	Disposed at Class B landfill or G:L:B+ landfill as specified
Post-consumer packaging. Waste tyres.	Disposed at Class C landfill or G:L:B+ landfill as specified
Building and demolition waste not containing hazardous waste or hazardous chemicals. Excavated earth material not containing hazardous waste or hazardous chemicals.	Disposed at Class D landfill or G:L:B- landfill as specified

Unless assessed in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of Section 7(1) of the Act and disposed of in terms of section 4(1) of these Norms and Standards, the following waste included in section 2(b) of Annexure 1 to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Asbestos waste; Expired, spoilt or unstable hazardous products; PCBs; General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals; Mixed, hazardous chemical wastes from analytical labs and labs from academic institutions in containers less than 100 litres.	Disposed at Class A landfill or H:h/H:H landfill as specified

Waste that has been classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition, 1998; DWAF) prior to the Regulations coming into operation, may be accepted and disposed of as set out below for a period not exceeding 3 years after the date of coming into operation of the Regulations:

Waste	Landfill Disposal Requirements
Hazardous Waste - Hazard Rating 1 or 2	Disposed at Class A landfill or H:H landfill as specified
Hazardous Waste - Hazard Rating 3 or 4	Disposed at Class A landfill or H:h landfill as specified
Hazardous Waste - Delisted	Disposed at Class B landfill or G:L:B+ landfill as specified
General Waste	Disposed at Class B landfill or G:S/M/L:B-/B+ landfill as specified

The Norms and Standards lists prohibitions and restrictions on the disposal of waste to landfill which comes into effect after the timeframes indicated for each waste and activities from the date of the Regulations coming into operation.

2.20 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): FEE STRUCTURE FOR CONSIDERATION AND PROCESSING OF APPLICATIONS FOR WASTE MANAGEMENT LICENSES, TRANSFER AND RENEWAL THEREOF, GOVERNMENT GAZETTE NO 37383, 28 FEBRUARY 2014

These regulations apply to the above applications excluding community based projects funded by government grants or applications made by organs of state. The commencement date is 1 April 2014. Payment details are discussed regarding the different applicable fees which are listed as follows:

Application	Fee
Application for a waste management license for which basic assessment is required in terms of the Act.	R2000.00
Application for a waste management license for which S&EIR is required in terms of the Act.	R10000.00
Application for a transfer of a waste management license in terms of section 52(2) or for the renewal of a waste management license in terms of section 55(2) of the Act.	R2000.00

2.21 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE EXTRACTION FLARING OR RECOVERY OF LANDFILL GAS, GOVERNMENT GAZETTE NO 37086, 29 NOVEMBER 2013

The purpose of these Norms and Standards is to aim at controlling the flaring, extraction or recovery of landfill gas at facilities in order to prevent or minimise the potential negative impacts on the bio-physical and socio-economic environments. It describes how these facilities must be designed, operated, monitored and decommissioned

2.22 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE SCRAPPING OR RECOVERY OF MOTOR VEHICLES, GOVERNMENT GAZETTE NO 37087, 29 NOVEMBER 2013

These Norms and Standards is applicable to a vehicle scrapping or recovery facility with an operational area exceeding 500m^2 and describes how such a facility must be designed, operated, monitored and decommissioned.

2.23 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE STORAGE OF WASTE, GOVERNMENT GAZETTE NO 37088, 29 NOVEMBER 2013

The purpose of these Norms and Standards is to provide a uniform national approach to the management of waste storage facilities, ensure best practice and to provide minimum standards for the design and operation of new and existing facilities. These Norms and Standards are applicable to waste storage facilities that have the capacity to store in excess of 100m^3 general waste continuously or 80 m^3 of hazardous waste continuously.

2.24 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR ORGANIC WASTE COMPOSTING, GOVERNMENT GAZETTE NO 37300, 7 FEBRUARY 2014

These Norms and Standards is applicable to organic waste composting facilities that have the capacity to process in excess of 10 tonnes but less than 100 tonnes of compostable organic waste per day and describes how such a facility must be designed, operated, monitored and decommissioned.

2.25 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE REMEDIATION OF CONTAMINATED LAND AND SOIL QUALITY, GOVERNMENT GAZETTE NO 37603, 2 MAY 2014

The purpose of these Norms and Standards is provide a uniform national approach to determine the contamination status of an area and to limit uncertainties about the most appropriate criteria and method to apply in such an assessment. Also to provide minimum standards for assessing necessary environmental protection measures for remediation activities.

2.26 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): LIST OF WASTE MANAGEMENT ACTIVITIES THAT HAS, OR IS LIKELY TO HAVE A DETRIMENTAL EFFECT ON THE ENVIRONMENT. GOVERNMENT NOTICE 37604, 2 MAY 2014

The Waste Management Activities List under paragraph 2.15 above has been amended by the deletion of Category B activity 3 (8).

2.27 NATIONAL POLICY FOR THE PROVISION OF BASIC REFUSE REMOVAL SERVICES TO INDIGENT HOUSEHOLDS. GOVERNMENT NOTICE 34385, 22 JUNE 2011

The main criterion for determining the qualifying recipients of Basic Refuse Removal (BRR) services is registration on a municipality's indigent register as provided for by the indigent policy of the municipality.

The following criteria can be used in the absence of or in addition to the main criterion to determine the qualifying recipients of the BRR services:

- Level of income: Monthly net household income of members of less than or equal to *two old age pensions (including children/individuals who may get state grants).*
- Residence status: Everybody residing in the municipality provided their indigent status have been verified.
- Special considerations: All child headed households, households headed by pensioners and people with disabilities
- Value of property (need to note that inherited properties might give false income level status).
- Any other criteria as determined by the specific municipality

A municipality may for practical reasons, declare certain areas or clusters as qualifying recipients of BRR. Examples may include low-income areas and high density, urban informal areas.

- Such declarations have added advantages in terms of administrative feasibility (logistics and costs included) especially where rate collection is challenging.
- A municipality may declare certain low density rural areas as areas where on-site disposal is deemed to be an appropriate waste management option.

If the recipient does not fall under a qualifying indigent area, he/she may register as an indigent at his/her municipality. The municipality must set out certain dates/times for these registrations.

2.28 WHITE PAPER: POLICY ON POLLUTION PREVENTION, WASTE MINIMISATION, IMPACT MANAGEMENT AND REMEDIATION (MARCH 2000)

In line with international trends and our national objectives of efficient and effective management of our nation's resources, priority is given to prevention of waste. Unlike previous policies that focused predominantly on so called "end of pipe" treatment, this White Paper underscores the importance of preventing pollution and waste and avoiding environment degradation.

Effective mechanisms to deal with unavoidable waste will remain necessary, but much greater attention must be directed to the introduction of preventative strategies aimed at waste minimisation and pollution prevention. Ever increasing urban and industrial development throughout the world is leading to levels of pollution, which seriously threaten the natural resources upon which humankind depends for its survival.

Although South Africa has extensive environment, pollution and waste management legislation, responsibility for its implementation is scattered over a number of departments and institutions.

The fragmented and uncoordinated way pollution and waste is currently being dealt with, as well as the insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa.

The White Paper on Integrated Pollution and Waste Management will result in a review of the existing legislation and the preparation of a single piece of legislation dealing with waste and pollution matters.

Pollution and waste management is not the exclusive preserve of government. The private sector and civil society have crucial roles to play. The fostering of partnerships between government and the private sector is a prerequisite for sustainable and effective pollution and waste management to take place. Similarly, the spirit of partnerships and co-operative governance between organs of state is equally important due to the crosscutting nature of pollution and waste management.

Monitoring and collection of information on pollution and waste generation are crucial for the implementation of pollution and waste reduction measures. Moreover, the sharing of such information and creating awareness about the issues will enable all stakeholders, including communities, to gain a better understanding of the relation between pollution, waste management and the quality of life.

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The White Paper proposes a number of tools to implement the objectives of the policy it sets out. The most significant of these is a legislative programme that will culminate in new pollution and waste legislation. This proposed legislation, amongst other things, will address current legislative gaps, and clarify and allocate responsibilities within government for pollution and waste management.

The policy presents seven strategic goals, which are as follows:

Goal 1: Effective Institutional Framework and Legislation
Goal 2: Pollution Prevention, Waste Minimisation, Impact Management and Remediation
Goal 3: Holistic and Integrated Planning
Goal 4: Participation and Partnerships Governance in Integrated Pollution and Waste Management
Goal 5: Empowerment and Education in Integrated Pollution and waste Management
Goal 6: Information Management
Goal 7: International Cooperation

The role of Local Government

Municipalities will be responsible for providing waste management services, and managing waste disposal facilities. Specific functions to be carried out by municipalities will include:

- compiling and implementing general waste management plans, with assistance from provincial government
- implementing public awareness campaigns
- collecting data for the Waste Information System
- providing general waste collection services and managing waste disposal facilities within their areas of jurisdiction
- implementing and enforcing appropriate waste minimisation and recycling initiatives, such as promoting the development of voluntary partnerships with industry, including the introduction of waste minimisation clubs where possible, regional planning, establishment and management of landfill sites, especially for regionally based general waste landfills.

2.29 PLANNING DOCUMENTS

The Provincial Spatial Development Framework (November 2005)

The PSDF states that there is a concern that a number of waste landfill sites are not properly managed. In addition to the challenges of managing increasing waste volumes and decreasing land available for waste disposal, the Western Cape, along with other Provinces, has to deal with waste management problems caused by inequitable development and inadequate service delivery. Waste issues are often closely associated with poverty, environmental health and social justice issues. The following Policies have particular reference:

RC32 All municipalities shall follow an integrated hierarchical approach to waste management consisting of the following, avoidance/reduce, reuse, recycle, composting, treatment and final disposal. The Waste Management System shall consist of a collection service from the source, (domestic, office or factory) transfer stations and waste disposal sites. (M)

RC33 Waste separation at source shall be mandatory in all domestic households and institutions and businesses including high density and multi-storey buildings from a date to be announced. Initially only organic (vegetable and plant matter) and inorganic (usually dry, cardboard, glass, plastics, paper, builders' rubble) waste shall be separated. (M)

RC34 Material Recovery Facilities shall be established at all Transfer Stations. (M)

RC35 Engage with the raw material and packaging industries and reach agreement to ensure demand for recycled products. (G)

RC36 Every urban settlement should have a Transfer Station within a maximum of 5kms from the town centre, inside the Urban Edge. These Transfer Stations shall be properly managed according to best practice so as to minimise nuisance to surrounding neighbours. They should also be open after hours and on the weekends and their locations shall be well publicised so as to ensure that the community uses them. Furthermore, charges should not be levied on loads brought to transfer stations. Micro enterprises wanting to process waste and trade second hand materials on site should be encouraged. (G)

RC37 Every municipality shall have a Waste Disposal facility site located and operated according to DWAF's minimum requirements that will service the Transfer stations in the urban settlements in that municipality. These sites may or may not be located within the Urban Edge of urban settlements. The main criteria for their location will be to meet satisfactory environmental and transport requirements. (M)

It is the intention of the Western Cape Government to make relevant policies contained in the WCPSDF mandatory in terms of legislation and to include these policies in appropriate legislation. These policies are indicated with a 'M' next to the applicable policy in Chapter 8 of this report. The balance of the policies is indicated with a 'G' to indicate that they are guiding principles. The distinction should be understood as follows:

Mandatory (M) measures refer to policies that are regarded as being of sufficient social, economic or environmental importance as to demand that every effort possible should be made to effectively implement that policy.

Guidelines (G) refer to policies that are intended as general developmental goals and whose detailed implementation may vary due to place specific conditions and therefore requiring a certain amount of flexibility in their application.

NOTE THAT THIS SECTION MUST BE UPDATED WHEN THE CURRENT DRAFT PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK (OCT 2013) IS FINALISED

2.30 INTERNATIONAL TREATIES

This section lists the international agreements to which South Africa has acceded. The following is as described in section 4.10 of the National Waste Management Strategy 2011:

Various international agreements to which South Africa has acceded relate to waste management. A number of non-binding conventions and protocols are also relevant to waste management. This section summarises the main actions in the NWMS related to implementing international agreements.

2.30.1 The Basel Convention

The Basel Convention, adopted in 1989, has the greatest bearing on the Waste Act as it addresses the trans-boundary movement of hazardous wastes and their disposal, setting out the categorization of hazardous waste and the policies between member countries.

DEA is developing MOUs with the International Trade Administration Commission (ITAC) and the South African Revenue Service (SARS) that effectively address the provisions of the Basel Convention.

DEA is considering accession to the amendments to the Basel Convention that ban the import and export of hazardous wastes. DEA is also currently developing a policy on imports and exports of waste that will address this.
DEA and DTI are jointly addressing the import and export control aspects of the Basel Convention, together with the chemical conventions. Control will happen through ITAC permits and SARS tariff codes.

2.30.2 The Montreal Protocol

The Montreal Protocol Treaty, revised in 1999, protects the ozone layer by phasing out the production of several substances that contribute to ozone depletion, with the aim of ozone layer recovery by 2050. This has relevance for waste management in instances where such obsolete products enter the waste stream. DEA will finalise and publish the National Implementation Plan for the Montreal Protocol. The plan will include the development on an Ozone Depletion Substance (ODS) strategy and regulations

will provide for the phasing out of specified substances and their safe disposal. These will be gazetted for public comment in 2012.

2.30.3 The Rotterdam Convention

The Rotterdam Convention promotes and enforces transparency in the importation of hazardous chemicals and whilst it explicitly excludes waste, its implementation may lead to bans on listed chemicals. Some of these chemicals may occur in stockpiles of obsolete chemicals such as pesticides that have been identified as a major waste management challenge. Extended producer responsibility schemes will be used to effectively manage obsolete chemicals.

A study to investigate the extent of manufacture, use, import and export of new chemicals listed in the Rotterdam Convention will determine whether South Africa should ratify the newly added chemicals. This document will be finalised in 2012. A process to identify and ban pesticides and industrial chemicals listed in Annex III (that South Africa has not yet banned) has started. Responsible departments will finalise arrangements for banning orders in 2012.

2.30.4 The Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs), which entered into force in 2004, requires that member countries phase out POPs and prevent their import or export. Parties to the Convention are also required to undertake the following responsibilities:

- Develop and implement appropriate strategies to identify stockpiles, products and articles in use that contain or are contaminated with POPs.
- Manage stockpiles and wastes in an environmentally sound manner.
- Dispose of waste in a way that destroys or irreversibly transforms POPs content.
- Prohibit recycling, recovery, reclamation, direct re-use or alternative use of POPs.
- Endeavour to develop strategies to identify contaminated sites and perform eventual remediation in an environmentally sound manner.

A National Implementation Plan has been developed and it will be reviewed in light of the Waste Act and finalised in 2012.

Furthermore, a study has been initiated to investigate the extent of manufacture, use, import and export of new POPs listed in this convention. The study will determine if South Africa should ratify the newly added POPs. This document will be finalised in 2012.

2.31 MUNICIPAL BY-LAWS

Breede Valley:

In terms of Section 13 of the Local Government Systems Act 2000, (Act 32 of 2000) Breede Valley Municipality made a solid waste by-law dealing with the containment and disposal of solid waste. The by-law was published in the Provincial Gazette Extraordinary 6560 of Wednesday, 22 October 2008.

This by-law needs to be updated to an integrated waste management by-law. This has been recommended in the Breede Valley 2015 IWMP implementation.

Drakenstein:

The Drakenstein Municipal By-laws relating to solid waste management were reviewed since the previous IWMP generation and replaced with their Integrated Waste Management By-law. The Drakenstein Municipality enacted their Integrated Waste Management By-law which was published in the Provincial Gazette Western Cape: 7184 on 4 October 2013.

No by-law revision for Drakenstein is recommended or necessary.

Langeberg:

The Langeberg Municipality's By-laws for the Prevention and Suppression of Nuisances and the Removal of Refuse and Control of Disposal Site was published in the Provincial Gazette Western Cape on 28 May 2010. It is recommended that the Langeberg develop and publish integrated solid waste by-laws.

Stellenbosch:

The Stellenbosch Municipality needs to compile and publish integrated waste management by-laws.

Witzenberg:

It is recommended that the current solid waste by-law of Witzenberg Municipality should be revised to integrated waste management by-laws.

CWDM:

The Cape Winelands District Municipality does not manage waste collection or disposal; therefore do not have Solid Waste By-laws. However, Chapter 8 of the Municipal Health By-laws of the Cape Winelands District Municipality published in the Government Gazette Extraordinary on Monday 15 February 2010 relates to Waste Management and reads as follows:

"Part 1: General provisions regarding recovery, storage and disposal of waste

25. Recovery, storage and disposal of waste

(1) Waste must be recovered, stored, transported and disposed of –
(a) without endangering human health
(b) without the use of processes or methods likely to harm or pollute the environment; and
(c) in a manner that does not create a health nuisance.

(2) A person who contravenes subsection (1) commits an offence.

Part 2: Hazardous Waste

26. Applicable legislation

The Municipality, taking cognizance of the provisions of the Environment Conservation Act, 1989 (Act No. 73 of 1989) the Hazardous Substances Act, 1973 (Act 15 of 1973), the National Health Act, 61 of 2003, and the regulations made under these Acts, adopts the provisions in this Part.

27. Storage of hazardous waste

(1) An empty container in which hazardous waste such as, but not limited to, pesticides was stored is to be treated as hazardous waste, and –

(a) must be stored in such a manner that –
(i) no pollution of the environment occurs at any time
(ii) no health nuisance is created at any time

(b) while being stored on site, must be clearly marked or labelled with the words "Hazardous Waste";

(c) the owner or occupier of the land must fence off the storage area to prevent unauthorised access; and

(d) shall be dealt with as Class 6 waste as described in the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (Second Edition, 1998) as published by the Department of Water Affairs and Forestry and as amended from time to time.

(2) A person who contravenes a provision of subsection (1)(a) to (d) commits an offence."

It is recommended that the District Municipality oversees the development and revision of the local Municipalities' solid waste by-laws (if outdated) into integrated solid waste management by-laws.

3. EXISTING WASTE MANAGEMENT IN CAPE WINELANDS DISTRICT MUNICIPALITY

3.1 AWARENESS AND EDUCATION

The lack of public awareness of the gravity of the problem of sustainable waste management has a significant impact on the effectiveness of the management of waste.

Our poor history of waste management in South Africa means that we pay little attention to our lifestyle insofar as how it affects the environment. However, when an environmental problem is noted and the public are made aware of the need for action, there is no stronger lobby. This has been evident with the Eskom power crisis in recent years. This situation has caused that people in South Africa have looked to alternative sources of electricity from small- to large scale. It is now an almost every-day sight to see people applying electricity saving practices at home. For example, solar panels are frequently seen on roofs (and these panels are becoming more efficient) and hot water geysers are fitted with timers so as not to consume electricity throughout the whole day or are simply switched on and off as needed. Creating awareness of the issue of sustainable waste management may have a similar outcome. With landfill airspace becoming more and more restricted, alternative options minimising or avoiding the need for disposal becomes necessary.

The successful implementation of the Cape Winelands District IWMP will require that all persons within the Municipal boundaries are aware of waste issues as an integral part of the creation of a healthy environment. They should be empowered to play their specific role in the development and implementation of the waste management initiatives.

Public participation is closely linked with education and public awareness. The significant difference between awareness programmes and public participation is that public awareness focuses on disseminating information, whereas public participation aims at obtaining participation, comment, input and feedback from the public.

3.1.1 Public Awareness and Education in the Cape Winelands District Municipality

Apart from each local Municipality's awareness and education initiatives, the following table illustrates the District's planned projects which will create awareness and educate the public about environmental health. Although some of the projects do not address education directly, the planting of trees and river rehabilitation for example, will create awareness and instil environmental consciousness with the public.

Project name	Budget	Unit of measurement	Baseline	Target 2014/2015	Target 2015/2016	Target 2016/2017
Environmental Health Education	R400 000.00	No. of theatre performances	100	80	80	80
Greening Project	R250 000.00	No. of trees planted	1500	1500	1500	1500
River Rehabilitation	R350 000.00	Hectares cleared	New	50	50	50
EPWP Invasive Alien Management Programme	R1 030 000.00	No. of hectares cleared	600	300	300	300

3.2 WASTE QUANTITIES AND TYPES

3.2.1 Methodology for General Waste Survey

The waste quantities in the Cape Winelands District were determined by using weighbridge data (where available) and/or using the latest population statistics with waste generation rates per capita. These factors were applied to the estimated future population figures of each local Municipality to estimate the future waste generation quantities.

3.2.2 Volumes of General Waste generated

Weighbridge data from the Drakenstein, Langeberg and Stellenbosch Municipalities have been used in the waste generation calculations. The Breede Valley and Witzenberg Municipalities will install weighbridges with future developments. Their current waste totals were determined from the population statistics.

The waste generation and quantities in the Cape Winelands District Municipality can then be shown as in **Table 3-1.**

Table 3-1: Waste tonnages calculated for the Cape Winelands District

Municipality	Population (2015)	Waste Gen in Ton/year (2015)	Population (2016)	Waste Gen in Ton/year (2016)	Population (2017)	Waste Gen in Ton/year (2017)	Population (2018)	Waste Gen in Ton/year (2018)	Population (2019)	Waste Gen in Ton/year (2019)	Average Waste Generation Factor for Area in kg/p/d
Breede Valley	175751	42928	178054	43490	180386	44060	182749	44637	185143	45222	0.67
Drakenstein	237150	83950	243221	86100	249448	88304	255834	90564	262383	92883	0.97
Langeberg	73469	33022	74784	33613	76123	34215	77485	34827	78872	35451	1.23
Stellenbosch	173313	115223	178010	118346	182834	121553	187789	124847	192878	128230	1.82
Witzenberg	128688	42516	132085	43638	135572	44790	139151	45973	142825	47186	0.91
CWDM	788372	317638	806154	325197	824363	333942	843009	340949	862192	348972	1.10

3.2.3 Recoverable Material Volumes

The Department of Environmental Affairs and Development Planning (DEA&DP) commissioned a study in 2007 to determine the characterisation of the disposed waste at various landfills in the Cape Winelands District. From that study, the anticipated average waste composition of each Municipality in the Cape Winelands District can be derived to include the following recyclable materials (by mass):

Table 3-2: Recyclables in waste stream

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	36%	9%	9%	6%
Drakenstein	34%	22%	11%	5%
Langeberg	33%	16%	8%	6%
Stellenbosch	16%	15%	8%	2%
Witzenberg	26%	27%	6%	7%

Note that the Stellenbosch Municipality has conducted a waste characterisation study in 2012 and the results are shown in the table above. It is therefore recommended that the other Municipalities in the District conduct waste characterisation studies, based on the method below, or similar to the Stellenbosch study.

