



SWARTLAND MUNICIPALITY

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PROJECT C00059 - SWARTLAND MUNICIPALITY: ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2014/2015

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
Draft	Draft issued for external review	R Kuffner Author	JT Human A Reviewer	Approval	29/09/2015	Approval	
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FOREWORD:

Swartland Municipality is required in terms of Section 18 of the Water Services Act, 1997 (Act No.108 of 1997), as well as the “Regulations relating to compulsory national standards and measures to conserve water”, as issued in terms of sections 9(1) and 73(1)(j) of the Water Services Act, to report on the implementation of its WSDP during each financial year and to include a water services audit in such an annual report.

The water services audit is designed to monitor the compliance of Swartland Municipality with these regulations. It also assists the communities within Swartland Municipality’s Management Area and the DWS to assess how well the Municipality is performing relative to their stated intentions and their capacity. The Water Services Audit Report can be seen as an annexure to the Municipality’s Annual Report. The Annual Report is compiled as required by the Local Government Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121).

Swartland Municipality is performing very well with regard to drinking water quality management, to the extent that the Municipality was awarded Blue Drop Status (>95%) for both their distribution systems in 2012 and received an overall Blue Drop Score of 95.24%. The Municipality was 10th on the 2012 Blue Drop Provincial Performance Log for the Western Cape, and in 22nd position on the National Performance Log.

The 2013 Blue Drop Risk Profile Progress Report of the DWS is further the product of a “gap” year, whereby progress is reported in terms of the improvement or decline in the risk position of the particular distribution system and WTW, compared to the previous year’s risks profile. Both systems managed to achieve a Blue Drop Risk Rating below 20%. The DWS commended the Swartland Municipality and the West Coast District Municipality for their combined efforts in lowering the Blue Drop Risk Ratings of both systems and the West Coast District Municipality in its efforts to comply with the draft Regulation 17 requirements.

Swartland Municipality managed to maintain its municipal Green Drop Score at 75.3%, making an above average performance. The Municipality is currently busy with the construction of the new regional Riebeek Kasteel WWTW, which will improve the Municipality’s overall Green Drop Scores, as well as the Green Drop Scores for the Riebeek Kasteel and Riebeek Wes systems.

The implementation of the Municipality’s Water Demand Management Strategy has been extremely successful, with an overall water requirement increase of only 1.93% per annum from 2008/2009 to 2014/2015. The overall NRW for the 2014/2015 financial year was also low at 944.915 MI (15.93%).

A comprehensive Performance Management System and Customer Services and Complaints system are also in place. The SDBIP is the process plan and performance indicator / evaluation process for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

The Municipality has maintained a high and consistent level of service to its urban water consumers. After hour emergency requests are being dealt with by the control room on a twenty four hour basis. Requests are furthermore captured on an electronic mail or works-order system to ensure the execution thereof.

Swartland Municipality also successfully completed various capital projects over the last financial year. The capital budget expenditure, for the 2014/2015 financial year, was R3.365 million (97.5% of the budget) for the water infrastructure projects and R42.316 million (100.1% of the budget) for the sewerage infrastructure projects.



SWARTLAND MUNICIPALITY
WATER SERVICES AUDIT FOR 2014/2015

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ABBREVIATIONS AND DEFINITIONS

ADWF	Average Dry Weather Flow
BDS	Blue Drop System
BSP	Bulk Supply Pipeline
BWP	Bulk Water Pipeline
CES	Community Engineering Services
CESA	Consulting Engineers South Africa
COD	Chemical Oxygen Demand
CPM	Contract Programme Manager
CRC	Current Replacement Cost
DLG	Department of Local Government
DRC	Depreciated Replacement Cost
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EQS	Equitable Share
ESETA	Energy and Water Services Sector Education and Training Authority
ESKOM	Electricity Supply Commission
GAMAP	General Accepted Municipal Accounting Practice
GDIP	Green Drop Improvement Plan
GDS	Green Drop System
GIS	Geographic Information Systems
GRAP	Generally Recognized Accounting Practice
GWSA	Green Water Services Audit
IAM	Infrastructure Asset Management
ICT	Information and Communications Technology
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
ILI	Infrastructure Leakage Index
IRP	Integrated Resource Plan
IWA	International Water Association
KPI	Key Performance Indicator
LGTAS	Local Government Turn Around Strategy
m	Metre
MAP	Mean Annual Precipitation
MFMA	Municipal Finance Management Act
MIG	Municipal Infrastructure Grant



ABBREVIATIONS AND DEFINITIONS / Continue

MISA	Municipal Infrastructure Support Agent
MI	Mega Litre
MI/a	Mega Litre per Annum
MI/d	Mega Litre per Day
MTCNA	Mikro Tik Certified Network Associate
MTCRE	Mikro Tik Certified Routing Engineer
MTCWE	Mikro Tik Certified Wireless Engineer
NQF	National Qualifications Framework
NRW	Non-Revenue Water
OTH	Other
PAT	Progress Assessment Tool
PRP	Pipe Replacement Potential
PRV	Pressure Reducing Valve
PVC	Polyvinyl Chloride
RBIG	Regional Bulk Infrastructure Grant
RDP	Reconstruction and Development Programme
RES	Reservoir
RSA	Republic of South Africa
RUL	Remaining Useful Life
SABS	South African Bureau Standard
SALGA	South African Local Government Association
SANS	South African National Standard
SCC	Sewer Consumer Connections
SDBIP	Service Delivery and Budget Implementation Plan
SPS	Sewer Pump Station
SRP	Sewer Reticulation Pipeline
STW	Sanitation Treatment Works
TMG	Table Mountain Group
UAW	Unaccounted for Water
VAT	Value Added Tax
VIP	Ventilated Improved Pit
WC/WDM	Water Conservation / Water Demand Management
WCC	Water Consumer Connections
WCDM	West Coast District Municipality
WDM	Water Demand Management



ABBREVIATIONS AND DEFINITIONS / Continue

WMA	Water Management Area
WPS	Water Pump Station
WRM	Water Resource Management
WRP	Water Reticulation Pipeline
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSI	Water Services Institution
WSP	Water Services Provider
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works



KEY TERMS AND INTERPRETATIONS

KEY TERMS	INTERPRETATIONS
Current replacement cost (CRC)	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset. GAMAP defines CRC as the cost the entity would incur to acquire the asset on the reporting date.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Financial Year	Financial year means in relation to- <ul style="list-style-type: none"> • a national or provincial department, the year ending 31 March; or • a municipality, the year ending 30 June.
Integrated Development Plan (IDP)	An IDP is a legislative requirement for municipalities which identifies the municipality's key development priorities; formulates a clear vision, mission and values; formulates appropriate strategies; shows the appropriate organisational structure and systems to realise the vision and the mission and aligns resources with the development priorities.
Municipal Finance Management Act (MFMA)	Municipal Finance Management Act, 2003 (Act No. 56 of 2003)
MIG	A conditional grant from national government to support investment in basic municipal infrastructure.
Remaining useful life (RUL)	The time remaining over which an asset is expected to be used.
Service Delivery Budget Implementation Plan (SDBIP)	The SDBIP is a management, implementation and monitoring tool that enable the Municipal Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the Municipal Manager, and for the community to monitor the performance of the municipality.
Strategic Framework for Water Services	The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a strategic framework for its implementation over the next ten years.
Water Conservation	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
Water Demand Management	The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability.
Water Services Authority (WSA)	A water services authority means a municipality with the executive authority and the right to administer water services as authorised in terms of the Municipal Structures Act, 1998 (Act No.117 of 1998). There can only be one water services authority in any specific area. Water services authority area boundaries cannot overlap. Water services authorities are metropolitan municipalities, district municipalities and authorised local municipalities.



KEY TERMS AND INTERPRETATIONS / Continue

KEY TERMS	INTERPRETATIONS
Water Services Development Plan (WSDP)	A plan to be developed and adopted by the WSA in terms of the Water Services Act, 1997 (Act No.108 of 1997)
WSDP Guide Framework	Modular tool which has been developed by the DWS to support WSAs in complying with the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance.
Water Services Provider (WSP)	A WSP means any person or institution that provides water services to consumers or to another water services institution, but does not include a water services intermediary.
Unaccounted for Water (UAW) SABS 0306 definition	UAW is the difference between the measured volume of water put into the water distribution system and the total volume of water measured to authorised consumers whose fixed property address appears on the official list of the WSA.
Water Balance	The water balance is the difference between the measured volume of potable water put into a water distribution system and the total volume of potable water measured at any intermediate point in the water distribution system. This is a statement setting out the amount of water flowing in and flowing out on an area-by-area basis.



SWARTLAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2014/2015

EXECUTIVE SUMMARY

Section 62 of the Water Services Act requires the Minister to monitor every WSI in order to ensure compliance with the prescribed national standards. This regulation requires a WSA to complete and submit a Water Services Audit every year.