The Sustainable Cities Institute (United States) and California Department of Resources Recycling and Recovery recommend that the ASTM standards are followed when collecting samples for waste characterisation to be statistically representative. Their proposed method was developed to obtain characterisation from the disposed waste stream. For Disposal Facility type sampling, which was the case in the above study, a minimum total of 30 samples of 90kg each for the residential sector or 40 samples of 90kg each for the non-residential sector should be used. Another requirement is that the samples to be taken are spread over at least two seasons.

To align a new waste characterisation study for each Municipality with the above guidelines, the following is recommended:

- 30 samples of 90kg each are to be sampled randomly at a disposal facility spread over the year.
- The following schedule is proposed to obtain representative samples from the waste stream: One sample per day, Monday to Saturday, for one week of every second month, starting in January as the first month and November as the last. This will amount to a total of 36 samples spread over all four seasons and every day of the week.
- The requirement for this exercise per disposal facility will then be 5 workers to take samples and categorise waste, employed for a total of 36 days throughout the year. They can be employed as part of the Extended Public Works Programme or the Youth Jobs in Waste where applicable. Working with an average of R120 per person per day, this totals R21,600.00. The team can be led by the Municipality's waste manager and also be trained by him or someone delegated by him. A total of R5,000.00 is estimated if a consultant then reworks the data and reports on the gathered data. This can also be done in-house to limit additional costs.

The 2007 characterisation report is still the best available representation of the Cape Winelands waste stream (with the exception of Stellenbosch). To conduct a waste characterisation study that meets the above statistical requirements will require data collected over an entire year. Until such a study is commissioned and completed, the existing report is used for the purposes of this IWMP.

From the waste composition as reflected in the 2007 report, it can be calculated that the total volume of recoverable materials that are theoretically available in the waste stream will be as indicated in Table 3-3. These characterisation percentages were applied to the waste stream of the permanent population.

Table 3-3: Quantities of Available Recoverable Materials

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	14995	3749	3749	2499
Drakenstein	26092	16883	8442	3837
Langeberg	10483	5082	2541	1906
Stellenbosch	17979	16856	8990	2247
Witzenberg	10707	11119	2471	2883
CWDM	80256	53688	26192	13372

The above theoretical figures give a total of approximately 173 509 tonnes per annum, which is 55% of the generated waste stream. It should be noted that this reflects the recyclable portion of the waste stream only as the mathematical representation. The full 58% cannot be seen as recoverable in the practical sense at this stage.

Due to the methods of collection, i.e. the collection of mixed un-separated household waste, a large amount of deterioration and contamination of potentially recoverable material takes place. Post-collection recovery (as is currently the norm in South Africa) implies that only a part of the above tonnages are available for recovery and recycling, due to contamination. For that reason separation at source is considered to be the preferred methodology to increase the volumes and value of recovered materials. Even with source separation some contamination still takes place, but less than mixed bag waste. The Municipalities in the Cape Winelands District implement source separation and are expanding on this service.

Although experience has shown that participation by the public is largely economy driven, the current trend is that separation at source, which implies that recoverable materials are separated by the home owner and "given" to the municipality (or Service Provider) for free, is mainly supported by the middle and higher income groups, whereas the low and very low income groups support buy-back centres or swop-shops where recoverable materials are bought/traded from the residents.

However, recently acquired data (measured quantities in Drakenstein Municipality over 5 years, Overstrand Municipality over 3 years and Swartland Municipality over 10 years) illustrates that the implementation of source separation only leads to a 1% increase in over-all recovered material volume. This small increase may be attributed to the fact that source separation was only implemented in a certain group of neighbourhoods and not throughout the whole of the area where the data was received. If one looks at the statistics per neighbourhood, the increase in material recovery is reportedly 15%. With these relatively small gains in recovery, the Municipality should evaluate the economic feasibility of implementing a source separation system. It is still the preferred collection method, but expensive to implement and would probably receive lower priority as opposed to alternative strategies and action plans that need to be executed by the Municipality in the upcoming years.

Recent statistics obtained from the Drakenstein Municipality show that participation rates are as following: The Middle income group participation rates vary between 12-25% and the High income group participation vary between 35-40%. The low and very low income groups participate at an average of 11-15%.

With the assumed strategy of source separation and "clean" Material Recovery Facilities where the source separated materials are sorted into its various groups and sub-groups, and assuming that middle and high income groups participate at a 45% average and low and very low income groups participate at a 15% average, it can be calculated that the current (2015) recovery volumes will be as indicated in **Table 3-4. Note that these quantities represent what can be expected if only the source separated portion of the waste stream is processed at a "clean" MRF.**

Table 3-4: Calculated Volumes of Recovery of Source Separated Materials

3.2	Participating Waste (t/a)	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	15137	1144	82	599	91
Drakenstein	27047	1931	357	1309	135
Langeberg	18454	1279	177	650	111
Stellenbosch	39057	1312	352	1375	78
Witzenberg	14571	796	236	385	102
CWDM	114265	6462	1203	4318	517

Assumptions for Source Separation:
45% participation Mid & High Income groups
15% participation Low & Very Low Income groups

Recovery % actual data from WastePlan:
21% recovery of available Paper and Cardboard
6% recovery of available Plastics
44% recovery of available Glass
10% recovery of available Metals

599

3.2.3.1 Paper and Cardboard

Paper and Cardboard form the foundation for any recovery venture, due to the relative stable demand and numerous recycled products made from recovered paper.

Waste paper is transformed from one type to another during the recycling process. The supply and demand for waste paper, although stable, is cyclical in nature, and therefore marketing patterns have to be adapted accordingly.

Some of the factors that contribute to this cyclical demand for recovered paper are:

- difficulty for mills to carry large stock
- periodic mill shut-downs result in fluctuations in demand
- paper stock is considered perishable and thus hazardous to store
- space for storage of stock is limited and costly

Some materials produced with recycled paper pulp include: newspapers, packaging, bags, tissue and towels, corrugated boxes, shoe boxes and files, egg cartons and fruit packing layers.

If paper and cardboard products are clean and separated into different types, significantly higher prices are fetched for the recovered materials.

3.2.3.2 Glass

Glass recovery for recycling has had a very erratic history, due to only one recycler having a monopoly in the market. When the capacity of the kilns is full, the price used to drop dramatically due to an over-supply and no demand. Fortunately this situation has stabilized and a constant market for recovered glass is currently prevailing.

The separation of glass is very successful in separation at source activities since it is easy to identify by the home owners. Recent experience in the City of Cape Town has shown that most home owners whom participate in separation at source also wash their glass products before putting it in the recyclables bag.

3.2.3.3 Plastic

Several types of plastics are typically recycled, i.e. PET (transparent plastic bottles e.g. 2 litre cool drink bottles), HDPE (milk containers), LDPE and mixed plastics. Recycled PET is used in the manufacture of small moulded products, such as handles, sporting goods and furniture. Recycled HDPE is used for producing flowerpots, dustbins and a variety of other containers. Mixed plastics are normally used for the manufacture of outdoor furniture, pallets, and plastic timber.

The recent introduction of a levy on shopping bags has caused the amounts arriving at the landfill to reduce dramatically. Less plastic bags are disposed of, as they are recovered and are now manufactured of better quality and thicker plastic.

In order to recycle plastics using current traditional methodology, it has to be sorted into the various categories, and washed if contaminated by the other wastes. Alternative technologies are currently being evaluated (also in South Africa) that could eliminate the need for sorting of plastics.

3.2.3.4 Metal

Metals are the single most recoverable item in the waste stream. Very little degradation takes place during collection. It follows that a relatively small amount ends up in the waste stream, as all types of metal are removed for re-sale at various stages of the waste handling process.

One of the major components of ferrous wastes is the steel can (95% of all cans in the Metropolitan Areas). Non-ferrous metals such as Aluminium and Copper are very scarce in our waste streams, due to its extremely high salvaging value. These are usually removed at source.

3.2.3.5 Economic Sustainability of Waste Recovery

Although the recovery of materials of value from the waste stream for recycling or re-use is one of the basic operations in future integrated waste management, the question regarding its financial and economical sustainability should always be asked and answered.

Local experience over the last decade has shown that the South African recycling market, or rather the recycled product market, is very small and very susceptible to unforeseen activities, e.g. if one paper mill burns down, the effect on the waste paper market, and the prices, is significant. The South African "market" is simply too small to absorb these types of set-backs.

For this reason it is commendable that D:EA&DP had a study conducted into sustaining the local recycling industry.

But one must consider the economical sustainability and not only the financial sustainability. Economic sustainability considers the whole life-cycle cost and not only the rands and cents of a specific financial year and taking into consideration the avoided costs of airspace saving and also the cost on the environment for the resultant smaller utilisation of virgin resources. An interesting stipulation in the Waste Act, Section 17 (1) (a), is that one may not recover materials from waste if it costs more environmental resources to recover, than it would to dispose of that material – a good example of the total or life-cycle costing principle.

Prices for recovered materials vary greatly from city to city and province to province, from baled to unbaled, from dirty to clean and from material type. External factors also play a significant role such as the oil price, e.g. due to a previous low crude oil price of approximately US$43 per barrel had caused new plastic to be cheaper than recycled plastic – cheaper, not necessarily more economical. The result was that recyclers at that moment (January 2009) could not even give their LDPE plastic away where only a month before it was sold for R1500/tonne.

The above does not imply or insinuate that recovery should not be supported, but that both recovery AND the establishment of a recycled goods market should be supported. This is an aspect that cannot be addressed on a local authority level, but must be addressed on a Provincial and/or National level to optimise economy of scale.

Benefits must also be shared. For example, if a municipality saves airspace and transport cost due to recovery, a portion of that saving (avoided costs) should be passed on to the recovery effort to ensure that it is sustainable. If not, as was proven in SA previously, the recovery effort closes down and the municipality loses its avoided cost saving.

The January 2015 prices for recovered materials delivered in Cape Town are displayed in Table 3-5.

Table 3-5: January 2015 Prices of Recovered Materials in Waste Stream

MATERIAL	PRICE IN RAND/TON FOR BALED MATERIAL
Card board	1000
White Paper	1300
Newsprint	750
Glossy Paper	450
Mixed Paper	580
Metals (Mainly cans)	1300
Glass (All colours, Crushed)	400
Plastic (PET, No 1, White, Blue, Green)	3600
Plastic (PET, No 1, Brown)	1000
Plastic (HDPE, No 2)	3000
Plastic (LDPE, No 4)	2000
Plastic (Polypropylene, No 5)	2500
Plastic (Polystyrene, No 6)	1300

3.3 PRIORITY WASTE STREAMS

3.3.1 Tyres

In accordance with the recently published Norms and Standards of 23 August 2013, no whole waste tyres may be landfilled, effective from the publication date. Tyres that are landfilled, must be quartered. After five years from the publication date no tyres, quartered or otherwise, may be landfilled. The Municipality does not accept waste tyres at the disposal facilities.

3.3.2 Hazardous and Health Care Risk Waste

Little to no recent information on hazardous and health care waste generation, characterisation and disposed/treated quantities are available in the District. It is recommended that in a revision of local by-laws, provision is made for hazardous and health care risk waste generators and transporters to register at the local municipalities and report relevant quantities regularly. Pending the availability of funds, studies need to be conducted to identify hazardous waste generators in the industry in the District to ensure that these types of wastes are correctly handled.

3.4 WASTE AVOIDANCE

3.4.1 Waste Avoidance Background

The following diagram illustrates a simplified version of the well-known waste hierarchy with Avoidance being the most favourable and Disposal the least favourable:

Waste avoidance refers to a pro-active approach by industrial as well as domestic waste producers to minimize the volume of waste, by not creating the waste in the first place.

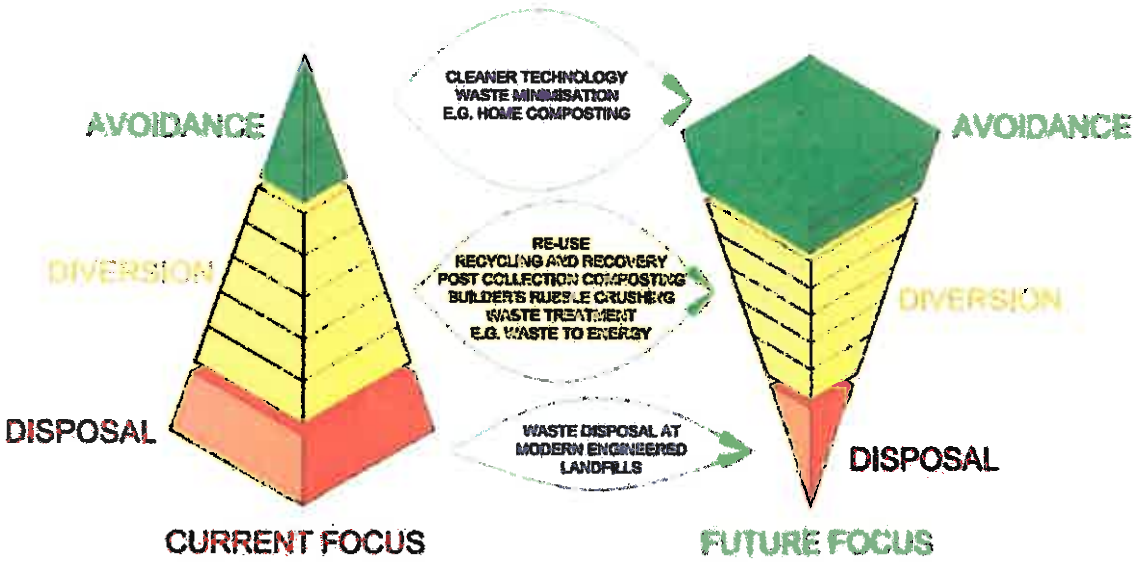

Figure 3-1: Waste Hierarchy

Waste avoidance is a "beginning of the pipe" action that can only work when people understand the full process depicted above.

At the moment waste minimisation through recovery (second tier) is considered a priority in South Africa. Once that can be successfully implemented and the people are educated in the importance of waste reduction, recovery at source (third tier) can be implemented with a reasonable chance of success.

It therefore follows that waste avoidance will be the ultimate and final step in this education process.

On a governmental / legislative level, the introduction of a levy on plastic shopping bags has spurred the production of alternative types of bags, which are re-useable and therefore avoiding the cheap and nasty waste bag that ends up littering our surroundings. However, along with such initiatives must come the required public education surrounding the proper use and impacts of new practices. For example, recent studies have shown that when re-usable bags are used by shoppers, these bags must be regularly washed/cleaned at least once per week. The users of these bags are not in the habit of washing their shopping bags because it was never necessary in the past as the bags were thrown away. Now with the re-usable bags, which are usually left in the car for convenience, that are not cleaned can contain traces of old food and or blood from meat parcels that quickly become breeding grounds for organisms that cause food poisoning. When these unwashed bags are then used to load new groceries into, the food becomes contaminated by the bag and may cause food poisoning in the

persons who eat this food. It is therefore necessary to keep the public aware of such issues to maintain their health while adopting new practices.

In the home, waste avoidance can be practiced by similar efforts where items are used for different purposes than the original intent, possibly suggesting that one purchases alternative products to the norm. Home composting is also considered waste avoidance, as the waste material is converted into a useful gardening resource whilst avoiding the raw product entering the waste stream.

Presently the avoidance of waste in industry has a financial detrimental implication in most cases (e.g. alternative raw products), and only large companies are able to take the leading role through their international experience in this field. Regulatory controls will only be effective if fines result in legal compliance being cheaper than non-compliance. In South Africa, resource and disposal costs are low, providing no financial incentive to reduce consumption or waste in industry. It follows that regulatory instruments are required for implementation on a Municipal level to govern the avoidance of industrial waste in the District.

Regular audits should be conducted by an independent entity on the avoidance practices, to form a basis for applying incentives / penalties.

An important tool for monitoring purposes is a proper Waste Information System (WIS). The District Municipality should ensure that all the local Municipalities report to the IPWIS.

Without a doubt, waste avoidance will become a real and enforced issue in South Africa in the near future, and must be addressed in any Municipal Waste Strategy.

3.4.2 Existing Waste Avoidance in Cape Winelands Municipality

In Cape Winelands, the best place to start implementing waste avoidance would be at the well-established industries on a voluntary basis. A joint venture effort between such industries and the Municipality may be mutually beneficial.

The industry will receive positive advertising of these "green" initiatives through the media, whilst the Municipality will be taking a leading role in South Africa through pro-actively spawning waste avoidance to the benefit of the community and the environment.

The Municipalities can promote waste avoidance by leading by example. Many opportunities exist where small changes can result in waste avoidance. One example is the option to have paperless meetings. If officials have access to laptops or tablets they need not receive the agenda on paper and can keep track and make notes digitally. Wherever it is not necessary to print and use paper, it can be avoided.

Successful waste avoidance will result in further lowering of the demand on the Cape Winelands waste management infrastructure and the functions of collection, recovery and disposal will be done more efficiently by the local municipalities.

Awareness and education plays a crucial role in waste avoidance. Today's consumerism focussed society causes that waste is created in the home without thinking of the consequences before buying. A very large part of our waste streams can be avoided by an educated and aware public, focussing on the avoidance of waste before minimisation and eventually disposal.

3.5 COLLECTION SYSTEMS

The District Municipality does not render waste collection services to households. An overview of the local Municipalities is given below.

3.5.1 Municipal Waste Collection

It is recommended that all Municipalities in the District review their respective collection fleets regularly so that vehicles that are operating beyond their economic lifetimes can be identified and provision can be made in the budget to replace these vehicles.

The levels of service have been obtained from the Department of Local Government. The latest numbers are currently in draft (December 2014), but will be replaced by the final numbers when they are released. We cannot ascertain the accuracy of the numbers or how they were determined.

3.5.1.1 Breede Valley

The Breede Valley Municipality provides a weekly collection service to its residents in all towns. Waste is collected in black bags and Worcester has started using wheelie bins.

Waste in Touwsrivier is first transported to the MRF and the tailings hauled for disposal to the Worcester landfill on a weekly basis. Waste from De Doorns, Rawsonville and Worcester and its surrounds are transported directly to the Worcester landfill for disposal. Worcester has started practising source separation in one neighbourhood and this is planned to be expanded to more neighbourhoods in 2015.

All formal residential households receive waste collection services. Commercial waste and non-hazardous industrial waste is collected on the same scheduled rounds as above. Household collection is once per week and business waste can be collected more frequently.

Informal housing areas are serviced once per week or more frequently if necessary. The Municipality reports 100% service to these areas. As door-to-door collection is difficult, communal skips are placed at central points from where the private company Mr Skip Hire removes the $3m^3$ skips on a weekly basis. They also provide the $3m^3$ skips. $5m^3$ skips are placed and emptied by Municipal trucks and a tractor.

As a result of the inefficiency of open skips as drop-off points due to their height and being hard to reach for some people to properly dispose their waste into the skip and the problem with wind-blown litter, the Municipality is in the process of replacing the skips with "Mini Drop-offs" that will be enclosed structures built with concrete and polywood. These drop-offs will house skips and bins for waste to be offloaded within easy reach on ground-level and being enclosed, will limit wind-blown litter.

The "Solid Waste and Area Cleaning Block System" is also being planned by the Municipality to implement in the informal settlements. Informal settlements will be divided into different blocks, consisting of 400 to 600 houses each. This system will make use of appointed foremen, via formal quotation or tender, in each block of the settlement. This appointed person will then be responsible for the waste collection and cleansing of the block to which he/she was appointed. The work will include distributing refuse bags, collecting full bags weekly and placing them at the mini drop-offs for collection, cleaning streets, cleaning mini drop-offs and planting trees where requested.

There is currently no collection service to farmers and rural households due to the problem of transport distances and accessibility. Farmers offload their waste at the disposal sites free of charge. In summary, the unserviced areas in the Municipality are the rural areas and farms.

Level of Free Basic Service

Received figures indicate that 7190 out of the 7 315 indigent households receive free basic refuse removal, which is 98%.

3.5.1.2 Drakenstein

Drakenstein has been divided into collection areas that have a fixed day per week when waste is collected. All formal residential households receive waste collection services. Commercial waste is collected on the same scheduled rounds.

At the residences wheelie bins are used with different lid colours to simplify identification of the scheduled collection day. The collection frequency is once per week.

Residences practice source separation. Drakenstein Municipality makes use of a two-bag system and clear bags are used for recyclable waste. The clear bag is filled with mixed recyclables and is collected separately for processing.

Informal housing areas are serviced twice per week. The Municipality reports 100% service to these areas. The refuse bag system is used. Collection of the bags is done as part of EPWP and moved to a central collection point from where it is transported to landfill.

In the rural areas and farms there are three scenarios: If the farm is on a collection route, the farm waste is placed by the owner outside his property boundary from where it is collected by the Municipality. Farmers also transport and offload their waste themselves to the Paarl Transfer Station

or the Wellington Landfill and they make use of the coupon system. Farmers can also apply for the use and service of a waste skip that is placed on his property. He pays a monthly fee and the Municipality collects the filled skip when they are notified.

Level of Free Basic Service

Received figures indicate that 12 429 out of the 12 429 indigent households receive free basic refuse removal, which is 100%.

3.5.1.3 Langeberg

Currently a waste collection service is provided by the municipality for all residents in urban areas. All formal residential erven are receiving a weekly door-to-door collection service. Langeberg practices source separation with the two-bag system. Clear bags are used for recyclables and black bags for general waste.

Residents are required to place their waste in bags or wheelie bins on the sidewalk for weekly collection. The farming community delivers their own waste to landfill, as it is not economically feasible for the Municipality to collect waste at these remote locations.

Level of Free Basic Service

Received figures indicate that 6 932 out of the 7 413 indigent households receive free basic refuse removal, which is 94%.

3.5.1.4 Stellenbosch

All formal residences receive a weekly door-to-door waste collection service. The informal settlements have been provided with mini drop-off facilities to offload their waste and this is collected by the Municipality.

Level of Free Basic Service

Received figures indicate that 4 217 out of the 4 217 indigent households receive free basic refuse removal, which is 100%.

3.5.1.5 Witzenberg

A waste collection service is provided by the municipality for all residents in urban areas. All formal residential erven are receiving a weekly door-to-door collection service.

The Municipality does not collect waste at the remote farming communities, as this would be economically unsustainable. Farming communities deliver their own waste

Level of Free Basic Service

Received figures indicate that 4 572 out of the 4 572 indigent households receive free basic refuse removal, which is 100%.

3.5.2 Public Cleansing

Public Cleansing involves the cleansing of streets (kerbs and gutters), public open spaces (other than parks and storm water ditches) and areas of illegal dumping.

All the local Municipalities in the District provide public cleansing services.