The Water Services Audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. The Water Services Act allows the audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. The Water Services Audit also assists local communities and DWS to assess how well WSAs are performing relative to their stated intentions and their capacity.

The Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2014/2015 financial year, and can be seen as an annexure to Swartland Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121).

Availability of the Water Services Audit Report: The Water Services Audit Report is a public document and must be made available within four months after the end of each financial year and must be available for inspection at the offices of the WSA. It is also recommended that the document be placed on the Municipality's website and that copies of the document be placed at the public libraries. The Water Services Audit Report also needs to be made available to the Minister of the DWS, the Minister of the Department of Cooperative Governance, the Province and to SALGA, as required by the Water Services Act, 1997.

The Water Services Audit Report contains the following detail information:

- The Municipality's performance with regard to their KPIs for water and sewerage services for the 2014/2015 financial year, as included in the Municipality's SDBIP.
- The Municipality's Performance with regard to DWS's Blue and Green Drop Assessments. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. Green drop status is awarded to those WWTWs that comply with 90% criteria on key selected indicators on waste water quality management.
- DWS's Scorecard for assessing the potential for WC/WDM efforts in the Municipality.
- Information to be included in a Water Services Audit as stipulated in regulations under section 9 of the Water Services Act, "Guidelines for Compulsory National Standards".
- Information on the implementation of the various WSDP activities, as included under the thirteen WSDP Business Element Chapters.

The Municipality has a comprehensive Performance Management System in place. The SDBIP is the process plan and performance indicator / evaluation for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.



The following water and sanitation related investigations were successfully completed during the last financial year.

- The Water Services Audit Report for the 2013/2014 financial year was finalised and approved by Council as part of the Annual Report. The non-revenue water balance models were updated for each of the distribution systems (Up to the end of June 2014) as part of the Water Services Audit Process.
- The Municipality is busy with the updating of their WSDP for the 2015/2016 financial year. The eWSDP website is populated and the WSDP-IDP Sector Input Report and Module 2 (Base Data and Compliance Data) and Module 3 (Strategies) documents are compiled.
- Swartland Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). The effluent discharged by industrial consumers is also monitored by Swartland Municipality.
- Targeted assessment of the skills and knowledge of the personnel was done and a new organogram was drafted. The new organogram was approved by the Council on the 28th of August 2014.
- The current detail Technical Process Audits for all the WWTWs were updated during 2014/2015, as required by the DWS's Green Drop Process.

The following awards / acknowledgements were also received by the Municipality:

- The West Coast District Municipality and Swartland Municipality were congratulated on their performance during the 2012 Blue Drop Assessment by the DWS, where Swartland Municipality achieved Blue Drop Status (>95%) for both their systems, Malmesbury and Moorreesburg. The Municipality's overall Blue Drop Score was 95.24 % and the Municipality was 10th on the 2012 Blue Drop Provincial Performance Log (Western Cape) and 22nd on the 2012 National Performance Log.

The 2013 Blue Drop Risk Profile Progress Report of the DWS is the product of a “gap” year, whereby progress is reported in terms of the improvement or decline in the risk position of the particular distribution system and WTW, compared to the previous year's risks profile. The Swartland Municipality and the West Coast District Municipality were commended by the DWS for their combined efforts in lowering the Blue Drop Risk Ratings of both systems. Both the Blue Drop systems of Malmesbury and Moorreesburg managed to attain low risk scores of below 20%.

- Swartland Municipality is also performing above average with regard to wastewater quality management, with an overall Green Drop Score of 72.38% for DWS's 2013 assessment. The highest Green Drop Score of 75.49% was for the Malmesbury WWTW and drainage system and the lowest Green Drop Score of 60.27% was for the Chatsworth WWTW and drainage system.
- Swartland Municipality achieved 100% expenditure in the 2014/2015 financial year on their MIG (DLG) funding received.
- Aurecon received the CESA Engineering Excellence award for the Malmesbury WWTW for projects between R50M and R250M.

Quantity of Water Services Provided (Water Balance)

Detail water balance models are in place for each of the distribution systems in Swartland Municipality's Management Area. These models include the volume of potable water supplied to the Swartland Municipality by the West Coast District Municipality, the volume of water abstracted from the Municipality's own resources and the billed metered consumption for each of the distribution systems. The volume and percentage of water losses and non-revenue water were also calculated from the available data. The flows at the WWTWs are also recorded by the Municipality.