3.5.3 Public Complaints

The contact numbers for complaints for each Municipality are listed below:

Breede Valley:	086 012 1212
Drakenstein:	021 807 4715; 021 807 4751
Langeberg:	023 614 8000
Stellenbosch:	021 808 8111
Witzenberg:	023 316 1854
District Municipality:	086 126 5263

The CWDM records and delegates the incoming complaints to the responsible persons who then report back and this is recorded on the register. The table below provides a summary and translation of the detailed complaints register received at the CWDM for the 2014/2015 financial year. The names of persons involved have not been included in the summary.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/08/06	2014-08-05	2014-08-15	Witzenberg	General Waste	Domestic waste dumping.	Several areas of unsightly conditions within town of Ceres exist. A letter was drafted, accompanied with photos and sent to Witzenberg municipality.
2014/10/20	2014-10-20	2014-10-20	Drakenstein	Illegal Dumping & Littering	Illegal Dumping of Medical waste, household waste and horse manure which are causing bad odours and fly breeding (Health nuisance)	During the investigation the complaint were found to be valid. Photos were taken of the medical waste as well as the improper ways of which they dispose of their household waste and the heaps of straw and manure that were dumped on the fence near Westland farm. The co-owner was present at the time of the investigation and did react to the complaint as follows: (i) Immediately all medical waste was safely collected and removed from the area. (ii) Household waste were picked up (iii) The horse manure with straw to be removed away from the fence and the worker houses and worked into his land. Full co-operation were received from the owner and the area was cleaned within 24 hrs since the complaint was received.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/11/24	2014-11-24	2014-12-05	Witzenberg	General Waste	Homeless persons tearing refuse bags on collection day and leaving the bags open and/or creating littering.	These complaints must be taken up with the Witzenberg Municipality, it is not a District function.
2014/11/27	2014-11-27	2014-11-27	Stellenbosch	General Waste	Waste next to the complainant's property causing odours and flies.	Inspection conducted. Refuse area in a reasonably acceptable condition. Otto refuse containers were too full and refuse in bags were observed on the refuse area floor. Insufficient number of refuse containers contributed to the problem. No perceivable odours were observed during the inspection, but some flies were observed next to the complainant's home. The owner of the property was contacted and he committed to acquiring additional refuse containers to ensure waste was stored in lidded containers at all times.
2014/12/04	2014-10-21	2014-12-17	Breede Valley	General Waste	Complaint regarding refuse not being collected.	The owner was contacted and she assured that the waste will be removed.
2014/08/12	2014-08-11	2014-09-10	Witzenberg	Illegal Dumping & Littering	Heap of rotten potatoes causing odours and flies.	The owner was contacted and agreed to remove the heap before Friday 15 August.
2014/12/08	2014-11-25	2014-12-08	Breede Valley	Building Material	Complaint regarding the backyard of the KFC filled with builder's rubble and black bags.	Complaint was received on 1 Dec 2014. Upon inspection all rubble and refuse was already removed.
2014/08/05	2014-07-31	2014-08-05	Breede Valley	General Waste	Homeless persons sleeping on doorstep of flats, littering and using the area as toilet.	Homeless persons sleep on property of Da Vinci flats and litter on said property. BVM were notified for action on the sidewalks and the owner and body corporate were notified for action on the property.
2014/07/02	2014-07-01	2014-07-02	Witzenberg	Illegal Dumping & Littering	Alleged dumping of sewage from mobile toilets on vacant land on the Farm Klein Pruise.	No dumping of sewage found on the vacant land of the premises.
2014/07/09	2014-06-26	2014-10-06	Stellenbosch	General Waste	Municipal ERF is being used as a dumping site.	Report issued to local municipality.
2014/07/11	2014-05-21	2014-07-11	Breede Valley	Burning waste/Tyres	Complaint regarding thick smoke caused by the burning of tyres.	Two persons were found burning tyres in order to collect the metal contained inside. Persons were informed about the pollution, dangers and unlawfulness of the burning. The firefighters were called to extinguish the fire.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/07/22	2014-07-03	2014-07-22	Drakenstein	Illegal Dumping & Littering	Shop's refuse bins were knocked over by the public, causing nuisance on the neighbour's property.	The shop owners were confronted regarding the situation and instructed to prevent access to the refuse bins by the public and also not to endanger public health in any way.
2014/07/25	2014-07-15	2014-07-25	Drakenstein	Illegal Dumping & Littering	Builder's rubble and other waste being dumped by various persons on open ground.	Builder's rubble was found during inspection. This complaint was given over to the law enforcement official of Drakenstein. The property owner as well as perpetrators were contacted. The CWDM requested the law enforcement official to install "NO DUMPING" signs at the property.
2015/02/09	2015-01-13	2015-02-09	Drakenstein	General Waste	Owner complains that cockroaches are creating a nuisance in front of her property from the drain.	This complaint was forwarded to the Drakenstein Municipality of which the pest control were dispatched to clean the drain.
2014/09/03	2014-09-02	2014-09-17	Stellenbosch	General Waste	Complainant's neighbour's property is overgrown with grass and bushes. Dumping ground for builder's rubble and garden waste. Conditions likely to create nuisances.	Conditions noted as per complaint.
2015/03/06	2015-01-29	2015-03-06	Breede Valley	General Waste	Refuse from the Game Reserve create extremely bad odours and are infected with worms. Removed only once per week.	Meetings with the owners were held and the CWDM and BVM attended meetings. The possible solution to the problem was that the Game Reserve take the waste on Mondays, Wednesdays and Fridays to the transfer station.
2015/03/16	2015-03-13	2015-03-16	Drakenstein	General Waste	The property does not have enough waste containers, causing waste to accumulate outside the containers.	Upon inspection it was confirmed that too little containers were available for the amount of units at the flat complex.
2014/09/10	2014-09-09	2015-02-19	Breede Valley	Illegal Dumping & Littering	That a health nuisance is created on the premises by the occupants. She is the owner of the house. NB. See attached inspection report for the complainant's attention. No health is constituted.	No health is constituted.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/09/15	2014-09-02	2014-09-15	Langeberg	Illegal Dumping & Littering	A person operates a recycling business from her home within residential area. Neighbours complain that the premise is unsightly and attracts rats to premise and surrounding area.	An inspection was conducted to the premise, accompanied with the councillor on 3 September 2014. The person was informed about the contravention ie. health nuisance. She was given (14) days to minimize the health nuisance by means of the best available method. A follow-up inspection will be conducted on 1 October 2014.

3.6 WASTE REDUCTION

The Polokwane Declaration was formulated in 2001 by members of Government, whereby a commitment to waste reduction, re-use and recycling was made towards achieving the following goals:

- 50% reduction in waste generation and 25% reduction in waste disposal by 2012
- A plan for Zero waste by 2022

In the January 2011 draft Provincial IWMP for the Western Cape it is stated:

"Consequently, since they have the power to adapt the targets in the Western Cape IWMP, DEA&DP has adjusted the unrealistic "25% of waste diverted from landfill sites by 2012", to a more realistic "15% of waste by 2015"."

It is therefore recommended that all Municipalities in the District strives to achieve 15% of waste diversion by 2015.

Waste reduction can be divided into four main categories, i.e.

1) Separation at source
2) Recovery for recycling from post-collected waste
3) Composting of post collected garden waste, and
4) Crushing of builder's rubble

The efficiency of waste minimisation can only be determined through the implementation of a proper WIS as mentioned above. This is necessary to in turn populate the Provincial IPWIS.

This WIS should provide information on an on-going basis regarding the following:

- The quantity, type, quality and sources of materials recovered
- The quantity and quality of compost produced and garden waste processed
- Industrial waste types and volumes, and possible opportunities for waste exchange
- Public education initiatives and data on available literature at public facilities (e.g. libraries, waste minimisation clubs and projects)
- Household awareness campaigns on recycling opportunities
- Waste education (schools level) and training programmes available for the general public, waste workers and officials

3.6.1 Recovery for Recycling

3.6.1.1 Breede Valley

The Breede Valley Municipality operates the Touws River Transfer Station and Material Recovery facility (MRF) in Touws River. The operation of the MRF is done by Beirowplas Recycling CC and they have been awarded the operational contract via a public tender process which expires in 2017.

Beirowplas also collects the source separated recyclables in the Worcester neighbourhood, Paglande, where source separation has been implemented. This service will be expanded to other neighbourhoods from 01/02/2015 when the Beirowplas collection contract has expired. The new service will be rendered by the Municipality.

The clear bags will be provided for free by the Municipality and one clear bag is to be exchanged for a filled clear bag on collection day. The service will initially be expanded to the following neighbourhoods:

- Johnson Park 1, 2
- Worcester West
- Panorama
- Fairway Heights
- Bloekombos
- Van Riebeeck Park
- Hex Park
- Langerug

Residents will each receive a clear bag, pen, fridge magnet and a recycling information pamphlet. Bags will also be available from the solid waste department offices.

After a few months the Municipality will review the service in order to ensure a successful and sustainable implementation process. Based on the review, new neighbourhoods will be identified to where the service can be expanded.

The following is a list of private recyclers in the Breede Valley Municipality:

- Beirowplus Recycling: Petro van Wyk (023) 342 6345
- Mr. Paper: Yolandy Goosen (023) 342 3667
- APD (Association for persons with disabilities): (023) 347 2002

3.6.1.2 Drakenstein

The Drakenstein Municipality operates the Paarl Material Recovery Facility (MRF) adjacent to the Paarl Transfer Station. The Paarl MRF was operated by a private contractor until late in 2013. The Municipality took over the operations since then and plans are in place to appoint a private contractor during 2014/2015. Some recycling also takes place at the Wellington Landfill and is done by the Municipality. The recyclables are sold to various private recyclers. Recycling alone in Drakenstein contributes to 5.6% diversion. This diversion rate excludes garden waste chipping and builder's rubble crushing. Total diversion currently stands at 12% per annum.

The following is a list of private recyclers in the Drakenstein Municipality:

COMPANY	CONTACT PERSON	ADDRESS
Boland Waste	Anelda van Zyl	P O Box 723, Wellington
C.P.Weyers Dienste	Neels	8 Koning Street, Paarl
Cape Waste	Tich Middleton	Donkervliet Street
CL Waste & Scrap Metal	Natasha Parker	5 Planken Street, Plankenburg, Stellenbosch
Enviro Paper & Pulp Suppliers CC	Lee-Ann Ehrenreich	25-27 Alkmaar Street, Dal Josaphat, Paarl
Enviro Smart Waste Management	Sonia Frans	36 Murray Street, Paarl
Green Clean Bin	Pieter De Wit	12 Peter Street, Paarl North
JNA Roofing Boland (Pty)LTD t/a Lucas Thatchers	Janine Thiart	2 Reiger Street, Stellenberg (P O Box 2606)
Len's Metals CC	Michael Rhode	18 EK Green Street, Paarl
Louis	William Louis Demmey	2 Vyfster Hof, Plein Street, Paarl
M Talip	Mogamat Talip	21 Barbarossa Street, Paarl
Ponderosa Pine Trading 34 CC	Dentzel Bocks	
R Chippendal	Riedewaan Chippendale	4 St Omer Street, Charleston Hill, Paarl
Regular Trading 63	Victor Mpela	
Smartwaste	Reg Barichievy	Wegelee Plein
Tanya's Construction and Services	Tanya Tisana	A54 Jabulani Street, Mbekweni, Paarl
Taraka Transport and Recycle	Anzol Pietersen	Drommerdaris Park, Unit 12, Drommedaris Str, Dal Josaphat, Paarl
Thermo Plastics	Frikkie Viviers	Oostbosch Street
Victory Parade Trading (Zeebins)		P O Box 1341, South Paarl
VS Tech CC	Sharline v Schalkwyk Gerhard v Schalkwyk	32 Donkervliet Street
Waste Corp Recycling	Mohammed Fahiem Khan	6 Mont View Avenue, Paarl
Wasteman Holdings (Pty) Ltd	Jeanie Seale	P O Box 219, Eppindust (Wingfield House, Mobile Rd, Airport Industria, CT)
Wasteplan Holdings	-	Sandringham Road, Kraaifontein Industrial Area

COMPANY	CONTACT PERSON	ADDRESS
Wellington Sakekamers	Christine van Wyk	
Xoliswa C Nkala	Xoliswa Nkala	3363 Zingisani Street, Pola Park, Mbekweni, Paarl

3.6.1.3 Langeberg

Recycling is done by the Municipality at the Material Recovery Facilities and through source separation as well as private entities such as Parmalat and Breërivier Recycle. Recycling activities alone currently account for 3% of waste stream diversion. In combination with the composting at the Robertson composting facility, a total of 15% of waste is diverted in Langeberg according to the weighbridge data.

3.6.1.4 Stellenbosch

The Municipality collects source separated waste in Stellenbosch. Recycling is done at the Kraaifontein waste facility and by the private institution for disabled persons Huis Horison. Currently recycling attributes to 1% diversion.

3.6.1.5 Witzenberg

The Witzenberg has no formal waste recovery facilities yet, except the separately fenced recycling area at the Tulbagh landfill. There is however a private company operating a materials recovery facility between Ceres and Prince Alfred Hamlet, sorting source separated wastes and baling it for transport to Cape Town as well as a number of smaller recyclers operating in the Tulbagh area. The private companies in total recover approximately 11% of Witzenberg's waste stream.

3.6.2 Composting

3.6.2.1 Composting Facilities in Cape Winelands

Composting of garden waste at a centralised composting facility requires approximately 350 tons of garden waste per month in order to achieve stand-alone economical sustainability. Composting facilities have been established in Langeberg and Stellenbosch. The other municipalities are currently chipping garden waste.

Organic material that is disposed by landfill and not composted decomposes in the absence of oxygen, that is, anaerobically, and produces methane gas and carbon dioxide while decomposing. These gases are greenhouse gases and must be minimised. Methane is 23 times as effective (bad) as carbon dioxide as a greenhouse gas and all attempts must be made to prevent its generation. During the composting process the decomposition takes place in the presence of oxygen (aerobic) resulting in no methane gas being generated. If the garden waste is simply chipped and used as mulch, it is preferable above disposal by landfill since it will decompose in the presence of oxygen.

3.6.2.2 Home Composting

Home composting in South Africa has traditionally been practiced for the purpose of having an inexpensive and reliable source of compost for the garden. More recently, the realization that composting is a means of conserving resources, saving landfill airspace and the recycling of organic matter, has become the driving force for composting under individuals as well as clubs / associations.

It has been shown that home composting can reduce the waste stream by 20% to 30% if carried out properly. This is a prime example of "reduction at source" or waste avoidance.

This represents probably the only feasible means of composting kitchen waste, as large-scale post-collection composting has proven ineffective on many occasions in South Africa.

Due to a lack of general information conveyed to the private composter in the past, many perceptions of home composting has become that of a stinking pile somewhere in the corner of the garden.

This (and a change in lifestyles) has led to compost becoming a shopping list item to be bought at the supermarket.

Leaflets or other methods of information should be made available to inform the general public of the advantages and "recipe" for making good quality home compost. This should include:

- Bins / container design
- Raw products
- C:N ratio
- Minimum volume
- Preparation
- Moisture content
- Aeration
- Monitoring
- Trouble-shooting

Home composting bins can be bought at selected nurseries throughout the Western Cape. These are normally one of two types. The first type is a moulded plastic bin which comes in two sizes as follows:

- Small – volume approximately 500 litres
- Medium – volume approximately 1000 litres

The second type is one made from chicken wire around a plastic framework. This one is also of approximately 1000 litre capacity. The disadvantage to the chicken wire model is the possibility of leaching, flies and foul odours.

However, it does allow for good aeration, whereas the plastic model may tend to result in anaerobic conditions (rotting) if not manually aerated by turning.

3.6.2.3 Vermicomposting

Vermicomposting refers to the deliberate introduction of earthworms (typically) during early stages of the composting process. These would appear naturally at an advanced stage of natural composting, which would be after stabilization, where macrofauna use some of the microflora as a substrate.

The earthworms have the following beneficial effects on the composting process:

- Reduction of particle size
- Removal of old bacteria, stimulating the growth of new bacteria
- Enriching the compost by excretions high in Nitrogen
- Promotes penetration of oxygen into the compost
- Increases pathogen control
- Produces worm castings, a good soil amendment

Vermicomposting lends itself well to household-sized ventures, as it requires very careful control, but produces very high quality compost in a relative short period of time.

It is a very clean process which does not attract flies.

This type of composting is typically done inside special bins designed for the purpose.

Most kitchen-type wastes can be composted in this manner, although onions, citrus & other acidic foods should be avoided as they can be toxic to the worms.

The worms are also quite sensitive to extreme temperatures, humidity and rain.

Therefore this process does not lend itself to large-scale industrial composting.

Also the ratio of worms: substrate is approximately 1:4; therefore very large amounts of worms are required for the process. The worm mass doubles in approximately 12 weeks.

3.7 WASTE DISPOSAL

3.7.1 Operating Landfills

3.7.1.1 Breede Valley

Breede Valley Municipality currently operate two landfills, the Worcester Landfill (S33°40'49.3", E19°28'11.0") south-east of Worcester and the De Doorns Landfill (S33°29'08.0", E19°41'43.0") east of De Doorns.

Worcester landfill

The Worcester landfill is permitted in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989) with Permit number B33/2/800/12/P70. The permit states "Class 2" in terms of the Minimum Requirements first edition, but would translate to G:S:B- in terms of the 1998 Minimum Requirements, 2nd Edition or Class B in terms of the Waste Act.

The landfill is operated by the Municipality. No recent audit information about the operation is available, but the Municipality plans to conduct an external audit early in 2015.

Figure 3-2: Google Earth Image of the Worcester Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. The site does not have a weighbridge at this stage, but the Municipality will start making use of a weigh pad in 2015 to more accurately measure the incoming waste loads for data collection purposes.

The site has many informal salvagers on a daily basis. Efforts to stop this in the past have been problematic. It has since been decided by the Municipality to rather support these individuals. They have been given safety training as well as safety equipment which they must use when they are on site. With the proposed development of a MRF at the landfill, this will be formalised. They are currently managed by:

- Providing them with reflective jackets to be more visible on site
- Providing them with rubber gloves
- Children younger than 18 are not allowed on site
- No dogs, alcohol, etc. are allowed on site
- A register must be signed upon entering the site in the morning

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The Municipality plans to erect a boom gate at the site entrance to ensure proper access control. From then on the incoming waste loads will be directed in order to separate garden/green waste, builder's rubble, mixed waste and recyclables into different offloading areas. During September 2014 information letters were distributed to users of the site to inform them of the Municipality's new Integrated Waste Management approach.

Worcester Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	B33/2/800/12/P70
Classification	G:S:B-
Location	S33°40'49.3", E19°28'11.0"
Estimated Remaining Lifetime	Latest estimate in the 2014 closure provisions report indicate remaining airspace to approximately 2017. This is to be re-evaluated in 2015 with the help of a new topographical survey.
Access Control and signage?	Yes
Externally audited?	No, but planned for 2015
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

De Doorns landfill

The De Doorns landfill has recently received an operating license as part of the D:EA National Outcome to license all unlicensed facilities. The operation of this facility is poor, no on-site cover material is available and must be purchased and imported and informal salvagers set waste alight daily. Therefore the Municipality plans to close and rehabilitate the facility and replace it with a transfer station/material recovery facility.

Figure 3-3: Google Earth Image of the De Doorns Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. Accurate disposal quantities are not available.

De Doorns Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	19/2/5/1/B2/3/WL0026/14
Classification	Class B
Location	S33°29'08.0", E19°41'43.0"
Estimated Remaining Lifetime	Estimated 20 years airspace, but marked for closure due to operational issues.
Access Control and signage?	No
Externally audited?	No, but planned for 2015
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Touws River

During the DEA National Outcome 10 to license all unlicensed facilities, a site not used by the Municipality as a disposal site, located to the south of Touws River has been issued with an operating license and classified as a Class B facility. According to the co-ordinates on the issued license, this site is located within 50 metres of the formal residential area and right next to the informal settlement. The license also states that a buffer zone of 200 metres must be established around the site. It is not certain whether this is a mistake in the license, but for this reason alone the Municipality will not be able to be compliant with the license without moving the residential area. This is also not an operated disposal site by the Municipality, but rather an illegal dumping ground. No plans or funds are in place to operate or further develop this site, therefore the way forward will be discussed with the D:EA&DP in order to close and rehabilitate or clear the area of waste.

3.7.1.2 Drakenstein

Drakenstein Municipality currently operates only one landfill, the Wellington Landfill (S33°39'14.8" E18°59'02.9") west of Wellington. This landfill was previously developed and used by the former Wellington Municipality. Cell 6, the current cell, was commenced with in August 2000 under the former Wellington Municipality. A permit amendment has since been approved to increase the maximum height of the site to 12m above ground level.

The height has since been increased, but the final phase has not been reached. It is currently estimated that the site will reach capacity in 2019/2020.

Operation of this landfill, which is operated by the municipality, is generally good. Jan Palm Consulting Engineers conducted an external compliance audit in July 2014 to determine if the facility is in compliance with license conditions. Internal monthly audits are conducted by the Municipality. The external audit identified the following partial and non-compliances:

The Wellington Landfill has an operating permit (no. 16/2/7/G100/D4/Z1/P263) from the Department of Water Affairs and Forestry in accordance with the Environmental Conservation Act and has been classified as a G:S:B^+ waste disposal facility. A Waste Management License in terms of Section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for the height extension as well as to operate a drop-off area, builder's rubble area, recycling area and chipping and composting area on the existing facility was issued to the Drakenstein Municipality in 2012. License Number E13/2/10/1-B3/36-WL0045/10.

Figure 3-4: Google Earth Image of the Wellington Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. There is a weighbridge at the site and the recorded waste quantities were provided by the Municipality (Discussed under section 3.2.2 of this document). The security has also been improved with the recent completion of the new fencing contract which upgraded the fencing for the Wellington landfill, but informal salvagers still gain access by damaging the security fence and gates.