Water Services Delivery Profile

The number of consumer units per category or user type is available for each of the distribution systems. All the households in the urban areas of Swartland Municipality's Management Area are provided with water connections inside the houses. Informal areas are provided with shared services as an intermediary measure. Swartland Municipality is committed to work with the private landowners to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services still below RDP standard.

Cost Recovery and Free Basic Services

A detail four block step tariff system is implemented by Swartland Municipality. This tariff system discourages the wasteful or inefficient use of water. It is expected that this tariff structure will continue to be implemented in the future. The sustainable supply of potable water is however becoming an ever increasing challenge, due to the huge bulk infrastructure needs of the West Coast District Municipality over the next number of years.

The first six (6) kl of water is provided free to all residential consumers. Swartland Municipality's tariffs support the viability and sustainability of water supply services to the poor through cross-subsidies (where feasible). Free basic water and sanitation services are linked to the Municipality's Indigent Policy and all indigent households therefore receive free basic water and sanitation services. This implies that either the equitable share is used to cover this cost, or higher consumption blocks are charged at a rate greater than the cost in order to generate a surplus to cross-subsidies consumers who use up to six (6) kilolitres per month.

The operational budget of the past six financial years for water and sanitation services is summarised in the table below:

Service	Expenditure / Income	Actual 14/15	Actual 13/14	Actual 12/13	Actual 11/12	Actual 10/11	Actual 09/10
Water	Expenditure	R40 004 208	R43 191 560	R42 118 578	R29 681 838	R28 128 643	R23 694 891
	Income	-R45 463 662	-R38 108 941	-R37 287 493	-R30 607 892	-R27 231 393	-R24 820 317
	Surplus / Deficit	-R5 459 454	R5 082 619	R4 831 085	-R926 054	R897 250	-R1 125 426
Sanitation	Expenditure	R28 769 500	R36 243 921	R29 200 700	R24 269 287	R9 708 230	R12 771 542
	Income	-R41 824 387	-R40 055 927	-R34 775 432	-R24 318 404	-R21 796 567	-R22 047 507
	Surplus / Deficit	-R13 054 887	-R3 812 006	-R5 574 732	-R49 117	-R12 088 337	-R9 275 965

Water Quality

Operational and Compliance Water Quality sampling programmes are implemented by the Swartland Municipality and the West Coast District Municipality. Some additional water quality compliance sampling points were recommended for the Swartland Municipality in their Water Safety Plan and this Water Services Audit Report. Operational and Compliance Final Effluent Quality sampling programmes are also implemented by Swartland Municipality at the various WWTWs.

The percentage compliance of the water quality samples taken over the period July 2014 to June 2015 for the various distribution systems are summarised in the table below (DWS's 2014 Blue Drop Limits).

Distribution System	Acute Health – 1 Chemical	Acute Health – 1 Microbiological	Acute Health – 2 Microbiological	Chronic Health	Aesthetic	Risk assessment defined Health (Acute or Chronic)	Operational Efficiency
Withoogte Final	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	91.9%
Moorreesburg	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Koringberg	100.0%	96.2%	100.0%	100.0%	100.0%	100.0%	96.1%
Swartland Final	100.0%	95.7%	100.0%	100.0%	100.0%	99.0%	95.6%
Malmesbury	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.8%
Darling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	88.4%
Riebeek Kasteel	100.0%	87.5%	100.0%	100.0%	100.0%	98.6%	95.0%
Riebeek Wes	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



Distribution System	Acute Health – 1 Chemical	Acute Health – 1 Microbiological	Acute Health – 2 Microbiological	Chronic Health	Aesthetic	Risk assessment defined Health (Acute or Chronic)	Operational Efficiency
Yzerfontein	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	82.1%
Riverlands	100.0%	100.0%	100.0%	100.0%	85.7%	100.0%	90.9%
Abbotsdale	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	75.0%
Chatsworth	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%
Kalbaskraal	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The overall percentage compliances of the final effluent samples taken over the period July 2014 to June 2015 at all the WWTWs are summarised in the table below.

WWTW	Microbiological	Chemical	Physical
Malmesbury	100.0%	97.9%	100.0%
Darling	75.0%	95.8%	86.1%
Moorreesburg	91.7%	68.1%	75.0%
PPC	63.6%	79.5%	78.8%
Chatsworth	100.0%	83.3%	95.8%
Kalbaskraal	100.0%	45.8%	95.8%
Koringberg	100.0%	20.8%	66.7%
Riebeek Kasteel	100.0%	68.2%	100.0%
Riebeek Wes	100.0%	83.3%	95.8%
Overall Compliance percentage	92.5%	75.7%	89.6%

WC/WDM

The implementation of Swartland Municipality’s WDM Strategy has been extremely successful and the Municipality was able to reduce the water requirements of the towns significantly. The average annual growth percentage in water requirements for Swartland Municipality over the period 2008/2009 to 2014/2014 was only 1.93%/a. The overall percentage of non-revenue water for Swartland Municipality for the 2014/2015 financial year was only 15.93%.

The table below gives a summary of the non-revenue water for the various distribution systems in Swartland Municipality’s Management Area.

Description	Unit	14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Koringberg	Volume	10.221	7.660	16.710	0.802	13.358	40.201
	Percentage	14.77%	13.58%	26.62%	1.67%	22.28%	46.87%
	ILI	0.97	0.75	1.60	0.07	1.24	3.74
PPC	Volume	10.743	4.128	15.737	25.236	23.476	22.318
	Percentage	22.13%	8.49%	26.74%	39.68%	36.43%	35.70%
Riebeek Wes	Volume	24.966	-8.750	22.376	18.768	52.437	38.774
	Percentage	11.93%	-4.75%	11.98%	9.96%	24.48%	20.80%
	ILI	1.50	-0.46	1.39	1.15	3.38	2.50
Riebeek Kasteel	Volume	62.43	57.457	52.455	19.488	23.597	5.624
	Percentage	18.95%	19.10%	18.43%	7.68%	8.96%	2.53%
	ILI	2.22	2.09	1.93	0.70	0.65	0.15
Yzerfontein	Volume	34.235	6.907	22.302	43.611	50.227	40.776
	Percentage	9.32%	2.21%	7.12%	13.78%	15.68%	13.44%
	ILI	0.97	0.19	0.66	1.27	1.44	1.16
Darling	Volume	72.554	23.180	20.477	45.687	47.637	55.715
	Percentage	10.37%	3.62%	3.03%	6.33%	6.81%	8.96%
	ILI	1.16	0.21	0.32	0.74	0.82	0.96



Description	Unit	14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Moorreesburg	Volume	113.346	61.799	86.457	131.849	93.032	131.529
	Percentage	13.18%	7.93%	11.01%	15.93%	12.21%	16.49%
	ILI	1.39	0.86	1.09	1.55	1.18	1.67
Malmesbury	Volume	616.42	524.438	741.701	559.375	595.113	359.994
	Percentage	18.40%	16.70%	23.55%	17.97%	18.92%	12.45%
	ILI	3.05	2.71	3.88	2.82	3.35	2.01
TOTAL	Volume	944.915	676.819	978.215	844.816	898.877	694.931
	Percentage	15.93%	12.39%	17.73%	15.27%	16.26%	13.44%
	ILI	2.40	1.77	2.56	2.17	2.56	1.82

Note: Infrastructure Leakage Index (ILI) for Developed Countries = 1 – 2 Excellent (Category A), 2 – 4 Good (Category B), 4 – 8 Poor (Category C) and > 8 – Very Bad (Category D)

Category A = No specific intervention required.

Category B = No urgent action required although should be monitored carefully.

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

Water Services Infrastructure Management

The CRC, DRC, RUL and Age distribution of the water and sewerage infrastructure in Swartland Municipality's Management Area is summarised in the table below (June 2015):

Asset Type	CRC	DRC	%CRC / DRC		
Water Infrastructure	R643 706 489	R273 555 132	42%		
Sewerage Infrastructure	R670 127 585	R403 221 971	60%		
Remaining Useful Life					
Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Water Infrastructure	R13 636 100	R17 001 033	R113 992 392	R66 638 455	R432 438 510
Sewerage Infrastructure	R61 629 026	R36 260 522	R134 563 525	R65 282 260	R372 392 252
Age Distribution					
Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Water Infrastructure	R38 104 015	R40 129 665	R45 036 383	R86 401 597	R434 034 829
Sewerage Infrastructure	R212 024 992	R87 448 280	R26 306 962	R53 175 293	R291 172 058

The above table means that 58% of the water infrastructure and 40% of the sewerage infrastructure has been consumed. It is important for Swartland Municipality to allocate adequate funds for the rehabilitation and maintenance of their existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality. All possible external sources of funding to assist with the development of the bulk infrastructure and additional sources need to be identified.