Wellington Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility, Recycling, Crushing, Composting
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G100/D4/Z1/P263; E13/2/10/1-B3/36-WL0045/10
Classification	G:S:B+
Location	S 33° 39' 14.8", E 18° 59' 02.9"
Estimated Remaining Lifetime	Until 2019/2020
Access Control and signage?	Yes
Operating Hours	Monday - Thursday: 08:00 - 16:00. Friday - Saturday: 08:00 - 15:30. Sundays and Public Holidays closed
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

CONDITION	NON-COMPLIANCE /PARTIAL COMPLIANCE	ACTION	TARGET DATE
1.2	The footprint of the garden waste stockpile is not within the Licensed area.	Reduce the garden waste stockpile and use the chippings for erosion protection on the outer landfill slopes.	a.s.a.p.
3.1	The SOP/EPP is not comprehensive.	Update the SOP/EPP according to the requirements as indicated in the License.	a.s.a.p.
6.1.1 (i)	The license holder has not set recycling recovery targets.	Set recycling targets.	a.s.a.p.
7.1.1	The facility perimeter fence is continuously damaged by informal salvagers thereby gaining access to	Improve the site security by employing dog patrols along the fence.	a.s.a.p.

	the site.		
7.2.10	Informal salvagers are reclaiming disposed waste.	Improve the site security by employing dog patrols along the fence.	a.s.a.p.
7.2.12	The site perimeter road is severely damaged during the rainy season.	Improve surface water drainage on site.	When budget is available.
7.2.13	The composting area has not yet been formalized.	Formalise licensed chipping and composting area.	Next financial year.
7.2.14	Ponding occurs on the composting and builder's rubble areas, because they have not yet been formalised.	Formalise composting and builder's rubble areas.	Next financial year.
7.2.22	Some of the outside slopes of the landfill are experiencing erosion due to the elements and foot traffic.	Cover these slopes with garden waste chippings.	a.s.a.p.
9.1.2 (c)	Air quality is not monitored.	Air quality monitoring will be included in future monitoring sessions.	Next monitoring session.
9.2.3	Ground water levels are not recorded during every sampling session.	Record ground water levels during each sampling session.	Next monitoring session.
9.2.5	Ground water samples are not analysed for all the required variables.	Analyse ground water samples for all the required variables.	Next monitoring session.
9.2.7	Leachate samples are not analysed for all the required variables.	Analyse leachate samples for all the required variables.	Next monitoring session.
11.1.1	Internal audits are not submitted to the Director.	Submit internal audits to the Director.	Next audit.

3.7.1.3 Langeberg

Ashton

Langeberg Municipality's municipal solid waste stream is disposed at the licensed G:S:B- landfill at Ashton (S33 50 10.4 E20 06 04.9). The Landfill was permitted in 1999. The permit number is 16/2/7/H300/D41/Z1/P332.

The Ashton Landfill does not have sufficient capacity and should reportedly reach capacity in 2015. This is taking into account that Langeberg Municipality is currently providing a separation at source service (2-bag system) in all towns as well as a material recovery facility and composting plant to save as much landfill airspace as possible.

Langeberg Municipality commissioned an investigation into the identification of a new municipal site and environmental authorisation was obtained for a location near Bonnievale (farm Stockwell). However, since the Cape Winelands District Municipality also commissioned an investigation into the identification of a regional landfill to serve Breede Valley, Langeberg and Witzenberg municipalities, Langeberg Municipality decided, based on an economic analysis, to support the regional initiative.

Figure 3-5: Ashton Landfill

Ashton Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility, Recycling
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H300/D41/Z1/P332
Classification	G:S:B-
Location	S33°50'10.4", E20°06'04.9"
Estimated Remaining Lifetime	Until 2014/2015
Access Control and signage?	Yes, but no signage
Operating Hours	Monday - Fridays: 08:00 - 16:30. Saturdays and Public Holidays: 08:00 – 13:00.
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Bonnievale

The Bonnievale disposal facility is permitted in terms of ECA 1989. The permit number is 16/2/7/H500/D79/Z1/P304 and was issued 31-07-1998. The classification is G:S:B-.

Figure 3-6: Bonnievale Landfill

Bonnievale Waste Disposal Facility Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H500/D79/Z1/P304
Classification	G:S:B-
Location	S33°55'33.89", E20°04'50.58"
Estimated Remaining Lifetime	Unknown
Access Control and signage?	Yes
Operating Hours	Monday - Fridays: 08:00 - 16:30. Saturdays and Public Holidays: 08:00 – 13:00.
Externally audited?	Yes
Waste Types Received	Garden waste, builder's rubble

Montagu (Bessiekop)

The Montagu landfill is permitted in terms of ECA 1989 with permit number B33/2/800/45/S/P169 and classification G:S:B-. The permit was issued 27-03-1995.

Figure 3-7: Montagu Landfill

Montagu Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	B33/2/800/45/S/P169
Classification	G:S:B-
Location	S33°47'38.42", E20°08'04.61"
Estimated Remaining Lifetime	Unknown
Access Control and signage?	Yes
Operating Hours	Monday - Thursday: 08:00 - 16:00. Friday - Saturday: 08:00 - 15:30. Sundays and Public Holidays closed
Externally audited?	No
Waste Types Received	Builder's rubble

3.7.1.4 Stellenbosch

The Stellenbosch Municipality operates one licensed landfill with permit number 16/2/7/G203/D16/Z1/P331 and classified as G:M:B+. A height extension was subsequently issued as an amendment to the permit.

Cell 3 was constructed in 2012 and is currently operational with cell 1 and 2 having reached capacity. It is estimated that the landfill will reach capacity in approximately 4 years (from 2015), depending on the waste diversion measures applied. The process of obtaining a closure license for the site is currently under way.

The Stellenbosch Municipality has received a license to establish an integrated waste management facility directly to the south of the landfill. This facility will include a public drop-off, a material recovery facility and transfer station, a garden waste chipping and builder's rubble crushing area and an area for the temporary storage of household hazardous waste.

Figure 3-8: Google Earth Image of the Stellenbosch Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble.

Stellenbosch Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G203/D16/Z1/P331
Classification	G:M:B+
Location	S33°56'33.38", E18°49'12.52"
Estimated Remaining Lifetime	Estimated 4 years
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

3.7.1.5 Witzenberg

The Witzenberg Municipality operates four licensed landfills. They are the Wolseley, Tulbagh, Prince Alfred Hamlet and Op-die-berg landfills.

Wolseley

The Wolseley permit expired in June 2013 and an application to extend the permit validity was submitted (license variation). However, the 250m buffer around the site was not maintained, with formal and informal housing established inside the buffer. Subsequently, along with the extended permit validity, the operational footprint of the Wolseley landfill was reduced, also reducing the remaining airspace.

Wolseley landfill has not been operational since 2013 and the site infrastructure (fence, entrance control building, etc.) have been destroyed or removed, possibly by the surrounding community not in favour of the landfill.

It is estimated that the Wolseley landfill will have approximately 2 years of operational life left if operations start again.

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Figure 3-9: Google Earth image of the Wolseley Waste Disposal Facility

The site received general household waste, general commercial and industrial waste, garden waste and builder's rubble.

Wolseley Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H101/D34/Z1/P496
Classification	G:S:B+
Location	S33°24'52.70", E19°11'02.14"
Estimated Remaining Lifetime	Approximately 2 years from start of operations
Access Control and signage?	When it was operational yes. Requires new fencing and access control.
Externally audited?	When it was operational yes.
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Tulbagh

The Tulbagh landfill (33°16'30.27"S, 19°07'56.45"E) is permitted in terms of Section 20 of ECA 1989 and is classified as G:S:B+ with permit number 16/2/7/G100/D6/Z1/P305.

Figure 3-10: Google Earth Image of the current Tulbagh Waste Disposal Facility Footprint

The site is externally audited and the non-compliances are being addressed by the municipality. Groundwater monitoring boreholes have been installed and the height of the waste body has been lowered to comply with the permit. A consultant has been appointed to develop a site management and operation plan in 2015.

Tulbagh Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G100/D6/Z1/P305
Classification	G:S:B+
Location	33°16'30.27"S, 19°07'56.45"E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, garden waste, builder's rubble

Prince Alfred Hamlet

The Prince Alfred Hamlet landfill (33°16'34.82"S, 19°19'29.11"E) is licensed in terms of the Waste Act of 2008 and is classified as G:C:B- with license number 19/2/5/1/B5/11/WL0088/14. The license was issued 02/07/2014.

The license stipulates that garden waste and builder's rubble is allowed to be disposed, recovered or stored at this facility. Skips must be provided at the site where waste that is not allowed to be disposed at the site is to be stored until it is removed and disposed at the appropriate licensed disposal facility.

Figure 3-11: Google Earth image of the Prince Alfred Hamlet disposal facility

Prince Alfred Hamlet Disposal Facility Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	19/2/5/1/B5/11/WL0088/14
Classification	G:C:B-
Location	33°16'34.82"S, 19°19'29.11"E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	No
Waste Types Received	General household, garden waste, builder's rubble

Op-Die-Berg

The Op-die-berg landfill (33°03'51.3"S, 19°20'00.18"E) is permitted in terms of the ECA 1989 and is classified as G:C:B+ with permit number 16/2/7/H200/D100/Z2/P325.

Figure 3-12: Google Earth Image of the Op-die-berg disposal facility

Op-die-berg Disposal Facility Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H200/D100/Z2/P325
Classification	G:C:B+
Location	33°16'34.82"S, 19°19'29.11"E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, garden waste, builder's rubble

3.7.1.6 Cape Winelands District

The Cape Winelands District Municipality is in the process to establish a regional landfill for the eastern portion of the Cape Winelands District. This includes the Municipalities of Breede Valley, Langeberg and Witzenberg. The preferred location for the regional site is adjacent to the Worcester landfill.

The license application has been submitted to D:EA&DP and D:WA has issued a Technical Record of Decision, but the District is awaiting the outcome of the application. It is estimated that if approved, the regional landfill will be operational within the next 5 years. This will be a Class B landfill and no hazardous waste will be accepted for disposal.

It is planned that this facility will have a material recovery facility, garden waste chipping area, builder's rubble crushing area, weighbridges and offices. This facility will be registered on and report to IPWIS.

A location for a similar regional disposal facility that would serve the western portion (Drakenstein and Stellenbosch) was investigated, but all proposed sites were rejected as candidates. A solution for the disposal of these two Municipalities must be sought as the Stellenbosch and Wellington landfills are the only operating landfills in this area and no alternatives are available once capacity is reached. The District can co-ordinate alternative disposal options for this part of the District, for example an agreement with the City of Cape Town.

3.7.2 Closed Landfills

The following closed landfills are located in the Cape Winelands District. Each Municipality in the District must ensure that all sites are issued with closure licenses and that rehabilitation provision is made in their respective budget. The rehabilitation cost estimates must be updated annually by each municipality in order to keep up to date with relevant legislation and rehabilitation requirements.

3.7.2.1 Breede Valley

The old Touws River landfill site has been closed and rehabilitated.

The Worcester and De Doorns disposal facilities are still operational, but will need to be closed and rehabilitated in the future.

3.7.2.2 Drakenstein

The following closed disposal sites are located in the Drakenstein municipality. All sites have been issued with closure licenses, except the Boy Louw closed site of which the closure license application is under way. Each site requires to be rehabilitated except the Klapmuts landfill that was rehabilitated according to its closure license.

Gouda

License number: 19/2/5/1/B3/14/WL0031/14
Location: 33°17'55.6"S, 19°01'32.6"E

Figure 3-13: Gouda Landfill

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Saron

License number: 19/2/5/1/B3/32/WL0028/14
Location: 33°12'23.4"S, 19°00'37.4"E

Figure 3-14: Saron Landfill

Hermon

License number: 19/2/5/1/B3/40/WL0030/14
Location: 33°26'03.7"S, 18°57'40.1"E

Figure 3-15: Hermon Landfill

Dal Josafat

License number: 19/2/5/1/B3/7/WL0027/14
Location: 34°42'24.7"S, 18°58'38.9"E

Figure 3-16: Dal Josafat Landfill

Note that the red border is as the site extents are described in the closure license and the yellow border is the actual old waste body.

Orleans

License number: 19/2/5/1/B3/29/WL0029/14
Location: 33°43'13.6"S, 18°59'32.6"E

Figure 3-17: Orleans Landfill

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Boy Louw

License number: Application under way (2015)
Location: 33°43'03.8"S, 18°58'19.2"E

Figure 3-18: Boy Louw Landfill

Klapmuts (Rehabilitation complete)

License number: 16/2/7/W511/B14/Z1/P368
Location: 33°47'15.22"S, 18°50'08.81"E

Figure 3-19: Klapmuts Rehabilitated Landfill

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3.7.2.3 Langeberg

Robertson (Rehabilitation complete)

The Roberston landfill has been closed and rehabilitated for a number of years.

Figure 3-20: Robertson Rehabilitated Landfill

McGregor

The old closed garden waste site near McGregor (33°57'40.72"S, 19°48'26.7"E) is in the final stage of being issued with a closure license. The license will be issued during 2015 and will provide clarity regarding the rehabilitation requirements. Refer to **Figure 3-28** below.

3.7.2.4 Stellenbosch

The closure license application for the Stellenbosch landfill is currently under way along with the rehabilitation designs. The landfill will then be rehabilitated when the current operational cell has reached capacity, currently estimated at 4 years from 2015.

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3.7.2.5 Witzenberg

The closed Ceres disposal site (33°23'16.72"S, 19°19'37.12"E) has been rehabilitated.

Figure 3-21: Ceres Closed Landfill

3.7.3 Waste Transfer Stations and Public Drop-offs

3.7.3.1 Breede Valley

Breede Valley Municipality operates one Solid Waste Transfer Station/Material Recovery Facility (S33°20'30.7"; E 20°01'39.7") in Touws River. The facility is managed by the private company Beirowplas, who was appointed via a public tender process. Currently, four labourers pick recyclable materials from a conveyor belt.

Waste collection is done by the Municipality and delivered to the facility. The non-recyclable waste that is stored in 30m^3 containers is hauled by the Municipality to the Worcester landfill on a weekly basis.

On average, 9 021kg of recyclable material is diverted monthly.

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Figure 3-22: Touws River Transfer Station/MRF

Touws River Transfer Station
Summary Table

Type of facility	Transfer Station / Material Recovery Facility
Licensed/Permitted?	None required/ Directive issued
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Indefinite with regular maintenance
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	General waste
Requirements	-

3.7.3.2 Drakenstein

Drakenstein Municipality operates one Solid Waste Transfer Station (S 33°43'11.3"; E 18°58'33.4"). The facility was upgraded in 2010 from operating with open top containers to operating with a static compactor into compaction containers.

Figure 3-23: Paarl Solid Waste Transfer Station

Paarl Transfer Station
Summary Table

Type of facility	Transfer Station
Licensed/Permitted?	None required, has ROD
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Indefinite with regular maintenance
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	General waste
Requirements	-

Public Drop-off Facilities have been provided in Saron (S33 11 20.9; E19 00 25.9), Hermon (S33 26 03.7; E18 57 38.3) and Gouda (S33 17 56.9; E19 01 34.2). These facilities receive only general waste and do not require licensing since the storage capacity is less than 100m^3. Waste is transported from these facilities to the Wellington Landfill.

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Figure 3-24: Gouda Drop-off

Figure 3-25: Hermon Drop-off

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Figure 3-26: Saron Drop-off Google Earth Image

3.7.3.3 Langeberg

In Langeberg public drop-offs have been provided at Montagu (33°47'34.60"S, 20°08'11.93"E) and McGregor (33°57'44.54"S, 19°48'29.69"E) and a transfer station at Robertson (33°49'15.84"S, 19°52'15.21"E).

Figure 3-27: Robertson Transfer Station

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Figure 3-28: McGregor Drop-off

Figure 3-29: Montagu Drop-off

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3.7.3.4 Stellenbosch

A transfer station has been provided at Klapmuts (33°48'22.15"S, 18°51'19.81"E).

Figure 3-30: Klapmuts Transfer Station

3.7.3.5 Witzenberg

No transfer stations or drop-offs have been provided in the Witzenberg Municipality, but a transfer station is recommended in order to replace the Wolseley landfill when it is no longer in use.

3.7.4 Disposal Facilities used outside the District Municipality Boundaries

The hazardous waste generated in the Cape Winelands District will be transported to the Vissershok Waste Management Facility (VWMF). It has a H:H operating permit from DWAF. The site is situated some 800m west of the N7 at Vissershok and is operated and audited in terms of its permit conditions.

3.7.5 Contaminated Land

Contaminated land includes all sites discussed under "3.7.2 Closed Sites".

3.8 COSTS OF EXISTING WASTE MANAGEMENT SYSTEM

3.8.1 Financial Summary of Waste Management Services of Cape Winelands District Municipality

The tables below show the totals for the Capital Budget and the Operating Budget for the Cape Winelands Municipality.

Table 3-9: Total Cape Winelands District Municipality Actual Budget and Expenditure

	2012/2013	Adjust. Bud. Jan 2014	2014/2015	2015/2016	2016/2017
Operating Expenditure	270 848 600.00	298 274 306.00	324 960 841.00	337 628 770.00	353 937 641.00
Project Expenditure	70 438 500.00	59 183 259.00	40 792 570.00	34 074 120.00	34 886 374.00
Sub Total	**341 287 100.00**	**357 457 565.00**	**365 753 411.00**	**371 702 890.00**	**388 824 015.00**
Capital Expenditure	11 102 020.00	8 295 622.00	12 482 747.00	7 472 050.00	7 048 300.00
Total Budget	**352 389 120.00**	**365 753 187.00**	**378 236 158.00**	**379 174 940.00**	**395 872 315.00**

Table 3-10: Project specific Budget (Solid waste and related projects)

Description	Adjust. Bud. 2014	Budget 2014/2015	Budget 2015/2016	Budget 2016/2017
Land-use and spatial planning				
EPWP invasive alien vegetation management programme	1 000 000.00	1 000 000.00	1 060 900.00	1 092 730.00
River rehabilitation	-	350 000.00	360 500.00	371 320.00
Projects and housing				
Cleaning of cemeteries	200 000.00	-	-	-
Clearing of road reserves	1 600 000.00	850 000.00	2 884 000.00	2 970 520.00
Municipal Health Service				
Clean-up Campaigns	1 000 000.00	-	1 000 000.00	1 000 000.00
Annual Environmental Health Education Programme	289 000.00	400 000.00	412 000.00	424 360.00
Greening	250 000.00	288 430.00	257 500.00	265 230.00
Waste Minimisation	-	-	-	-

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Table 3-11: Total Income

	2012/2013	Adjust. Bud. Jan 2014	2014/2015	2015/2016	2016/2017
RSC Replacement Grant	193 926 000.00	199 744 000.00	205 736 000.00	210 834 000.00	217 159 020.00
Equitable Share	6 945 000.00	9 692 000.00	7 892 000.00	6 215 000.00	6 215 000.00
Finance Management Grant	677 431.00	2 043 315.00	1 250 000.00	1 250 000.00	1 250 000.00
EPWP Incentive	1 214 000.00	1 000 000.00	1 030 000.00	1 060 900.00	1 092 730.00
Other National Dora Grants	-	-	5 000 000.00	-	-
Provincial Dora Grants	1 303 094.00	4 991 607.00	9 820 520.00	5 542 970.00	5 682 273.00
Public Contributions	1 989 950.00	2 587 000.00	604 620.00	622 750.00	641 430.00
Other Income	4 183 164.00	7 987 869.00	38 630.00	4 746 800.00	2 280 001.00
Interest Received	R 24 451 381.00	R 26 250 000.00	R 27 500 000.00	R 28 840 000.00	R 29 705 200.00
Agency Services	R 73 799 198.00	R 91 727 298.00	R 99 267 364.00	R 103 447 362.00	R 107 537 135.00
Total budget	**R 308 489 218.00**	**R 346 023 089.00**	**R 358 139 134.00**	**R 362 559 782.00**	**R 371 562 789.00**

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3.9 STAFF COMPLIMENT OF EXISTING WASTE MANAGEMENT SYSTEM

As the District Municipality is not responsible for weekly waste collection, there is not a large labour intensive staff compliment as with the local Municipalities. The waste management responsibilities are divided between the Technical Services Department and the Municipal Health Services Department.

Waste Management Officer:

Chapter 3 of the Waste Act states that:

"10.(3) Each municipality authorised to carry out waste management services by the Municipal Structures Act, 1998 (Act No. 117 of 1998), must designate in writing a waste management officer from its administration to be responsible for co-ordinating matter pertaining to waste management in that municipality.

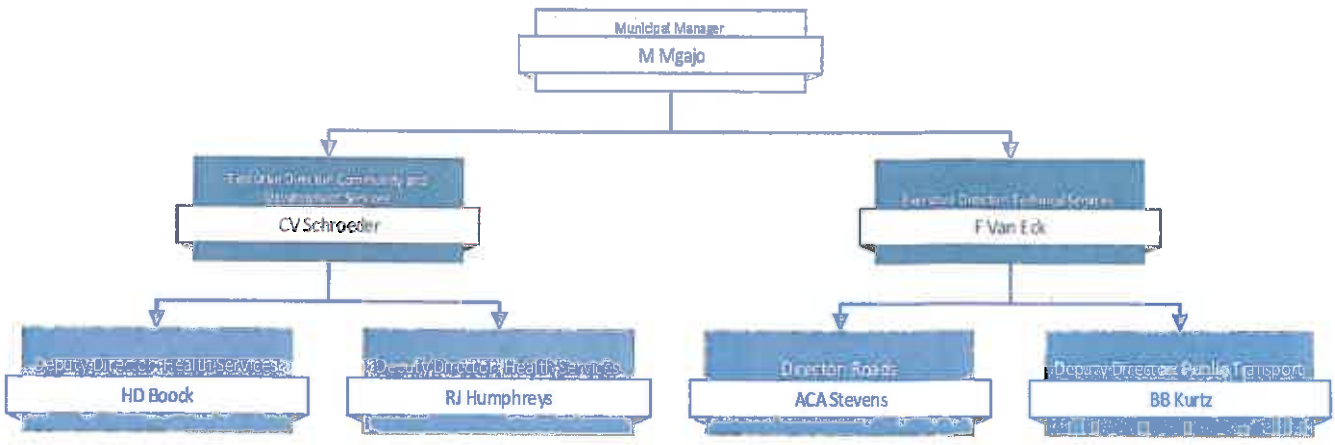
(4) A power delegated or a duty assigned to a waste management officer by virtue of subsection (3) may be sub-delegated of further assigned by that officer to another official in the service of the same administration, subject to such limitations or conditions as may be determined by the municipality.

(5) Waste management officers must co-ordinate their activities with other waste management activities in the manner set out in the national waste management strategy established in terms of section 6 or determined by the Minister by notice in the Gazette."

The designated Waste Management Officer for the Cape Winelands District Municipality is Mr F van Eck who was appointed by Council as required by the Waste Act.

Provision must be made for the continuous training and education of the Cape Winelands waste management employees. Waste management information sharing/capacity-building events such as the Departmental Waste Forum, Waste Khoro and Wastecon should be attended by waste management employees determined by the Municipality.

Only the Macro structure has been included below, as there is no specific solid waste department. The duties are shared between the Technical Services Department and the Municipal Health Services (Under Community Services and Development Planning).



3.10 CURRENT WASTE MANAGEMENT IDENTIFIED GAPS

The following gaps were identified from the status quo of solid waste management in the Cape Winelands District Municipality:

- <u>Public Awareness and Education</u>.

  A large part of the general public appears to be content to put out their waste and then it is somebody else's problem and source separation participation must still be established in all neighbourhoods in the District which prove viable. Concepts such as waste avoidance, waste reduction, etc., are not within their general vocabulary. Public awareness and education must be continued and expanded in all local Municipalities.

- Not all residents are aware of the impacts of waste and the consequences of their littering
- Illegal dumping shows that these offenders are not in sync with the mind-set of sustainable waste management yet

- Recycling and waste minimisation.

  - Recycling initiatives need to be supported in all local Municipalities so that diversion rates in the District can be boosted. Reaching the target of 15% diversion by the end of 2015 will be very hard through recycling alone. Focus must be placed on garden waste chipping/composting as well as builder's rubble crushing. The future implementation of waste to energy in Drakenstein will boost diversion rates significantly.

- Area cleaning.

  - Proper area cleaning has been raised as a concern in some of the local Municipalities and must be brought up to standard.

- Lack of information regarding waste generation types and volumes.

  Accurate information regarding waste quantities are not readily available in all local Municipalities. The lack of weighbridges and waste characterisation are the cause of this.

  - The registration of industry waste generators and health care waste generators and transporters need to be addressed in a revision of the Municipal Integrated Solid Waste By-laws.
  - A new study regarding the waste stream characterisation must be done.
  - Weighbridges need to be installed at the larger waste management facilities.

- Collection Fleet – Age, Condition, Aesthetics, Type.

  Some collection vehicles in the District are likely in service long after the end of their economic lives. Collection vehicles help in creating the public's perception of waste management and need to be aesthetically pleasing.

  - Some vehicles are likely operating beyond their effective lifetimes. These vehicles need to be evaluated to ensure that they are still cost effective and efficient. If not, they need to be replaced. Each local Municipality in the District must ensure that their waste collection fleet is up to standard.

- Law enforcement.

  - The levels of illegal dumping need to be reduced by stricter law enforcement on the perpetrators.
  - The current outdated solid waste by-laws of some local Municipalities need to be updated to Integrated Waste Management By-laws.

- Disposal sites.

  - Some disposal sites in the District require external audits in order to ascertain non-compliances and develop action plans to correct them. Sites that cannot be operated or developed in terms of issued license conditions need to be closed and rehabilitated.
  - Closed disposal sites need to be replaced by solid waste transfer stations.
  - Drop-off and collection points need to be established for the public to deliver their household hazardous waste. The Municipalities must then dispose of this waste at the appropriate licensed facility or use private service providers to do so.
  - Disposal airspace is limited and there is need for the development of a regional disposal site as soon as possible.

- Vacant Positions.

  - Vacant positions in the solid waste management departments need to be filled so that services can be rendered effectively by all municipalities in the District.

Possible negative impacts of identified gaps on health and the environment

- With lack of public awareness and education, the understanding of a sustainable waste management system will be lacking and public littering will increase. With no realisation of the actual impact of waste on the environment, there would be no reason to be environmentally responsible. The environment will be poisoned by uncontrolled waste which will affect the public at large. An uninformed public will also not participate in waste avoidance and recycling efforts, causing pressure on landfill airspace requirements, hence more landfills need to be constructed to the detriment of the environment.
- With lack of information regarding waste generation types and volumes, no control can be exercised over the generators of these wastes and where it is disposed, possibly illegally.
- If the vehicles in the collection fleet are used past their useful lifetimes, they become a financial liability

4. WASTE MANAGEMENT STRATEGIC OBJECTIVES

With the Status Quo of waste management as listed in the previous chapters and the current problems that are experienced by waste management, the way forward is to state the strategic objectives of the District Municipality and then to develop action plans or implementation instruments how to achieve the strategic objectives.

Being a District Municipality and not "owning" any waste, these strategies are more focussed on supporting the local municipalities with their individual strategies and in the event of developing a district landfill, to develop action plans to ensure safe disposal. The District Municipality does not collect waste with the result that strategies for waste avoidance and waste reduction are not really applicable.

The District Municipality is committed to a system of waste management that will see the least possible amount of waste going to modern engineered landfills. This will be achieved through the use of education, law enforcement and material recovery and treatment plants. New and emerging technologies, where applicable and affordable, will also play a part in overall waste management.

The Waste Management Strategic Objectives for Cape Winelands District Municipality on which this Plan is based, commits the municipality to:

- Create an atmosphere in which the environment and natural resources of the region are conserved and protected.
- Develop a communication/information/education strategy to help ensure acceptance of 'ownership' of the strategic objectives among members of the public and industry throughout the municipality and to promote co-operative community action.
- Provide solutions for the three main objectives:
  - The avoidance of waste generation
  - The reduction of waste volumes
  - The safe disposal of waste

4.1 STRATEGIC OBJECTIVES

4.1.1 General

To ensure that Waste Management in the Cape Winelands District complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.

4.1.2 Waste Avoidance

To promote the minimisation of the generation of waste.

4.1.3 Waste Reduction

To promote the reduction of all waste so that nothing of neither value, nor anything that can decompose, gets disposed.

4.1.4 Waste Disposal

To store, dispose or treat all waste that cannot be avoided nor reduced at licensed facilities with regular operational and environmental monitoring and in accordance with regulatory requirements.

4.1.5 Definitions

WASTE AVOIDANCE is to avoid material entering the waste stream, e.g. when the generator of the material either re-uses it or gives the material to somebody else as product or raw material. Composting at home is regarded as waste avoidance.

WASTE REDUCTION is to reduce the quantity of waste that has been discarded by its generator, e.g. when recyclable materials are recovered at the sidewalk or at a transfer station, materials recovery facility or landfill. Composting of garden waste at a composting facility is regarded as reduction.

WASTE DISPOSAL is defined as the storage, treatment or disposal of waste at licensed facilities.

4.2 ROLE OF CAPE WINELANDS DISTRICT MUNICIPALITY

The role of the District authority is not easily defined as the collection and disposal of municipal solid waste is a function of the local municipalities. It is only when waste crosses a local municipal boundary that the receiving waste disposal facility or transfer station becomes a District function.

The plans formulated by the Cape Winelands District Municipality are specific to the area and its resources. They reflect the availability of suitable waste management facilities in the region, as well as local market demand for recovered materials. Special care must be taken to cater for the volatility of markets for recovered materials by ensuring that there are other suitable options to fall back on, if required. It is, therefore, highly desirable to be able to switch between waste management methods - further emphasising the hazards of relying too heavily on a single policy option instead of a combination of policies.

The Integrated Waste Management Plan of the Cape Winelands District Municipality is a requirement of the Waste Act and this plan will be carried out through the upcoming years. This plan takes into account the Municipality's legal obligations regarding waste avoidance, recovery, disposal and general management.

The implementation instruments or action plans defined in the following section are laid out in a manner which reflects the waste management hierarchy, putting the emphasis on waste avoidance and minimisation, with specific waste streams looked at in detail.

5. CAPE WINELANDS DISTRICT MUNICIPALITY'S IWMP IMPLEMENTATION ACTIONS, SCHEDULE AND COST ESTIMATES

5.1 IWMP GOAL 1: PUBLIC AWARENESS AND EDUCATION

Goal 1: Awareness & Education						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Educate, strengthen capacity and raise awareness in integrated waste management. The public will be informed and continually made aware of the impacts of waste on the environment. Municipal staff will receive training and attend forums.	Environmental Health Education					
	400 000.00	TBD	TBD	TBD	TBD	TBD
	Greening Project. Measured by number of trees planted.					
	250 000.00	TBD	TBD	TBD	TBD	TBD
	Cape Winelands Solid Waste employees to attend education seminars and waste forums. Capacity training and education conducted within the Municipality where needed.					
	Costs dependent on number of forums attended as well as costs related to internal training provided by the CWDM.					

5.2 IWMP GOAL 2: IMPROVE WASTE INFORMATION MANAGEMENT

Goal 2: Improve Waste Information Management						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure the reporting of all waste management facilities to IPWIS. Waste quantification systems to be in place. Registration of hazardous waste generators (industry & medical) and service providers (e.g. transporters).	Ensure that all the local Municipalities conduct waste characterisation studies.					
	Ensure that all local Municipalities have registered their waste management facilities on and reports to IPWIS.					
	No Cost. The District's Waste Management Officer to oversee in co-operation with the Waste Management Officers/Waste Managers of the Local Municipalities.					
		The planned new regional landfill will be equipped with weighbridges to record waste loads. This will be reported to IPWIS.				
		Costs included under Goal 3				

5.3 IWMP GOAL 3: EFFECTIVE SOLID WASTE SERVICE DELIVERY

Goal 3: Effective solid waste service delivery						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure that waste services are provided in an effective and environmentally responsible manner to all residents in the District.	Construct the planned regional Integrated Waste Management Facility. This is to ensure future disposal airspace in the District for use by the local Municipalities.					
	Civil contractor to be appointed via public tender for the construction. External operator to be appointed via public tender for the operation of the MRF, chipping & crushing area and landfilling. Costs will be determined.					
	River Rehabilitation Project. Measured by amount of hectares cleared.					
	350 000.00	TBD	TBD	TBD	TBD	TBD
	EPWP invasive alien plant management programme. Measured by amount of hectare cleared.					
	1 030 000.00	TBD	TBD	TBD	TBD	TBD

5.4 IWMP GOAL 4: PROMOTE AND ENSURE WASTE MINIMISATION

Goal 4: Promote and Ensure Waste Minimisation						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Maximise waste minimisation in the CWDM. Monitor and assist local municipalities to achieve recycling and diversion targets. The aim is to consistently divert high percentages of waste from landfill.	The regional integrated waste management facility will include a Material Recovery Facility, Garden Waste Chipping Area and Builder's Rubble Crushing Area which will ensure that the incoming waste stream is diverted as much as is practicable before disposal.					
	Educate the public regarding waste minimisation as part of Goal 1.					

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5.5 IWMP GOAL 5: IMPROVE REGULATORY COMPLIANCE

<table>
<tr><th colspan="7">Goal 5: Improve Regulatory Compliance</th></tr>
<tr><th rowspan="2">Objectives/Targets</th><th colspan="6">Actions/Cost Estimates</th></tr>
<tr><th>2015/2016</th><th>2016/2017</th><th>2017/2018</th><th>2018/2019</th><th>2019/2020</th><th>2020 AND ON</th></tr>
<tr><td rowspan="4">Ensure up-keep with latest legislation and the enforcement thereof relating to solid waste management in the District.</td><td colspan="6">Ensure that all local Municipalities' and the CWDM's solid waste management by-laws are relevant and up to date. Provision should be made in the by-laws so that generators and transporters of hazardous wastes register and report to the Municipalities.</td></tr>
<tr><td colspan="6">No additional costs. Can be done in-house</td></tr>
<tr><td></td><td></td><td colspan="4">Ensure that the regional integrated waste management facility is internally and externally audited as per the frequency required in the license once operational. Further ensure that license conditions and requirements are met. The cost estimate includes an operational audit, water monitoring and topographical survey.</td></tr>
<tr><td></td><td></td><td>60 000.00</td><td>63 600.00</td><td>67 416.00</td><td>71 460.96</td></tr>
</table>

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5.6 IWMP GOAL 6: ENSURE SAFE AND INTEGRATED MANAGEMENT OF HAZARDOUS WASTE

Goal 6: Ensure safe and integrated management of hazardous waste						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Provide education and management options for hazardous wastes. Ensure legal compliance by hazardous waste generators and transporters. Ensure the monitoring of the incoming waste stream at disposal facilities.	The public must be informed about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes. This forms part of Goal 1 of this plan.					
	As part of Goal 2 of this plan, the registration and reporting of hazardous waste generators at the local Municipalities will allow the Municipalities as the service authorities to ensure that the waste is stored, transported, treated or disposed as is legally required. The District can oversee and review this.					
	Hazardous facilities: With the construction of the regional disposal facility, provision must be made for the temporary storage of household hazardous wastes from where it will be transported and disposed at the appropriate licensed facility.					
	Monitoring of waste: It must be ensured that waste management employees are familiar with the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal. Employees at the future regional waste management facility must be able to identify the received waste loads and prohibit the disposal where required. The incoming waste loads at disposal and waste management facilities must be monitored.					

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5.7 IWMP GOAL 7: ENSURE SOUND BUDGETING FOR INTEGRATED WASTE MANAGEMENT

Goal 7: Ensure sound budgeting for integrated waste management						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure that upcoming implementation actions are in the budget. Explore sources of funding.	The Municipality will ensure that there is sufficient provision in the budget for upcoming projects and action items. This can be done with the annual IWMP implementation programme review and project evaluation.					
	The Municipality will explore other sources of funding.					
	The Municipality will as part of Goal 3 ensure that the service delivered is cost efficient.					

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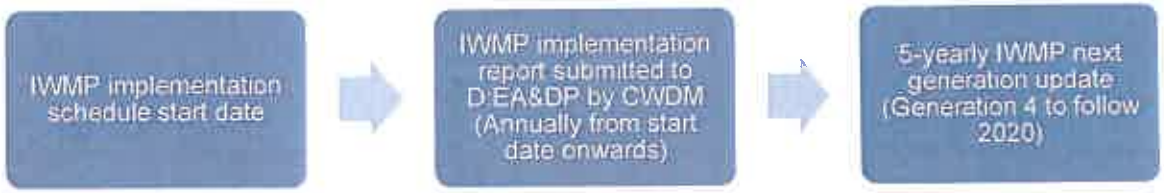
6. IWMP MONITORING AND REVIEW

For the IWMP to be an effective and relevant tool and guide for integrated waste management in the Cape Winelands District Municipality, it will need to be monitored and reviewed. Monitoring relates to the goals and targets set out in the IWMP and whether they are being achieved or pursued. Reviewing relates to the document and the projects themselves which will require regular updates to stay up-to-date, specifically the implementation items of Section 4. The proposed implementation schedule as well as allocated budget may change at any time and these changes, if any, need to be reflected in the reviewed IWMP to avoid confusion.

The following diagram illustrates the initial review cycle when a new IWMP is developed:

The date on which the final IWMP third generation document is approved, must be recorded and will serve as the base date on which further monitoring and review dates are based. This is also the start date of the approved implementation schedule. The following diagram illustrates the review steps that must be followed after the final IWMP is published.



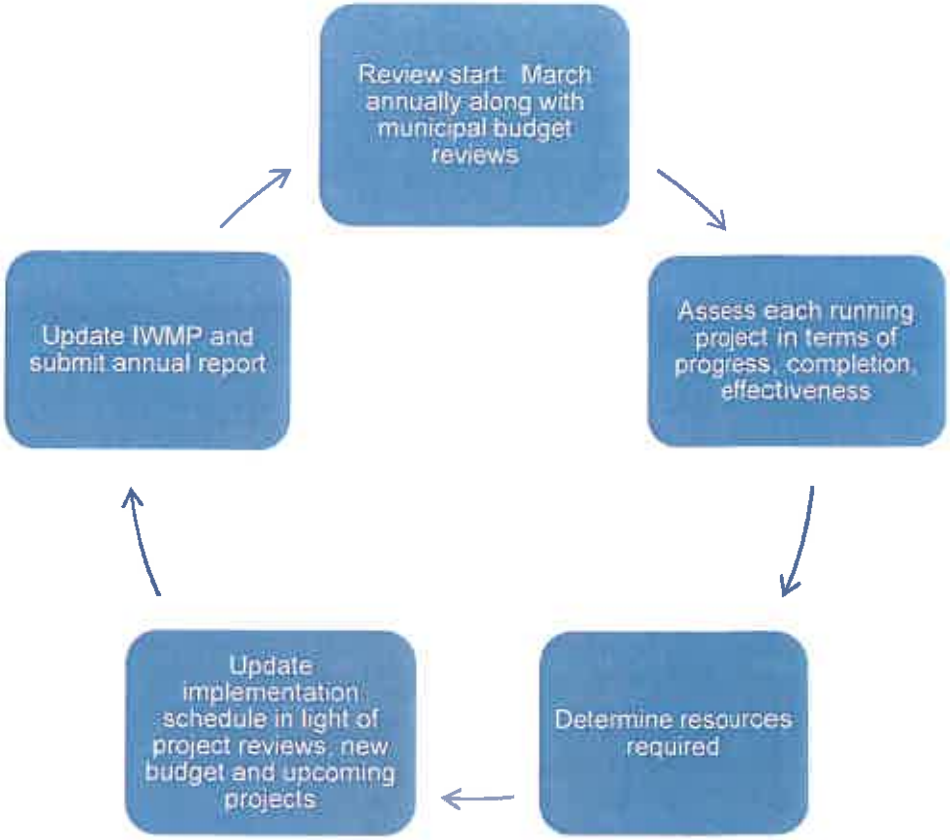
The annual implementation reports will be submitted by the CWDM and will be compiled by Mr van Eck, or to whom the task is delegated by him. The annual report must contain the approved implementation items and dates of the IWMP and the progress thereof of the past year. Based on the progress and possible new budget allocations, the implementation schedule of the IWMP must be updated and included in the annual report. This new implementation schedule must provide for 3 upcoming years from the report date.

The progress of each task on the implementation schedule, if under way according to the schedule for that year, must be summarised and the estimated completion date must be updated. The reasons for the lack of progress or practical difficulties must be stated along with a summarised action plan to adhere to the schedule as close as possible.

The report must further discuss the effectiveness of completed projects. For example, when a new weighbridge has been commissioned, the collected data must be reported on and added to the IPWIS. Also the participation rates of source separation can be monitored along with the public awareness and education campaign. See **Annexure 2** for an example of a project review form which can be used to track the success and effectiveness of the waste management projects and added to the annual report. The projects and progress thereof will be tracked by each project team constantly, meaning that each project is not reviewed only annually, but all progress tracked in order to provide an accurate description in the annual report for submission.

Wherever issues are reported or identified in the projects, these issues must also be evaluated in terms of the relevant legislation and by-laws. It must be stated if there is relevant legislation applicable to the issue and if so, was it the lack of enforcement, for example, that caused the issue. If no relevant legislation exists, it must be noted to adapt the by-laws accordingly in future revisions.

Below is the proposed review cycle of the IWMP and its projects:



7. CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The Project Team, with the assistance of Municipal Officials, has undertaken an analysis of the current municipal solid waste management activities within Cape Winelands District Municipality.

The analysis has shown that the Municipalities in the District have through the years committed themselves to the delivery of a collection and disposal service for all its residents. In recent years the more sustainable approach with regard to waste minimisation and reduction has been adopted and is to be expanded in the upcoming years.

The chapters of this Integrated Waste Management Plan report describe the way in which the municipalities are currently conducting solid waste management and how to strategically move towards a sustainable waste management system whereby the focus will shift to the avoidance and reduction of waste rather than to the disposal thereof. It also lists the strategies of the municipality in terms of waste avoidance, waste reduction and waste disposal.

During the process of the implementation of the municipality's IWMP, and arising from the public consultation process that is forthcoming, further input and/or corrections to the report may come to light that will then be added as a revision to the report.

The analysis of the current waste management system has shown the following:

- all formal and informal residential erven are receiving a weekly door-to-door waste collection service
- waste collection services are not available to farms, but farmers offload their household waste themselves or can apply for a service in some of the municipalities
- separation of recyclables at source is done in all municipalities in the District and continues to expand to more neighbourhoods
- collected municipal waste are transported to the local disposal sites, with some of these sites becoming restricted in terms of available disposal airspace

- green waste chipping and builder's rubble crushing activities are practiced throughout the District, with composting being done in Langeberg and Stellenbosch
- most healthcare risk wastes are managed by private contractors
- waste recovery is being done, but needs to expand

With the current waste management system focussing on getting the waste into the waste stream and disposing of it in an acceptable manner, and with the future integrated waste management system focussing on waste avoidance and waste reduction, the municipality requires a set of strategic objectives on how to transform from the current management system to the future management system.

The strategic objectives for integrated waste management in Cape Winelands District Municipality can be summarised as follows:

- To ensure that Waste Management in the Cape Winelands District complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.
- To promote the minimisation of the entrance of material of value into the waste stream.
- To promote waste reduction so that nothing of value nor anything that can decompose, gets disposed.

For these strategic objectives to be met, a series of implementation instruments (action plans) will need to be implemented. These implementation instruments as well as time framework within which it should be addressed are described in this report but need to be fully detailed at a later stage. The instruments are the following:

- Public Awareness and Education
- Waste Quantification & Information
- Effective Solid Waste Service Delivery
- Promote and Ensure Waste Minimisation
- Improving Regulatory Compliance
- Ensuring the Safe and Integrated Management of Hazardous Waste
- Ensuring Sound Budgeting for Integrated Waste Management

The above instruments, through implementation via their action plans, will ensure that waste management in the Cape Winelands focuses on avoidance and reduction rather than collection and disposal, but simultaneously maintaining the practical balance between the various waste management functions.

Since the highest priority for transforming the current management system is undoubtedly depending on public acceptance and ownership, the Public Awareness and Education instrument will receive preference in the implementing framework.

7.2 RECOMMENDATIONS

A comprehensive analysis and assessment of solid waste management in the Cape Winelands District has been done and key strategies have been determined to aim the municipality towards sustainable and integrated waste management.

It is therefore recommended that the next stage of the process of implementing the Integrated Waste Management Plan be proceeded with, that entails the consultation process with the public and the development of detail action plans and key performance indicators for future monitoring of the municipality's successes in waste management service delivery.

Public Awareness

The first step in educating the public about waste is to make them aware of any new waste management procedures and facilities available to them.

Another reason to focus on educating the public will cause a greater awareness of waste minimisation. This will reduce waste generation rates which will in turn reduce transport volumes and costs. It is important to also provide feedback to the public of the success of their efforts, for example publishing month to month volumes of waste diverted from being landfilled.

To reduce the contamination of recyclables, the current source separation strategy should be expanded in all local municipalities.

Waste reduction

Expanding the separation at source neighbourhoods and continual use of existing and additional MRF's will ensure the reduction of waste to landfill. The establishment of swop shops will also contribute to waste reduction.

Waste Disposal

When the regional site is established, it must be ensured that it is audited in terms of the license. Regular audits will ensure that the facility is operated correctly and efficiently. Ensuring the correct operations will maximise the results of efforts of waste reduction and recovery and therefore the benefits thereof.

A disposal strategy must be co-ordinated for the western portion of the Cape Winelands District. The Waste to Energy strategy of the Drakenstein Municipality will contribute, but disposal airspace will still become a requirements once the current landfills have reached capacity.

The following items must be included in the Cape Winelands Municipality IDP:

All implementation actions requiring Capital Expenditure not already contained in the IDP:

- The establishment of the regional integrated waste management facility following the issuing of the license

ANNEXURE 1
IWMP CHECKLIST

Western Cape Government
Environmental Affairs and Development Planning

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INTERGRATED WASTE MANAGEMENT PLANNING

CHECKLIST FOR THE .....LOCAL MUNICIPALITY

FEBRUARY

2014

The Afrikaans or Xhosa version of this document is available on request.