Associated Services

All schools and medical facilities in Swartland Municipality's Management Area are supplied with adequate water and sanitation services.

Water Resources

Treated water is supplied to Malmesbury, Moorreesburg, Yzerfontein, Darling, Riebeek Kasteel, Riebeek Wes, Koringberg and PPC by the West Coast District Municipality, from their Withoogte and Voëlvei WTWs, through the District Municipality's two bulk water distribution systems. A Service Level Agreement between the West Coast District Municipality and Swartland Municipality is in place for the provision of bulk potable water to the various towns.

The supply from Paardenberg Dam is to supplement the supply to Malmesbury, Abbotdale, Kalbaskraal, Riverlands and Chatsworth from the Municipality's own local sources. Three boreholes at Riverlands are also used as supplementary sources.

In order to ensure sustainable economic development in the West Coast region the West Coast District Municipality started with a comprehensive study in 2007 to identify a sustainable long term alternative water source for the region. Various alternative sources and combinations thereof were evaluated and eventually a 25.5 MI/day sea water desalination plant in the Saldanha Bay area was identified as the most cost beneficial alternative and partial funding for the project was obtained from the Regional Bulk infrastructure Grant (RBIG) programme from the DWS.

The West Coast District Municipality is therefore proposing to construct and operate a sea water desalination plant in the Saldanha Bay area using sea water reverse osmosis (SWRO) technology. The intake capacity of the plant will be approximately 60 MI/d (21.9 million MI/a) producing 25.5MI/d (9.3 million MI/a) at final capacity. Approximately 36 MI/d (13 million MI/a) brine will be discharged into the sea. It will have a lifespan of 25 years with the potential of an extended lifespan. The plant will be constructed in three phases of 8.5 MI/d to reach the full capacity by 2026. All infrastructure however will be constructed for the full capacity in the first construction phase.

The environmental screening and technical evaluation reduced the ten possible sites, which were originally identified, to two proposed sites to be evaluated, i.e. the site at Arcelor Mittal in the Industrial Development Zone (IDZ) of Saldanha Bay and a site in Danger Bay. The Danger Bay site was identified as the most suitable site and the EIA approval was obtained during August 2013 for this site and the concomitant bulk infrastructure.

The West Coast District Municipality has already exceeded their current allocation of 22.99 million MI/a from the Berg River System for the last eight years. The West Coast District Municipality therefore also applied to the DWS in December 2013 to increase the allocation from the System to initially 18.087 million m³/a for the Withoogte supply area, which is to be increased to 30.3 million m³/a by 2033, and to 6.39 million m³/a for the Swartland supply area (to be increased to 11.1 million m³/a by 2033).

The levels of salinity in the Berg River have increased dramatically to the point where the level of assurance of 98% cannot be reached without major engineering effort. Urgent measuring devices must be put in place to monitor the Berg River, to find the reason for the high salinity readings and to mitigate these circumstances. Additional factors will have to be addressed through further investigations to determine the sources of contamination and to include these in the management options at Misverstand.

Although the modelling results from the 'Analysis of Management Options at Misverstand Weir to mitigate the potential impact on salinity of the Berg Water Project and Voëlvlei Augmentation Scheme (DWS, 2006) Study indicated that the incremental impact of the Berg Water Project and the Voëlvlei Augmentation Scheme could be mitigated through the provision of an additional 250 000 m³ of off-channel storage capacity, this re-analysis shows that the desired 98% level of assurance would not be achievable. To obtain a 98% level of assurance an additional 0.7 million m³ of storage would be required over and above the readily available 0.5 million m³ at Withoogte.

DWS's Reconciliation Strategies, as completed during 2010/2011, indicated that the current water sources do not have adequate supply to cater for the medium and longer term future water requirements of the various towns. The DWS is currently busy with the updating of these Reconciliation Strategies.

Institutional Arrangement Profile

Swartland Municipality is the WSA for the entire Municipal Management Area. A Service Level Agreement is in place with the West Coast District Municipality for the provision of bulk water to most of the towns in Swartland Municipality's Management Area. The Municipal staff is continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled annually and the specific training needs of the personnel, with regard to water and wastewater management are determined annually.

Social and Customer Services Requirements

A comprehensive Customer Services and Complaints system is in place at Swartland Municipality and the Municipality has maintained a high and a very consistent level of service to its urban water consumers. After hour emergency requests are being dealt with by the control room on a twenty four hour basis.

Barriers implemented by Swartland Municipality against contamination and deteriorating water quality include the following:

- Service Delivery Agreement between the West Coast District Municipality and Swartland Municipality. A Monitoring Committee is also in place.
- Protection at points of abstraction such as Paardenberg Dam and the boreholes (Abstraction Management).
- Protection and maintenance of the distribution systems. This includes ensuring an adequate disinfectant residual at all times, rapid response to pipe bursts and other leaks, regular cleaning of reservoirs, keeping all delivery points tidy and clean, etc.

Three other important barriers implemented by Swartland Municipality against poor quality drinking water that are a prerequisite to those listed above are as follows:

- A well informed Council and municipal managers that understand the extreme importance of and are committed to providing adequate resources for continuous professional operation and maintenance of the water supply system.
- Competent managers and supervisors in the technical department who are responsible for water supply services lead by example and are passionate about monitoring and safeguarding drinking water quality.
- Well informed community members and other consumers of water supply services that know how to protect the water from becoming contaminated once it has been delivered, that have respect for water as a precious resource and that adhere to safe hygiene and sanitation practices.



SWARTLAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2014/2015

BACKGROUND

Appointment

WorleyParsons RSA was appointed by Swartland Municipality to assist them with the compilation of their Water Services Audit Report, which form part of their annual report for the 2014/2015 financial year. The purpose of the Water Services Audit Report is to report on the implementation of Swartland Municipality's previous year's WSDP, for the 2014/2015 financial year.

The DWS developed a new "Annual Water Services Development Plan Performance- and Water Services Audit Report" template during 2014, to assist Municipalities with the drafting of their reports. WorleyParsons RSA agreed with Swartland Municipality to follow this template as far as possible.

Purpose

Section 62 of the Water Services Act requires the Minister to monitor every WSI in order to ensure compliance with the prescribed national standards. This regulation requires a WSA to complete and submit a water services audit every year. The water services audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. The Water Services Act allows the audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. The purpose of the water services audit is as follows:

- To monitor compliance with the Act and these regulations;
- To compare actual performance against targets contained in the WSDPs.
- To identify possibilities for improving water conservation and water demand management.

The Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2014/2015 financial year, and can be seen as an annexure to Swartland Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121). The Water Services Audit Report contains the following detail information:

- The Municipality's performance with regard to their KPIs for water and sewerage services for the 2014/2015 financial year, as included in the Municipality's SDBIP.
- The Municipality's Performance with regard to DWS's Blue and Green Drop Assessments. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. Green drop status is awarded to those WWTWs that comply with 90% criteria on key selected indicators on waste water quality management.
- DWS's Scorecard for assessing the potential for WC/WDM efforts in the Municipality.
- Information to be included in a Water Services Audit as stipulated in regulations under section 9 of the Water Services Act, "Guidelines for Compulsory National Standards".
- Information on the implementation of the various WSDP activities, as included under the thirteen WSDP Business Element Chapters.

A. WATER SERVICES AUTHORITY PROFILE

A.1. Map of Water Services Authority Area of Jurisdiction

Swartland Municipality is located in the West Coast Region of the Western Cape, as indicated on the figure below.



Figure A.1.1: Location of Swartland Municipality in the Western Cape

The figure below gives an overview of Swartland Municipality’s Management Area and the settlements located in the Area.