SECTION 1: GENERIC INFORMATION					
Category of the municipality			A	B	C
Date of Submission					
Name of the municipality					
Section or Department within the municipality responsible for drafting the IWMP					
Contact details of "Responsible Person" in the Municipal Department		Contact details of Alternate contact person from Municipality			
Name:		Name:			
Tel:		Tel:			
Fax:		Fax:			
Cell:		Cell:			
Email:		Email:			

Integrated Waste Management Plan Review Form (IWMP) / Checklist

Please answer the following questions by placing a (**X**) in the appropriate block. Only submit your IWMP for approval once you have answered YES to all the questions below.

CHECKLIST QUESTIONS	YES	NO
SECTION 1 INTRODUCTION AND GENERAL DESCRIPTION		
1.1) Does the Intro and general description includes overall aim, strategic goals and scope, of the IWMP?		
1.2) Does the IWMP indicate the geographical coverage of the plan?		
1.3) Does the IWMP indicate the Geo-physical and Geo-hydrological conditions in the municipality?		
SECTION 2 STRATEGIC LINKAGES		
2.1) Does the IWMP show linkages with the WC IWMP?		
2.2) Does the IWMP show linkages with the SDF?		
2.3) Does the IWMP show linkages with the IDP?		
SECTION 3 PUBLIC PARTICIPATION		
3.1) Is there a detailed public participation program included in the IWMP? (i.e. date, location and amount, number of PP session's, type of PP(newspapers, meetings), (participants)		
3.2) Does the IWMP provide proof of PP i.e. attendance registers, comments received and response given?		
SECTION 4 IWMP STATUS QUO OR SITUATION ANALYSIS		
4.1 LEGISLATION		
4.1.1) Does the IWMP identify all existing legislation and policies, which is applicable to integrated waste management including the local municipal by-laws?		

4.1.2) Does the IWMP indicate which existing local government by-laws that influence waste management practices are currently being reviewed or in the process of being reviewed?		
4.1.3) Does the Status Quo identify any international agreements		
4.2 DEMOGRAPHIC PROFILE		
4.2.1) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t total population of the area,		
4.2.2) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t projected population and growth rate of the area,		
4.2.3) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t population distribution		
4.2.4) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t socio-economic categories including income levels		
4.2.5) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t development profiles		
4.3 WASTE MANAGEMENT COST AND FINANCING		
4.3.1) Does the IWMP include a detailed breakdown of current operational and capital budget?		
4.3.2) Does the IWMP include a detailed breakdown of current operational and capital expenditure?		

4.3.3) Does the IWMP indicate the current breakdown of income (e.g. tariffs, fines for waste management)		
4.4 SERVICES AND SERVICE DELIVERY		
4.4.1) Does the IWMP indicate the level of free basic services		
4.4.2) Does the IWMP indicate the level of services to Formal residential houses		
4.4.3) Does the IWMP indicate the level of services to informal settlements.		
4.4.4) Does the IWMP indicate the level of services to farms		
4.4.5) Does the IWMP indicate unserviced areas		
4.5 COMPLIANCE AND ENFORCEMENT		
4.5.1) Does the Status Quo identify licensed and unlicensed waste management facilities and has provision been made for the licensing, closure and rehabilitation of these facilities in the IWMP.		
4.5.2) Does the IWMP indicate if landfill sites, recycling, drop-off and buy-back centers are in compliance with license conditions?		

4.5.3)	Does the Status Quo provide a summary of waste related complaints (i.e. number and type)		
4.5.4)	Does the Status Quo indicate the available annual air space and remaining life expectancy of the waste management facilities.		
4.5.5)	Does the Status Quo identify contaminated land (unpermitted landfills prior to ECA) and indicate remediation measures to reduce the risk of harm to health or the environment.		
4.5.6)	Does the IWMP address how informal salvaging, if any, on existing landfill facilities are going to be formalized, controlled or eliminated and does the permit/license or environmental authorization make provision for it, or do they indicate if the existing authorizations are to be amended.		
4.6 WASTE CHARACTERISATION			
4.6.1)	Does the IWMP include waste generation quantities and types for general and hazardous waste from households		
4.6.2)	Does the IWMP include waste generation quantities and types for general and hazardous waste from industry		
4.6.3)	Does the IWMP include waste generation quantities and types for general and hazardous waste from business		
4.6.4)	Does the IWMP include waste generation quantities and types for general and hazardous waste from Farms		
4.6.5)	Does the IWMP include waste generation quantities and types for general and hazardous waste from Other institutions e.g. health care facilities		

4.6.6) Does the IWMP include projected waste generation quantities?		
4.7. **WASTE MINIMISATION**		
4.7.1) Does the Status Quo indicate any waste minimisation (reuse, recycling, recovery, treatment) initiatives as mandated in the NEM: WA within your municipal area including private sector initiatives?		
4.7.2) Does the IWMP include waste minimisation quantities and types for general and hazardous waste?		
4.8. **ORGANISATIONAL STRUCTURE AND STAFF CAPACITY**		
4.8.1) In accordance with Chapter 3 of NEMWA has a waste management officer been designated in writing to be responsible for coordinating matters pertaining to waste management in the municipality?		
4.8.2) Does the IWMP indicate the entire waste staff (management, supervisor and labourers) complement including any staff vacancies and plans to fill vacant posts.		
4.9. **WASTE AWARENESS AND EDUCATION**		
4.9.1) Does the IWMP provide information(campaigns) on waste awareness and education		
4.10 WASTE INFORMATION MANAGEMENT		

4.10.1) Does the IWMP indicate the Status of registration and reporting of waste management facilities on IPWIS.		
4.10.2) Does the IWMP indicate the use of a waste quantification system?		
5. GAP AND NEED ANALYSIS		
5.1) Does the IWMP indicate a gap analysis (analysis and identification of issues, problems or shortcomings or challenges within the municipality w.r.t waste management.		
6. OBJECTIVES AND TARGETS		
6.1) Does the IWMP set short, medium and long-term objectives and targets? If yes, are these objectives specific/measurable/achievable/realistic/time-based (SMART)?		
7. IWMP IMPLEMENTATION		
7.1) Is there a detailed implementation plan identifying activities together with both human and financial resources and timeframes.		
7.2) Does the Implementation plan address how the IWMP will be integrated with the Integrated Development Plan (IDP)?		
8. MONITORING AND REVIEW		
8.1) Does the IWMP introduce mechanisms to monitor the effectiveness of the implementation of the IWMP and to take corrective actions if the targets are not met?		

Score:

Percentage:

ANNEXURE 2
PROJECT REVIEW FORM

CAPE WINELANDS DISTRICT MUNICIPALITY IWMP IMPLEMENTATION PROJECT REVIEW FORM

PROJECT NAME AND DESCRIPTION: .....

.....

.....

PROJECT COMMENCEMENT DATE: .....

PROJECT COMPLETION DATE: .....

RATE PROJECT OVERALL SUCCESS IN TERMS OF INTENDED PURPOSE: 1 2 3 4 5

REASON(S) FOR SCORE: .....

.....

.....

IF SCORE = 1-3, LIST THE ACTIONS THAT ARE TO BE TAKEN ALONG WITH TARGET DATES TO IMPROVE SCORE: .....

.....

.....

.....

LIST ALL PUBLIC COMMENTS/COMPLAINTS RECEIVED RE THIS PARTICULAR PROJECT: .....

.....

.....

HAVE THESE BEEN ADDRESSED: .....

.....

ANNEXURE 3
ADVERTISEMENTS

CAPE WINELANDS DISTRICT

DRAFT INTEGRATED WASTE MANAGEMENT PLAN (3rd GENERATION)

Notice is herewith given in terms of section 21 of the Local Government: Municipal Systems Act, 2000 (Act 32 of 2000) that the Draft Integrated Waste Management Plan (IWMP) Third Generation of the Municipality has been developed.

The local community is invited to submit comments in connection with the Draft Plan to the Municipality by submitting such comments on or before 4 June 2015 to the Municipal Manager (For attention Mr F van Eck) at the following address, fax number or e-mail:

JPCE, PO Box 931, BRACKENFELL, 7561, Fax number: (021) 981 0868, info@jpce.co.za

The Council will consider the Draft Plan together with all the comments and representations received. The Draft Plan will be available for perusal during office hours at the offices of the Breede Valley, Drakenstein, Langeberg, Stellenbosch and Witzenberg local municipal offices, at libraries throughout the District and can be downloaded at www.jpce.co.za.

M Mgajo
MUNICIPAL MANAGER

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

KONSEP GEINTEGREERDE VASTE AFVAL BESTUURPLAN (3de GENERASIE)

Kennis geskied hiermee ingevolge artikel 21 van die Wet op Plaaslike Regering: Munisipale Stelsels, 2000 (Wet 32 van 2000) dat die Munisipaliteit se Konsep Geintegreerde Vaste Afval Bestuurplan, 3de Generasie saamgestel is.

Die plaaslike gemeenskap word uitgenooi om vertoë met betrekking tot die Konsepplan aan die munisipaliteit voor te lê deur hul vertoë voor of op 4 Junie 2015 te rig aan die Munisipale Bestuurder (vir aandag Mnr F. Van Eck) by die volgende adres of faksnommer:

JPCE, Posbus 931, BRACKENFELL, 7561, Faksnommer: (021) 981 0868, info@jpce.co.za

Die Raad sal die Konsepplan tesame met alle kommentaar of vertoë wat ontvang is oorweeg. Die Konsepplan is gedurende kantoorure ter insae by die kantore van die Breede Vallei, Drakenstein, Langeberg, Stellenbosch en Witzenberg munisipale kantore, openbare biblioteke in die Distrik en op die volgende webwerf: www.jpce.co.za.

M Mgajo
MUNISIPALE BESTUURDER

ANNEXURE "R"

CORPORATE DISASTER MANAGEMENT PLANNING FRAMEWORK

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

CORPORATE DISASTER MANAGEMENT

PLANNING FRAMEWORK

Version: 21 December 2016

TABLE OF CONTENTS

CAPE WINELANDS DISTRICT MUNICIPALITY CORPORATE DISASTER MANAGEMENT PLANNING FRAMEWORK

1 INTRODUCTION

This plan serves to confirm the institutional arrangements within the area of the Cape Winelands District Municipality to effectively promote disaster prevention, mitigation, risk reduction and to lessen the impact of those hazards that cannot be avoided.

Disaster Management is a continuous and integrated multi-sectoral and multi-disciplinary process of planning and implementation of measures aimed at disaster prevention, -mitigation, -preparedness, -response, -recovery and – rehabilitation (Section 1, Disaster Management Act, Nr. 57 of 2002).

The preventative elements of this plan must be implemented and maintained on a continuous basis. The emergency or reactive elements of this plan will be implemented in the district whenever a significant event or disaster occurs or is threatening to occur in its area of jurisdiction.

The responsibility for the implementation of the plan is that of the Municipal Manager in co-operation with all internal functionaries.

The Disaster Management Act, Nr. 57 of 2002 (Section 53) requires, amongst others, of the Municipality to take the following actions:

(a) prepare a disaster management plan for its area, which includes departmental plans, according to the circumstances prevailing in its area;

(b) the regular review and update of the plan taking into consideration new developments or circumstances that may arise.

The plan and the supportive plans that form part thereof should comply with the following principles and will address the following issues:

1. form an integral part of the Integrated Development Plan as prescribed by the Municipal Systems Act, Nr. 32 of 2000 (Section 26 (g));
2. anticipate the likely types of disasters that might occur in the district and their possible effects;
3. provide for appropriate prevention and mitigation strategies;
4. identify and address weaknesses in capacity to deal with possible disasters;
5. facilitate maximum emergency preparedness;

6. establishment of an emergency management organization that will be utilized to mitigate any significant emergency or disaster affecting the district; and
7. contain contingency plans and emergency procedures in the event of a disaster, providing for the allocation of responsibilities to the various role players and co-ordination in the carrying out of those responsibilities.

The District Municipality must submit a copy of its disaster management plan, including the above-mentioned requirements, and of any amendment to the plan, to the National Disaster Management Centre and the Western Cape Provincial Disaster Management Centre.

2 DEFINITIONS AND PURPOSE

2.1 DISASTER MANAGEMENT DEFINITIONS

For the sake of clarity the following disaster management definitions are listed:

"**the Act**" means the Disaster Management Act, Nr. 57 of 2002,

"**disaster**" means a progressive or sudden, widespread or localized, natural or human-caused occurrence which –

(a) causes or threatens to cause-
  (i) death, injury or disease,
  (ii) damage to property, infrastructure or the environment; or
  (iii) disruption of the life of a community; and
(b) is of such a magnitude that it exceeds the ability of those affected by the disaster using only their own resources (Sec. 1 Disaster Management Act, Nr. 57 of 2002).

The Council of the District Municipality must declare a disaster in terms of Section 55 of the Disaster Management Act, Nr. 57 of 2002.

"**disaster management**" means a continuous and integrated multi-sectoral, multidisciplinary process of planning and implementing of measures aimed at-

(a) preventing or reducing the risk of disasters;
(b) mitigating the severity of or consequences of disasters;
(c) emergency preparedness;
(d) rapid and effective response to disasters; and
(e) post-disaster recovery and rehabilitation (Sec. 1 Disaster Management Act, Nr. 57 of 2002)

2.2 PURPOSE OF THE CORPORATE DISASTER MANGEMENT PLANNING FRAMEWORK

The purpose of this planning framework is to determine general principles to direct the provision of essential services during an emergency or anticipated emergency. Furthermore, the procedures and the coordination of responses are outlined. The obligations, duties and responsibilities of all departments and agencies will be defined. This plan addresses the planned response to extraordinary emergencies associated with natural disasters, technological incidents and national security emergencies in or affecting the district.

3 CAPE WINELANDS DISTRICT MUNICIPALITY DISASTER MANAGEMENT POLICY FRAMEWORK (SECTION 42)

The District Municipality envisages the establishment of an internal Interdepartmental Disaster Management Committee in order to align disaster management activities with the National-, Provincial- and District Disaster Management Policy Frameworks.

The Disaster Management Centre as envisaged in the Disaster Management Act, 57 of 2002, will be the custodian of the corporate or district-wide Disaster Management Plan. Individual district departments/sections will be responsible for the compilation and maintenance of their own departmental disaster management plans and for submitting such plans to the District Disaster Management Centre. The processes involved in Disaster Management can best be explained through the following Disaster Management Continuum:

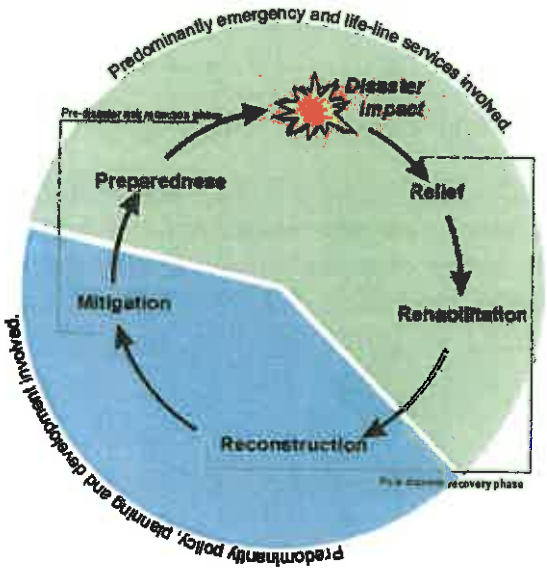

Figure 1: Disaster Management Continuum

Figure 1 illustrates the continuum – it should be noted that Disaster Management is not only reactive, but also involves actions aimed at preventing disasters, or mitigating the impact of disasters. Departmental plans should be compiled with due consideration of the needs of other departments during disasters. The needs identified by the various departments in the corporate disaster management planning framework will indicate where line functions of other departments must contribute. **These contributions will then be included in line function- and departmental disaster management plans.**

Departmental disaster management plans should cover the whole disaster management continuum, and must address actions before, during and after disasters. Disaster management plans are compiled on the basis of a generic plan including standard operating procedures. It should be complemented with risk-specific plans that address disaster management for special circumstances.

4 RISK PROFILE

Risk and vulnerabilities will determine the priorities for Disaster Management programs and projects. The amount of possible benefit to be derived from a project in terms of lives protected, livelihoods secured and property or natural resources defended, will be the criteria that determine priorities.

In a generic sense, the following physical hazards were found to pose the highest risks district – wide:

Natural phenomena	Technological Risks	Transportation	Environmental threats
Fire Risk	Service disruption	Violence, terrorism	

Table 1 : Hazards that pose highest risk in the Cape Winelands District Municipality

Communities in informal settlements are the most vulnerable to many of these physical risks, but proximity to certain installations or hazards also exposes other communities to risks. In terms of capacity to address and therefore reduce risks, there currently is a strong emphasis on preparedness and response planning. This means that capacity in terms of mitigation and prevention should be strengthened.

The following have been identified as critical Disaster Management issues and should receive priority attention in the IDP;

(a) Integrating risk management programs within the IDP;

(b) To develop and maintain **risk specific safety infrastructure** and plans for high risk installations, infrastructure, industries etc.;

(c) To establish **disaster prevention programmes** that focus on the most vulnerable areas and communities, with special emphasis on women and children, disabled persons and the elderly, and aim to support sustainable livelihoods;

(d) To refine disaster **loss tracking and assessment** and establish a culture of **ongoing scientific risk analysis**; and

(e) To establish **pro-active measures, including media liaison** and rapid response to media inquiries.

Risk reduction should be a priority during all activities performed by the various departments in the municipality. This will include line function risk assessment, assessing internal capacity to deal with identified risks and the formulation of risk reduction plans.

5 MANAGEMENT STRUCTURE

The principle to function within the established structure of the Cape Winelands hierarchy must be maintained as far as possible.
The management will plan and implement measures to deal with the changed circumstances during significant events or disasters in order to maintain and ensure continuation of existing services. The planning, prevention and response management structure for the Cape Winelands District Municipality is as follows:

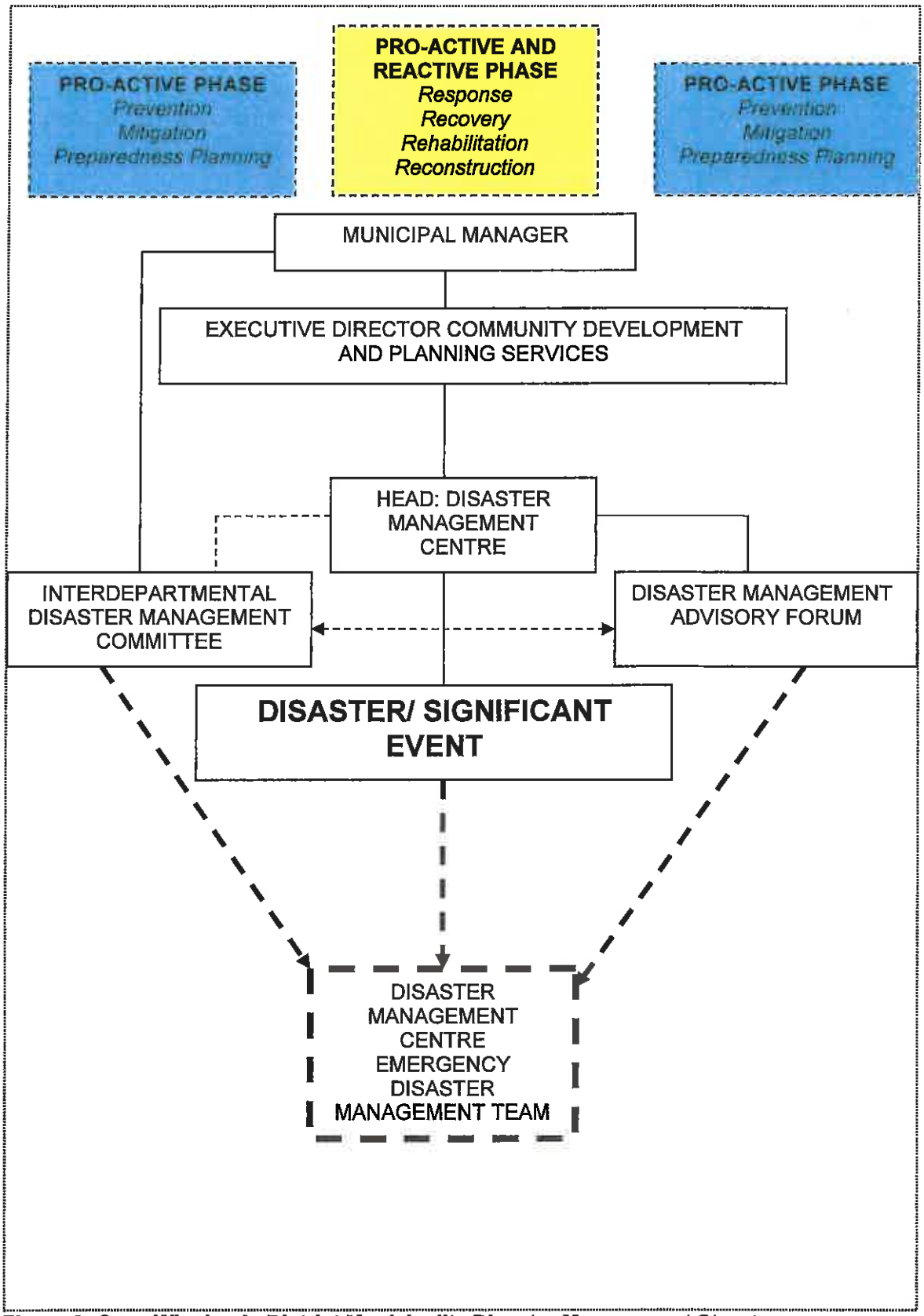

Figure 2: Cape Winelands District Municipality Disaster Management Structure

5.1 INTERDEPARTMENTAL DISASTER MANAGEMENT COMMITTEE (IDDMC)

The IDDMC consists of the following personnel internal to the District Municipality:

Municipal Manager
Executive Director: Financial and Strategic Support Services
Executive Director: Community Development and Plannng Services
Executive Director: Technical Services
Relevant directors
Head:Disaster Management Centre
Fire Chief

The Interdepartmental Disaster Management Committee has, amongst others, the following functions:

(a) **Pro-active activities** which include, but is not limited to the following:
1. Convene quarterly meetings;
2. Update corporate plan regularly;
3. Consider conditions, trends, current and future developments in the area internally and externally;
4. Identify and consider new hazards in the area; and
5. Assign teams to investigate possible risk and related issues.

(b) **Reactive activities**: refer to duties of the Emergency Disaster Management Team (see 5.4 below)

5.2 DISTRICT DISASTER MANAGEMENT ADVISORY FORUM

A disaster management advisory forum, in terms of Section 51 of the Act, is a consultative body in which a municipality and relevant disaster management role-players within the municipal area consult with one another and co-ordinate their actions on matters relating to disaster management in the municipality

In the event of a disaster, the nature of the event will determine which representatives of the Advisory Forum or other experts will be co-opted to participate in the management thereof. Under normal circumstances the Forum meets once per semester.

The District Municipality's Disaster Management Advisory Forum will in terms of Section 51 of the Disaster Management Act, Nr 57 of 2002, consist of the following:

5.2.1 INTERNAL TO THE DISTRICT MUNICIPALITY:

Municipal Manager
Executive Director: Financial and Strategic Support Services
Executive Director: Technical Services
Executive Director: Community Development and Planning Services
Head: Disaster Management Centre
Director: IDP, Performance and Risk Management
Fire Chief
Any other departmental representatives as nominated by the Municipal Manager

5.2.2 EXTERNAL BODIES:

Municipal Managers and/or Disaster Management Functionaries of the five local municipalities in the district;
Representatives from all national and provincial departments functioning in the district such as, but not limited to, the following:

Provincial Government: Western Cape Disaster Management Centre
SA Police Services, Western Cape Province
SA National Defence Force, Western Cape
Western Cape Emergency Medical Services
Department of Social Development
Department of Education
Department of Environmental Affairs and Development Planning
Department of Correctional Services
Department of Water and Sanitation
Department of Transport and Public Works
Department of Community Safety (Provincial Traffic Department)
Department of Health
Department of Agriculture
Department of Home Affairs
Cape Nature
External Organisations (NGO's, CBO's and FBO's)

Other representatives or disaster management experts may be co-opted to participate in the normal proceedings of the Advisory Forum as the need arises.

The Disaster Management Section will be responsible for rendering secretarial services during functional activities of the respective established disaster management structures.

5.3 DISASTER MANAGEMENT CENTRE (DMC)

In terms of Section 44 of the Disaster Management Act, 57 of 2002, amongst others, the Disaster Management Centre (DMC) must also specialize in issues concerning disasters and disaster management within the District Municipality. In this regard it must promote an integrated approach to the function with special emphasis on prevention and mitigation.

An emergency operations centre was established at the Worcester Ambulance Station, Murray Street, Worcester on 6th June 2014.

FUNCTIONS AND POWERS

The Cape Winelands District Municipality's Disaster Management Centre will, amongst others, act as a repository and conduit for information concerning disasters, impending disasters and disaster management in the municipal area.

It will also promote the recruitment, training and utilisation of volunteers to participate in disaster management in the municipal area.

The Centre will perform its functions –
(a) within the national, provincial and district disaster management frameworks;
(b) subject to the District IDP and other directions of the Council; and
(c) in accordance with the administrative instructions of the Municipal Manager.

The Centre will liaise with and co-ordinate its activities with those of the National Disaster Management Centre and the Western Cape Provincial Disaster Management Centre.

Irrespective of whether a local state of disaster has been declared or not, the Municipal Council is primarily responsible for the co-ordination and management of local disasters that occur in its area.

5.4 EMERGENCY DISASTER MANAGEMENT TEAM (EDMT)

The Emergency Disaster Management Team consists of the following:

Municipal Manager
Executive Director: Community Development and Planning Services
Head: Disaster Management Centre
Executive Director: Financial and Strategic Support Services
Executive Director: Technical Services
Relevant Directors and Managers per department
Relevant Disaster Management Advisory Forum Members
Directorate: Communication Services

The team will be responsible to assess, evaluate and co-ordinate all actions in all the phases of a significant occurrence or incident. Each line function will be responsible for the implementation of its own departmental disaster plan but, the Emergency Disaster Management Team will ensure co-ordination and support between departments and external bodies. The Emergency Disaster Management Team may appoint a risk mitigation project team to address specific pre- or post disaster risk elimination or reduction projects.

The Emergency Disaster Management Team, under the direction of the Municipal Manager/ Executive Director must, when activated, and during any response and relief operations perform the following functions in terms of and in addition to Section 49 of the Disaster Management Act, 2002 which will include:

1. maintaining records of communications, decisions, actions and expenditures;
2. determining of emergency area(s) and sites;
3. decide on emergency measures and priorities;
4. co-ordinate incident or disaster assessments (combine);
5. requesting emergency assistance of any kind;
6. closing public buildings when necessary;
7. depending on circumstances, issue public warning orders and instructions;
8. protecting the health and safety of emergency responders;
9. ensuring that an acceptable level of service is rendered for the district outside emergency area(s);
10. preparing lists of fatalities, casualties and missing persons;
11. preparing lists of destroyed and/or damaged properties;
12. co-ordinate response with provincial ministries through the Provincial Government: Western Cape Disaster Management Centre;
13. co-ordinate response with non-governmental disaster relief organisations, neighbourhood- and community based organizations;
14. provide and co-ordinate critical emergency information to the media for dissemination to the affected population(s) and the general public at the prerogative of the Executive Mayor or Municipal Manager who have delegated authority;
15. co-ordinate information for public release with emergency partners' communications staff;
16. respond to enquiries from the media or public in accordance with official policy;
17. identify target audiences for post-emergency communications; and
18. identify persons/organizations to contribute to post-emergency reports/debriefings.

5.5 EXECUTIVE MAYOR

In the event of a local disaster the Executive Mayor, in consultation with his/her Executive Mayoral Committee, may by notice in the Provincial Gazette declare a local state of disaster if existing legislation and contingency arrangements do not adequately provide for the municipality to deal effectively with the event or special circumstances warrant the declaration of a local state of disaster (Section 55).

Responsibilities of the Executive Mayor in a disaster situation:

1. authorize unforeseen and unavoidable expenditure in terms of section 29 and 32 of the Municipal Finance Management Act, Nr. 56 of 2003 in consultation with the Municipal Manager;
2. in terms of section 55 (2) the Executive Mayor and his/her Council may make by-laws to the extent that it is necessary to assist and protect the public as well as to combat and/or deal with the effects of the disaster;
3. the Executive Mayor and his/her Council may terminate or extend a declared disaster by notice in the Provincial Gazette before the term of the declared disaster lapses (after three months);
4. notify next of kin in the event when a community member is injured, missing or killed;
5. initiate the establishment of a disaster relief fund in terms of Section 12 read with Section 7 of the Municipal Finance Management Act, Nr. 56 of 2003;
6. release media statements; and
7. report on the emergency impact and response to the Council or its committees responsible for the emergency area(s), as well as to the mayors of local- and district municipalities and councillors of the area.

5.6 MUNICIPAL MANAGER

During disasters the Municipal Manager or his designate will be responsible to report, liaise and consult with the Executive Mayor and Mayoral Committee and external Provincial and National Government Departments. He/she will, furthermore be responsible to:

Proactive Phase:

1. constitute the IDDMC;
2 convene quarterly IDDMC meetings; and
3. co-opt specialized role-players to the IDDMC and EDMT.

Reactive Phase:

1. when notified of a disaster or significant event by the Executive Director or delegate, the Municipal Manager will activate and chair the Emergency Disaster Management Team;
2. report on the emergency impact and response to the Executive Mayor;
3. notify next of kin in the event when a municipal employee is injured, missing or killed;
4. identify staff/persons/organizations to receive recognition for contributions to emergency response;
5. prepare and forward media statements to the Executive Mayor for release;
6. when notified of a disaster or significant event by the Executive Director or delegate, the Municipal Manager will, activate the disaster response plan;
7. the Municipal Manager must ensure that all departmental disaster management plans are included in the Integrated Development Plan of the Council; and
8. he/she must also ensure that the employment and performance contracts of all newly appointed Section 57 employees should include disaster management responsibilities.

5.7 HEAD: DISASTER MANAGEMENT CENTRE

The Head is responsible for the compilation and maintenance of the District's Corporate Disaster Management Planning Framework. The Head of the Centre is responsible for consultation with the Executive Director: Community Development and Planning Services who is primarily responsible for disaster management.

The Head is also responsible for the performance by the Centre of its disaster management functions (Section 44) and to co-ordinate the implementation of the District's Corporate Disaster Management Planning Framework and:

Proactive Phase:

1. initiate and facilitate efforts to make funds available for disaster management in the municipal area;
2. assist municipal departments with the compilation of their disaster management plans;
3. obtain and record departmental disaster management plans;
4 co-ordinate the updating, maintenance and evaluation of departmental plans;
5. to make provision in own departmental budget for significant events which requires immediate response and relief actions;
6. the Head of the Centre must ensure that the contents of this corporate planning framework are communicated to staff members at all levels within the department;

7. report on issues regarding the Corporate Planning Framework within the Annual Disaster Management Report which is to be submitted to the Provincial- and National disaster management centres as well as all municipal councils within the district;
8. on instruction of the Municipal Manager, release media statements or general information on significant events and/or disasters in terms of Section 44 (1)(c); and
9. make arrangements for the request for, receipt and administration of donations.

Reactive Phase:

1. when deemed necessary, make recommendations to the Municipal Manager for the declaration of a disaster by the Council of the District Municipality as defined in the Act;
2. to initiate steps to deal with a significant event, which requires multi-disciplinary and multi-sectoral actions;
3. liaise with municipal, provincial and national officials within the district;
4. recommend to the Municipal Manager request provincial and/or national assistance;
5. co-ordinate disaster response and relief by individuals, CBO'S and NGO'S;
6. manage public donations received;
7. recommend to the Municipal Manager to request voluntary donations during a disaster or significant event;
8. recommend to the Municipal Manager or relevant Executive Director to enter into service delivery agreements with individuals, CBO'S and NGO'S with relation to relief actions during disasters and significant events;
9. authorize areas to be evacuated or re-entered;
10. identify and recommend persons/organizations to receive recognition for contributions to the emergency response;
11. establish and maintain the required telecommunications links; and
12. recommend to the Municipal Manager that Executive Directors should release departmental resources including personnel, equipment or vehicles for utilisation during disasters and significant events.

The Head of the Disaster Management Centre shall be responsible for the distribution of the updated disaster management plan in terms of Section 43 of the Act.

The Head of the Centre will make recommendations to the Municipal Manager who will officially activate and announce the duration and termination of the disaster or significant event to all relevant parties. Special or extraordinary delegations will apply during such periods.

In the recovery and rehabilitation phase a project team under a line function can be convened to take responsibility for further activities that address the causal factors of the disaster/incident. This team will receive a brief from and report back to the Disaster Management Advisory Forum as well as senior management.

5.8 EXECUTIVE DIRECTOR: COMMUNITY DEVELOPMENT AND PLANNING SERVICES

In terms of Section 52 compile a departmental disaster management plan in relation to the identified hazards and risk assessments applicable to the functional activities of the department. Such plans are to be submitted to the Disaster Management Centre.

The Executive Director should ensure that his/her department/divisions pay particular attention to preventative, mitigating, response and recovery activities by the compilation of relevant contingency plans. The implementation of the plan will include the proactive and reactive steps as outlined below.

- Disaster management activities shall include, but are not limited to the following:

Proactive Phase:

1. identify persons/organizations to contribute to post-emergency reports/debriefings;
2. to make provision in own departmental budget for significant events which requires immediate response and relief actions, including impact assessments;
3. plan and ensure that risk reduction and disaster prevention/mitigation principles are adhered to in the recovery and redevelopment phases;
4. ensure that risk reduction and mitigation principles are applied in all developmental projects;
5. plan for the continuation of operational activities during a disaster e.g. reserve personnel and resources;
6. in case of a disaster or significant event, the Executive Director or delegate shall notify the Municipal Manager who will activate the disaster response plan;
7. the contents of this corporate planning framework must be communicated to staff members at all levels within the department; and
8. execute all other, tasks, duties or functions assigned by the Municipal Manager.

Reactive Phase:

1. initiate steps to eliminate risks presented by communicable diseases;
2. isolate person(s) in order to decrease or eliminate risks presented by a communicable disease;
3. protect the health and safety of emergency responders;
4. identify persons/organizations to contribute to post-emergency reports/debriefings;
5. monitor large groups of people for contamination and/or health effects;
6. co-ordinate the immunization of large groups of people;
7. care for disrupted populations (may be general population or limited to vulnerable populations);
9. seize and dispose of food that poses a health hazard;
10. monitor the environment (air, water, and ecosystem) for contamination;
11. identify persons who may require medical follow-up and who may require psychological/social support;
12. the department should assign dedicated officials with extended delegated authority for the duration of the disaster or significant event to approve the acquisition of goods and services needed;
13. upon request of the Municipal Manager, release resources including personnel, equipment or vehicles for utilisation during disasters and significant events. Personnel shall be deemed to be on official duty; and
14. execute all other, tasks, duties or functions assigned by the Municipal Manager.

5.9 EXECUTIVE DIRECTOR: FINANCIAL AND STRATEGIC SUPPORT SERVICES

In terms of Section 52 compile a departmental disaster management plan in relation to the identified hazards and risk assessments applicable to the functional activities of the department. Such plans to be submitted to the Disaster Management Centre.

The Executive Director should ensure that his/her department/divisions pay particular attention to preventative, mitigating, response and recovery activities by the compilation of relevant contingency plans. The implementation of the plan will include the proactive and reactive steps as outlined below.

- Disaster management activities shall include, but are not limited to the following:

Proactive Phase:

1. plan for the safekeeping of financial records to withstand disastrous events;
2. plan for the continuation of operational activities during a disaster e.g. reserve personnel and resources;
3. to make provision in own departmental budget for significant events which requires immediate response and relief actions, including impact assessments;
4. in case of a disaster or significant event, the Executive Director or delegate shall notify the Municipal Manager who will activate the disaster response plan;
5. the contents of this corporate planning framework must be communicated to staff members at all levels within the department; and
6. execute all other, tasks, duties or functions assigned by the Municipal Manager.

Reactive Phase:

1. in case of a disaster or significant event, the Executive Director or delegate shall notify the Municipal Manager who, in consultation with the Head of Centre, will activate the disaster response plan; and
2. management and administration of the disaster relief fund, if established;
3. the department should assign dedicated officials with extended delegated authority for the duration of the disaster or significant event to approve the acquisition of goods and services to be used to redress the impact of the event;
4. upon request of the Municipal Manager, release resources including personnel, equipment or vehicles for utilisation during disasters and significant events. Personnel shall be deemed to be on official duty during such redeployment; and
5. responsible for the legal process to promulgate a declared disaster in the Provincial Gazette;
6. monitoring compliance with relevant legislation and regulations during abnormal circumstances;
7. ensuring that Council's administrative support services, including human resources management, are maintained under abnormal circumstances;
8. providing disaster related information to municipal employees and their families;
9. documenting and safeguarding of information for potential municipal insurance claims and legal actions;
10. documenting information for remuneration of municipal employees during disasters or significant events;
11. documenting potential occupational health and safety issues;
12. documenting information for potential municipal labour relations issues;

13. execute all other, tasks, duties or functions assigned by the Municipal Manager.

5.10 EXECUTIVE DIRECTOR: TECHNICAL SERVICES

In terms of Section 52 compile a departmental disaster management plan in relation to the identified hazards and risk assessment applicable to the functional activities of the department. Such plans to be submitted to the Disaster Management Centre.

The Executive Director should ensure that his/her department/divisions pay particular attention to preventative, mitigating, response and recovery activities by the compilation of relevant contingency plans. The implementation of the plan will include the proactive and reactive steps as mentioned below.

- Disaster management activities shall include, but are not limited to the following:

Proactive Phase:

1. compilation of pro-active departmental disaster management programmes to support risk reduction or elimination;
2. identify buildings which are unsafe;
3. identify areas, buildings and structures which may require restoration;
4. controlling the consumption of public water supplies;
5. providing technical advice in preventing or reducing the effects of flooding;
6. to make provision in own departmental budget for significant events which requires immediate response and relief actions;
7. plan for the continuation of operational activities during a disaster e.g. reserve personnel and resources;
8. in case of a disaster or significant event, the Executive Director or delegate shall notify the Municipal Manager who, in consultation with the Head of Centre, will activate the disaster response plan;
9. the contents of this corporate plan must be communicated to staff members at all levels within the department; and
10. execute all other tasks, duties or functions assigned by the Municipal Manager.

Reactive Phase:

1. removal of debris from transportation routes and other sites as required;
2. rendering of emergency repairs to damaged road infrastructure;
3. identifying and prioritising of essential services that may require restoration as a result of an emergency or a disaster;

4. providing alternative water supplies for domestic, industrial and other uses;
5. the department should assign dedicated officials with extended delegated authority for the duration of the disaster or significant event to approve the acquisition of goods and services needed;
6. upon request of the Municipal Manager, release resources including personnel, equipment or vehicles for utilisation during disasters and significant events; and
7. execute all other tasks, duties or functions assigned by the Municipal Manager.

6 DEPARTMENTAL DISASTER MANAGEMENT PLANS (REFER TO ATTACHED TEMPLATE)

Typical aspects addressed in a disaster management plans are the following:

1. Planning Framework/Introduction
2. Risk and Vulnerability Assessment leading to a needs analysis
3. Evaluation and description of Infrastructure / Organisation available
4. Prevention through risk elimination.
5. Mitigation through risk reduction
6. Preparedness planning for risks that cannot be eliminated
7. Lines of communication (Protocols) and liaison
8. Awareness and Education
9. Evaluation and Maintenance

7. SIGNIFICANT EVENTS AND DISASTER DECLARATIONS

Based on the information available, the Head of the Disaster Management Centre will inform the Municipal Manager, who shall inform and recommend to Council whether or not the circumstances warrant a disaster declaration in terms of Section 55 of the Disaster Management Act, Nr. 57 of 2002.

Significant event declaration

Guided by assessment reports from disaster management role-players within the District, the Head: Disaster Management Centre may initiate steps to counter the effects and impact of a significant event in accordance with existing contingency

plans and notify the Municipal Manager and/or the Mayoral Committee of the Council accordingly. (Sections 44 and 54)

Disaster Declaration

In the event of a local disaster the Council may by notice in the Provincial Gazette declare a local state of disaster if existing legislation and contingency arrangements do not adequately provide for the municipality to deal effectively with the event or special circumstances warrant the declaration of a local state of disaster (Section 55). The stipulations of Sections 23(2) and 49 regarding the recording and classification of disasters should be adhered to.

The Municipal Manager may request assistance and resources from another level of government and that request shall not be deemed to be a request for implementation of the emergency plans of that jurisdiction.

8. POST DISASTER RECOVERY AND REHABILITATION OPERATIONS

Post-disaster recovery and rehabilitation operations will be dealt with in terms of the activities of the IDDMC and Disaster Management Advisory Forum members.

9. REFERENCES

City of Cape Town. 2002. *Draft Corporate Disaster Management Plan.*

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Republic of South Africa. 2005. *National Disaster Management Framework of 2005.* Pretoria. Government Printer.

ANNEXURE "S"

PROCUREMENT PLAN

DEMAND PLAN 2019/202 : AS ON: 18/03/2019

ANNEXURE "S"

Tender No	CAPITAL / OPERATIONAL	DEPARTMENT RESPONSIBLE FOR PROCUREMENT	DIVISION	DESCRIPTION	AMOUNT	Expected dates when actions should be completed					
						Specification Committee Date	Date of Advertisement	Closing Date of Tender	Evaluation Committee Date	Adjudication Committee Date	Cool Off Expiry Date
COMMUNITY DEVELOPMENT AND PLANNING SERVICES											
- ECONOMIC DEVELOPMENT AND PLANNING											
Local Economic Development											
Q 2019/037 B	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	LOCAL ECONOMIC DEVELOPMENT	PRINTERS (LED)(REPLACEMENTS)	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Tourism											
Q 2019/021	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	COMMUNITY AND DEVELOPMENTAL SERVICES	GAZEBOS, WALL BANNERS, A-FRAME BANNERS, PULL UP BANNERS, FEATHER BANNERS	200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/004	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	TOURISM	TOURISM MONTH LAUNCE, MAYORAL TOURISM AWARD GALA EVENT AND MAYORAL TOURISM MEDIA LAUNCE	200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/052	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	TOURISM	TOURISM TRAINING FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	800 000.00	2019/05/06	2019/05/20	2019/06/03	2019/06/17	2019/07/01	2019/07/15
Q 2019/036 F	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	COMMUNITY AND DEVELOPMENTAL SERVICES	PORTABLE DATA PROJECTOR	9 700.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 G	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	COMMUNITY AND DEVELOPMENTAL SERVICES	5 X ELECTRONIC LASER DISTANCE METER	5 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 H	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	COMMUNITY AND DEVELOPMENTAL SERVICES	LAMINATOR A3 MAX STELLENBOSCH	2 195.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Environmental Planning											
T 2019/011	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	PLANNING SERVICES	LABOUR INTENSIVE CLEARING OF INVASIVE ALIEN PLANTS WITHIN CWDM FOR THE PERIOD 01 NOVEMBER 2019 TO 30 OCTOBER 2022	2 900 000.00	2019/08/10	2019/08/24	2019/09/07	2019/09/21	2019/10/04	2019/10/18
- COMMUNITY AND DEVELOPMENTAL SERVICES											
Municipal Health Services											
Q 2019/006	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	RESTORATION OF DEFECTIVE SEWERAGE DRAINAGE SYSTEM AT 55 SAMPSON STREET, RIVERVIEW, WORCESTER	37 500.00	2019/07/08	2019/07/22	2019/08/05	2019/08/19	2019/09/02	2019/09/16
Q 2019/020 G	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	HIGH BACK CHAIRS X 6 MHS OFFICE	14 600.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/035	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	MUNICIPAL HEALTH BRANDING ITEMS	200 000.00	2019/06/03	2019/06/17	5019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/009	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	CAPE WINELANDS DISTRICT MUNICIPALITY CHEMICAL ANALYSES OF WATER SAMPLES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	36 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/010	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	CAPE WINELANDS DISTRICT MUNICIPALITY FOOD AND WATER MICROBIOLOGICAL SAMPLE ANALYSES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	1 630 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/053	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	SUPPLY AND DELIVERY OF VIP TOILET SYSTEMS	220 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
U 2019/003	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	MUNICIPAL HEALTH SERVICES	DIGITAL CAMERA	21 900.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
Disaster Management											
Q 2019/003	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	HIRING OF PORTABLE TOILETS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	40 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Q 2019/005	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	SERVICING, CLEANING AND TRANSPORTATION OF PORTABLE AND MOBILE TOILETS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	40 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Q 2019/011 A	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	KITCHEN TABLE WITH CHAIR	2 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/012	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	SMALL IT EQUIPMENT	40 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/013	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	STORAGE FACILITY (PAARL)	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/015	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	VOICE LOGGER	200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 B	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	OFFICE CHAIRS (REPLACEMENTS)	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/037 A	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	PRINTER (CONTROL ROOM)	8 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19

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Q 2019/038 A	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	LCD TV	80 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/038 B	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	LCD TV (COMMUNICATION ROOM) (DISASTER)	15 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/005	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	SUPPLY AND DELIVERY OF EMERGENCY HOUSING KITS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/054	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	TRANSPORTATION, ERECTION, DISMANTLING AND CLEANING OF MARQUE TENTS	150 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/066	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	STORAGE FACILITY (STELLENBOSCH)	250 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/067	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	UPGRADE DISASTER MANAGEMENT CENTRE (SATELLITE)	1 200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/068	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	UPGRADE OF RADIO/COMMUNICATION ROOM	1 600 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
U 2019/004	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	GPS	3 200.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/005	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	GPS	3 500.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/006	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	DASHBOARD CAMERA	5 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/007	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	TOOL KIDS	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/008	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	DIGITAL RADIOS	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/009	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	TWO RADIOS	20 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/025	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	DISASTER MANAGEMENT	BRANDING	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
	Fire Services										
Q 2019/002	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SUPPLY, DELIVERY AND DEMONSTRATION OF HAZARDOUS MATERIALS EQUIPMENT	100 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/008	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SUPPLY AND DELIVERY OF BREATHING APPARATUS EQUIPMENT	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Q 2019/010	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SUPPLY AND DELIVERY OF FITNESS EQUIPMENT	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Q 2019/011 B	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	VACUUM CLEANER (3)	8 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 C	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	MOP TROLLEY (3)	5 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/017	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	HAZMAT EQUIPMENT (REPLACEMENT)	100 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/018	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SIMULATOR TRAINING	100 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 E	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	OFFI CE DESKS & CHAIRS (REPLACEMENTS)	30 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 F	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	CHAIRS (TRAINING ROOM)	20 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/038 C	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	LCD TV - (REPLACEMENT) (FIRE)	10 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/006	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SUPPLY AND DELIVERY OF UNIFORM AND PERSONAL PROTECTIVE EQUIPMENT FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022.	500 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/007	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	GROUND CREWS FOR FIRE FIGHTING AND FIRE RELATED FUNCTIONS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	3 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/008	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	AERIAL FIRE FIGHTING SUPPORT SERVICES FOR THE PERIOD 01 NOVEMBER 2019 TO APRIL 2020 AND FROM 01 NOVEMBER 2020 TI 30 APRIL 2021	10 000 000.00	2019/08/10	2019/08/24	2019/09/07	2019/09/21	2019/10/04	2019/10/18
T 2019/059	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	SUPPLY AND DELIVERY OF SKID UNITS AND PUMPS	300 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/060 A	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	LIGHT 4X4 FIRE FIGHTING VEHICLE (REPLACEMENT - CL28012)	700 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/060 B	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	LIGHT 4X4 FIRE FIGHTING VEHICLE (REPLACEMENT)	1 600 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/060 C	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	4 X 4 BAKKIE DOUBLE CAB (REPLACEMENT - CL 20738, CW 44519, CL54687)	1 490 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/060 D	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	FORWARD CONTROL VEHICLE (REPLACEMENT CL 19169)	3 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/060 E	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	MAJOR 4X4 FIRE FIGHTING VEHICLE (INSURANCE CLAIM)	4 119 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/061	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	INCIDENT COMMAND VEHICLE AND TRAILER	3 0 .00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17

ANNEXURE "S"

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T 2019/062	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	NEW RADIO HIGH SIT DEVELOPMENT	400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/069	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	UPGRADE RADIO INFRASTRUCTURE	400 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
U 2019/010	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	REPLACEMENT OF RADIOS (INSURANCE)	20 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/011	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	BINOCULARS (5)	12 500.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
	OPERATIONAL	COMMUNITY AND DEVELOPMENTAL SERVICES	FIRE SERVICES	REPLACEMENT OF VARIOUS TOOLS FOR MECHANICS	40 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
		- RURAL AND SOCIAL DEVELOPMENT									
		Social Development									
Q 2019/036 O	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	RURAL AND SOCIAL DEVELOPMENT	SHREDDER (NEW)	8 100.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 P	CAPITAL	COMMUNITY AND DEVELOPMENTAL SERVICES	RURAL AND SOCIAL DEVELOPMENT	BINDING MACHINE (NEW)	6 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
		FINANCIAL AND STRATEGIC SUPPORT SERVICES									
		GOVERNANCE AND COUNCILLOR SUPPORT									
		Office of the Mayor									
Q 2019/020 H	CAPITAL	OFFICE OF THE EXECUTIVE MAYOR	COUNCILLOR SUPPORT	2 X HIGH BACK CHAIRS (REPLACEMENT) CLRS DU PLESSIS & JOUBERT	3 200.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
		- CORPORATE SERVICES									
		Admin Support Services									
Q 2019/001	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	LAWN MOWING SERVICES: EERSTE BEGIN, BRANDWACHT, WORCESTER FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	55 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Q 2019/020 A	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH BACK CHAIR	2 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 J	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH BACK CHAIR	2 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 K	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH BACK CHAIR	2 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 L	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH BACK CHAIR (ADMIN REG CW REPLACEMENT)	1 600.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 M	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH BACK CHAIR (ADMIN CW REPLACEMENT)	1 600.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 N	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	2 X SIDE CHAIRS (ADMIN CW REPLACEMENT)	1 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	1900/01/00
Q 2019/036 A	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	GUILLOTINE	2 500.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 B	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	BINDING MACHINE	5 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 C	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	LAMINATOR A4/A3	5 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 M	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	GUILLOTINE	2 500.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 N	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	NOTICE BOARD 1M X 1.2M (NEW ITEM)	1 200.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 Q	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SHREDDER	9 500.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 R	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	BINDING MACHINE	5 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 S	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	LAMINATOR A4/A3	5 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 T	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	BINDING MACHINE	5 800.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 U	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	DIGITAL VOICE RECORDER	10 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 V	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SHREDDER (LEGAL SERVICES REPLACEMENT)	4 300.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 W	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SHREDDER (ADMIN SUPP CW REPLACEMENT	30 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/002	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SAFETY AND SECURITY ASSESSMENT OF ALL OFFICE BUILDINGS OF THE CAPE WINELANDS DISTRICT MUNICIPALITY, AS WELL AS THE DEVELOPMENT AND FORMULATION OF SPECIFICATIONS IN RESPECT OF RECOMMENDED SOLUTIONS	1 500 000.00	2019/01/23	2019/03/01	2019/04/05	2019/04/17	2019/04/26	2019/05/10

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T 2019/012	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	ISIXHOSA TRANSLATION SERVICES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	500 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/013	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	AFRIKAANS AND ENGLISH TRANSLATION SERVICES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	500 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/014	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SECURITY AND ACCESS CONTROL SERVICES FOR 51 TRAPPES STREET, WORCESTER FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	1 500 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/015	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SECURITY AND ACCESS CONTROL SERVICES FOR STELLENBOSCH FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	450 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/016	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SECURITY AND ACCESS CONTROL SERVICES FOR 194 MAIN STREET, PAARL FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	450 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/041	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	CLEANING / GARDENING / REFRESHMENT SERVICES IN STELLENBOSCH, PAARL, WELLINGTON, CERES, WORCESTER AND ROBERTSON FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/042	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	LEASE OF AN OPEN PARKING AREA SITUATED ON ERVEN 121 AND 123, DRUKKERS AVENUE, STELLENBOSCH FOR THE PERIOD 01 SEPTEMBER 2019 TO 31 AUGUST 2020	240 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/043	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	RENTAL OF A TELEPHONE MANAGEMENT SYSTEM FOR THE PERIOD FROM 01 AUGUST 2019 TO 31 JULY 2022	3 600 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/055	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	SUPPLY AND DELIVERY OF UNIFORMS AND PROTECTIVE CLOTHING FOR LOGISTICAL SUPPORT SERVICES, DISASTER MANAGEMENT AND TOURISM PERSONNEL FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2020	330 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/065 A	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH VOLUME COLOUR PHOTO COPY MACHINE	330 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/065 B	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	HIGH VOLUME COLOUR PHOTO COPY MACHINE (ADMIN REG CW REPLACEMENT	120 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/093 A	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	1600 CC SEDAN CAR (REPLACE CW47335)	270 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/093B	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	1600 CC SEDAN CAR (REPLACE CW49313)	270 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/093 C	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPORT SERVICES	1600 CC SEDAN CAR (REPLACE CW49398)	270 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Human Resource Management											
T 2019/017	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	HUMAN RESOURCES	GROUP LIFE INSURANCE SCHEME FOR THE PERIOD FROM 01 JULY 2019 TO 30 JUNE 2022	1 400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/058	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	HUMAN RESOURCES	IMPLEMENTATION AND MANAGEMENT OF A HOLISTIC EMPLOYEE WELLNESS PROGRAM TO CWDM FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	750 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
Property Management											
Q 2019/011 D	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	VACUUM CLEANER	8 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 E	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	REFRIGERATOR FREEZE 223L	4 300.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 F	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	DISHWASHER	4 500.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 G	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	MICROWAVE 38 L	3 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 H	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	DISHWASHER (EERSTE BEGIN) (NEW ITEM)	4 300.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 I	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	DISHWASHER (ADMIN CW GROUND FLOOR) (REPLACEMENT)	4 300.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/064	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	DIGITAL CONFERENCE SYSTEM (COUNCIL CHAMBER, CL)	450 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
U 2019/018	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	TELECOMMUNICATION EQUIPMENT- CWDM (REPLACEMENTS)	12 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/019	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	WHEEL BARROW (EERSTE BEGIN) (NEW ITEM)	1 300.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/020	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	PROPERTY MANAGEMENT	WHEELIE BIN (EERSTE BEGIN CW) (NEW ITEM)	1 200.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19

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- FINANCIAL SERVICES

Management and Finance

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Tender No.	CAPITAL / OPERATIONAL	DEPARTMENT RESPONSIBLE FOR PROCUREMENT	DIVISION	DESCRIPTION	AM	Specification Committee Date	Date of Advertisement	Closing Date of Tender	Evaluation Committee Date	Adjudication Committee Date	Bool Off Expiry Date
Q 2019/020 C	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	FINANCIAL SERVICES	3 x DESKS	21 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 D	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	FINANCIAL SERVICES	HIGH BACK CHAIR	2 300,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 E	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	FINANCIAL SERVICES	GUILLOTINE	1 500,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/001	OPERATIONAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	FINANCIAL SERVICES	REVIEW OF AND TECHNICAL SUPPORT FOR GRAP FINANCIAL STATEMENTS, ACCOUNTING SERVICES AND ANNUAL PERFORMANCE REPORT (APR) FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	390 000,00	2019/01/22	2019/02/01	2019/03/08	2019/03/20	2019/03/29	2019/04/12
		Procurement									
Q 2019/036 D	CAPITAL	FINANCIAL & STRATEGIC SUPPORT SERVICES	SUPPLY CHAIN MANAGEMENT	WHITE BOARD YEAR PLANNER	3 500,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
		- OFFICE OF THE MUNICIPAL MANAGER									
		Public Relations									
Q 2019/036 L	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	COMMUNICATION SERVICES	8 X NOTICE BOARDS	20 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/018	OPERATIONAL	OFFICE OF THE MUNICIPAL MANAGER	COMMUNICATION SERVICES	ADVERTISING & MEDIA BUYING SERVICES FOR DIGITAL, TV AND RADIO BROADCASTING OF MATERIAL PROVIDED BY CAPE WINELANDS DISTRICT MUNICIPALITY	900 000,00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
U 2019/001	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	COMMUNICATION SERVICES	41 X CAMERAS	10 000,00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/002	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	COMMUNICATION SERVICES	CAMERA EQUIPMENT	10 000,00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
		Performance Management									
Q 2019/036 I	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	PERFORMANCE MANAGEMENT	PROJECTOR	10 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 J	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	PERFORMANCE MANAGEMENT	BLUETOOTH SPEAKER	5 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/036 K	CAPITAL	OFFICE OF THE MUNICIPAL MANAGER	PERFORMANCE MANAGEMENT	VOICE RECORDER	5 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
		TECHNICAL SERVICES									
		- ENGINEERING AND INFRASTRUCTURE									
		Projects and Housing									
T 2019/044	OPERATIONAL	TECHNICAL SERVICES	PROJECTS	PROVISION OF PROFESSIONAL CIVIL ENGINEERING SERVICES FOR THE APPOINTMENT OF A WASTE SPECIALIST	3 000 000,00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/046	OPERATIONAL	TECHNICAL SERVICES	PROJECTS	CONSTRUCTION / UPGRADING OF ABLUTION FACILITIES AT RURAL SCHOOLS	500 000,00	2019/10/14	2019/10/28	2019/11/11	2019/11/25	2019/12/09	2019/12/23
T 2019/047	OPERATIONAL	TECHNICAL SERVICES	PROJECTS	INSTALL SPRINKLER SYSTEMS AT RURAL SCHOOLS	400 000,00	2019/08/10	2019/08/24	2019/09/07	2019/09/21	2019/10/04	2019/10/18
T 2019/048	OPERATIONAL	TECHNICAL SERVICES	PROJECTS	SUPPLY AND DELIVER PRE-MANUFACTURED PAVILIONS IN RURAL AREAS	250 000,00	2019/08/10	2019/08/24	2019/09/07	2019/09/21	2019/10/04	2019/10/18
T 2019/049	OPERATIONAL	TECHNICAL SERVICES	PROJECTS	DEVELOPMENT / UPGRADING OF SPORT FIELDS IN THE RURAL AREA OF CWDM	900 000,00	2019/09/02	2019/09/16	2019/10/07	2019/10/21	2019/11/04	2019/11/18
		Information Technology									
Q 2019/022	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	ROUTERS & SWITCHES (NEW)	200 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/063 A	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	PC'S	1 280 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/063 B	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	LAPTOPS	841 500,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/063 C	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	TABLETS	60 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/070	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	WIRELESS ACCESS POINTS	1 000 000,00	2019/06/03	2019/06/17	5019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/071	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	WIDE AREA NETWORK HARDWARE	7 000 000,00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19

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Tender No	CAPITAL / OPERATIONAL	DEPARTMENT RESPONSIBLE FOR PROCUREMENT	DIVISION	DESCRIPTION	AMOUNT	Specification Committee Date	Date of Advertisement	Closing Date of Tender	Evaluation Committee Date	Adjudication Committee Date	Cool Off Exp Date
U 2019/012	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	ADOBE ACROBAT PROFESSIONAL	22 900.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/013	CAPITAL	TECHNICAL SERVICES	INFORMATION AND COMMUNICATION TECHNOLOGY	SMALL IT EQUIPMENT	30 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
Public Transport Regulation											
T 2019/050	OPERATIONAL	TECHNICAL SERVICES	PUBLIC TRANSPORT	UPDATE THE TRANSPORT RECORD AND OPERATION LICENSE PLAN FOR BREEDE VALLEY MUNICIPALITY	1 600 000.00	2019/10/14	2019/10/28	2019/11/11	2019/11/25	2019/12/09	2019/12/23
T 2019/051	OPERATIONAL	TECHNICAL SERVICES	PUBLIC TRANSPORT	SUPPLY AND DELIVERY OF BRANDED LEARNER BACKPACKS, PEAK CAPS AND PROMOTIONAL ITEMS	328 000.00	2019/10/14	2019/10/28	2019/11/11	2019/11/25	2019/12/09	2019/12/23
Buildings: Maintenance											
Q 2019/023	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	NEW SHELVING IN STORE	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/024	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	WATER TANKS, STANDS & PUMPS	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/025	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	BROCHURE STANDS TOURISM	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/026	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CAR SHADE PORTS (4)	80 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/027	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	STORAGE CONTAINER	120 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/028	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ACCESS FOR THE DISABLED- c/fwd 18/19	150 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/029	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	UPGRADE LADIES ABLUTION FACILITIES	150 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/030	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CAR SHADE PORTS- c/fwd 19/20	150 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/05/19
Q 2019/031	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CARPORTS FRONT PARKING	150 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/032	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ROLLER SHUTTER DOORS ROADS DEPOTS	150 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/033	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	REPLACE AIR CONDITIONER/S	200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/034	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAVING BROUGHT FORWARD 18/19	200 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/072	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ACCESS RAMP FOR THE DISABLED- c/fwd 18/19 >	250 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/073	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	UPGRADE STORM WATER DRAINAGE- c/fwd 19/20 >	300 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/074	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CANOPIES BETWEEN CONTAINERS CJ ROADS-cfwd	300 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/075	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ACCESS FOR THE DISABLED- c/fwd 18/19 >	350 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/076	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	RE-THATCH/ REHABILITATE THATCH ROOFS	350 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/077	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	REPLACEMENT OF PAVING AND GRASS, SQUARE ALEXANDER STR BUILDING	350 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/078	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ACCESS FOR THE DISABLED- c/fwd refer 18/19)	400 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/079	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	STEEL STRUCTURE TRUCK PORTS	500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/080	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	TUNNEL TRAINING SIMULATOR- c/fwd 18/19	500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/081	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAINTING OF STELLENBOSCH ROADS AND WORKSHOP BUILDINGS	500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/082	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ROBERTSON WORKSHOP OLD CORRUGATED CARPORT/ STORAGE REPLACEMENT	500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/083	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAINT ROADS/WORKSHOP PAARL	500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/084	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	REHABILITATE ASPHALT ROAD SURFACES	600 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/085	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAINT ROADS/WORKSHOP CERES	600 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/086	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAINTING OF WORCESTER ROADS/WORKSHOP BUILDINGS	700 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/087	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	PAVING YARD/ RETAINING WALL ->	750 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19

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T 2019/088	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	NEW CLOAKROOM CERES WORKSHOP	850 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/089	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CERES WORKSHOP ASBESTOS ROOF REPLACEMENT	1 000 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/090	OPERATIONAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ELECTRIC/ HEATING GO GREEN	1 000 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/091	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	STEEL STRUCTURE FIRE TRUCK PORTS	1 500 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/092	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CERES DEPOT- NEW STAFF DEVELOPMENTS	6 000 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/015	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	ELECTRIC DRILL	3 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/016	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	CORDLESS DRILL	3 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/017	CAPITAL	TECHNICAL SERVICES	MAINTENANCE & REPAIRS	SANDING MACHINE	5 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
		- ROADS: AGENCY									
		Roads – Workshop									
Q 2019/011 J	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	MOP TROLLIES	45 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/011 K	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	MICROWAVE ROADS	3 500.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/020 I	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	HIGH BACK CHAIR (PAARL)	3 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/037 C	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	5 X COLOUR PRINTERS (CERES)	50 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
Q 2019/037 D	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	3 X COLOUR PRINTER (WORCESTER)	30 000.00	2019/06/03	2019/06/17	2019/07/08	2019/07/22	2019/08/05	2019/08/19
T 2019/003	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	REMOVAL OF WASTE OIL FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	50 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/004	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF PROTECTIVE CLOTHING AND FOOTWEAR FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	800 000.00	2019/03/01	2019/03/08	2019/04/12	2019/04/17	2019/04/27	2019/05/10
T 2019/019	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	TREE EVALUATION AND FELLING ACTIVITIES IN PROVINCIAL ROAD RESERVES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	500 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/020	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	RENTAL, REFILLING AND DELIVERY OF GAS (ACETYLENE, OXYGEN AND ARGO SHIELD) FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	50 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/021	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SECURITY SERVICES FOR THE ROADS DEPARTMENT, CERES, ROBERTSON AND WORCESTER FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	70 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/022	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	MEDICAL CERTIFICATE OF FITNESS FOR AFFECTED ROAD MAINTENANCE, ROAD CONSTRUCTION AND WORKSHOP EMPLOYEES AT THE CAPE WINELANDS DISTRICT MUNICIPALITY FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	150 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/023	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY, DELIVERY AND SPRAYING OF BITUMINOUS PRODUCTS AND RELATED SERVICES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	3 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/024	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF CRUSHED STONE, GRIT, CRUSHER DUST, AGGREGATE FOR RAPID SETTING RUBBER MODIFIED SLURRY, MATERIAL FOR BASE COURSE, MATERIAL FOR SUBBASE, SELECTED MATERIAL, FILTER MATERIAL AND SAND FOR CONCRETE FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	1 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/025	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY CONCRETE PIPES AND CULVERTS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/026	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF FENCING MATERIALS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/027	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF GABION UNITS AND MATTRESSES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	300 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/028	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF GEOTEXTILE PRODUCTS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/029	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF GRADER BLADES, PLOUGH BOLTS AND NUTS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	150 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17

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T 2019/030	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF HIGHWAY GUARDRAILS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/031	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	THE HIRE OF MECHANICAL EQUIPMENT AND CONSTRUCTION PLANT FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	3 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/032	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF CEMENT FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	20 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/033	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF PRE-MIX CONCRETE FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	50 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/034	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF ROAD LINE PAINT, THINNERS AND GLASS BEADS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/035	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF RE-INFORCED STEEL PRODUCTS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/036	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF FENCING TIMBER POLES, TIMBER GUARDRAIL POSTS, TIMBER SPACER BLOCKS AND ROUND WOODEN POLES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/037	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF TRAFFIC CONTROL SIGNS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/22	2019/06/03	2019/06/17
T 2019/038	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF OILS AND LUBRICANTS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/039	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF NEW TYRES, TUBES, RETREADING OF TYRES AND SUBSIDIARY SERVICES SITUATED IN WORCESTER, CERES, ROBERTSON, PAARL AND STELLENBOSCH FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	2 400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/040	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	APPOINTMENT OF A PANEL OF ACCREDITED SERVICE PROVIDERS FOR THE SUPPLY AND DELIVERY OF SPARE PARTS AND SERVICE OR REPLACEMENT OF COMPONENTS OF MOTOR VEHICLES, FIRE FIGHTING VEHICLES AND PLANT, EARTHMOVING AND ROAD CONSTRUCTION PLANT FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	2 400 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/045	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	SUPPLY AND DELIVERY OF NATURAL GRAVEL FOR RE-GRAVELING OF RURAL PROVINCIAL ROADS FOR THE PERIODE 01 JULY 2019 TO 30 JUNE 2022	3 000 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/056	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	UNBLOCKING AND CLEANING OF DRAINAGE PIPE STRUCTURES IN RURAL PROVINCIAL PUBLIC SECTOR RESERVES FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	100 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
T 2019/057	OPERATIONAL	TECHNICAL SERVICES	ROADS / WORKSHOP	TRAFFIC CONTROL FOR 24 HOURS FOR THE PERIOD 01 JULY 2019 TO 30 JUNE 2022	200 000.00	2019/04/08	2019/04/22	2019/05/06	2019/05/20	2019/06/03	2019/06/17
U 2019/014	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	INDUSTRIAL MOBILE GENERATOR	20 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/021	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	REPLACEMENT OF VARIOUS TOOLS FOR MECHANICS	40 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/022	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	INDUSTRIAL ANGLE GRINDER	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/023	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	INDUSTRIAL JIGSAW	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
U 2019/024	CAPITAL	TECHNICAL SERVICES	ROADS / WORKSHOP	INDUSTRIAL SKILL SAW	10 000.00	2019/06/03	2019/06/17	2019/08/05	2019/07/22	2019/08/05	2019/08/19
					110 276 696.00						

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ANNEXURE "S"