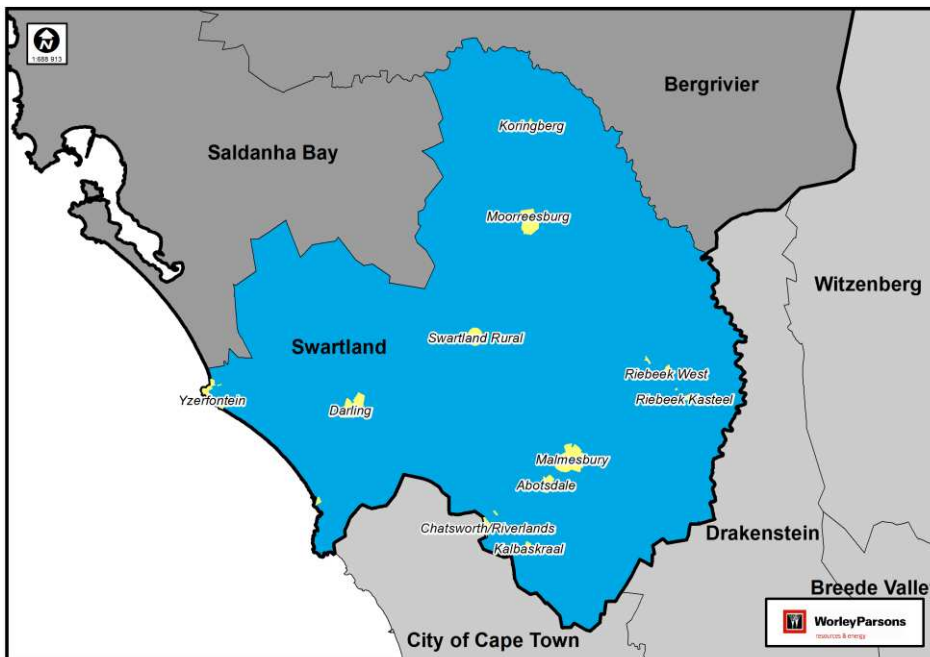


Figure A.1.2: Swartland Municipality’s Management Area



The various schemes supplied with bulk water by Swartland Municipality are discussed in more detail under Section A.3. The existing water and sewerage infrastructure of the various distribution systems are indicated on the Aerial Photos included in the Municipality's detail WSDP documents (Module 2).

A.2. Water Services Administration and Organization

Swartland Municipality is the WSA for the entire Municipal Management Area. The West Coast District Municipality acts as Bulk Water Services Provider for Swartland Municipality and provides bulk potable water to all the towns in Swartland Municipality's Management Area. Swartland Municipality's Organogram for Engineering Services are included in Annexure F. The table below gives the contact details of the persons responsible for water services management and planning within Swartland Municipality.

Table A.2.1: Water Services Administrative Structure	
Accounting Officer	
Designation	Municipal Manager
Name	Joggie Scholtz
Telephone Nr.	022-4879 400
Fax Nr.	022-4879 440
Cell Nr.	082 823 7542
Email	joggiescholtz@swartland.org.za
WSA Manager	
Designation	Director: Civil Engineering Services
Name	At Botha
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	082 823 7543
Email	at@swartland.org.za
WSP Manager	
Designation	Director: Civil Engineering Services
Name	At Botha
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	082 823 7543
Email	at@swartland.org.za
WSDP Manager	
Designation	Manager Trade Services
Name	Esmari Steenkamp
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	083 643 3455
Email	steenkampe@swartland.org.za
IDP Manager	
Designation	IDP Manager
Name	Leon Fourie
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	084 471 5442
Email	fouriel@swartland.org.za

A.3. Water Services Overview

Swartland Municipality is located within the newly established Berg-Olifants Water Management Area (WMA). The Municipality further falls within the West Coast Region of the Western Cape Province, in which the following Local Municipalities are also located:

- Matzikama Municipality;
- Cederberg Municipality;
- Bergrivier Municipality; and
- Saldanha Bay Municipality

Swartland Municipality consists of 12 individual wards, and is the only WSA within the Swartland Municipality's Management Area. It is also the Water Services Provider (WSP). Potable bulk water is however provided to Swartland Municipality by the West Coast District Municipality through their Swartland and Withoogte bulk water distribution systems. Swartland Municipality's responsibility as WSA also extends to the rural areas within its Municipal boundary, which prior to July 2003 had fallen under the jurisdiction of the West Coast District Municipality. Swartland Municipality's Management Area includes the following areas:

- The large towns of Malmesbury and Moorreesburg;
- The small towns of Yzerfontein, Darling, Koringberg, Riebeek Kasteel, Riebeek Wes;
- The rural hamlets of Abbotsdale, Riverlands, Chatsworth, Kalbaskraal; and
- The rural farm areas.

Swartland Municipality receives bulk potable water from the West Coast District Municipality. The District Municipality operates the Withoogte and Swartland bulk schemes, which is served by the Berg River as main raw water supply. The bulk supply of Withoogte is augmented by abstraction of groundwater from the Langebaan Road Groundwater Aquifer System. Both these bulk distribution schemes are cross-border schemes and supply water to Swartland Municipality, Bergrivier Municipality and Saldanha Bay Municipality. The towns in Swartland Municipality's Management Area supplied with bulk potable water by the West Coast District Municipality are Malmesbury (Abbotsdale, Riverlands, Chatsworth and Kalbaskraal), Moorreesburg, Yzerfontein, Darling, Riebeek Kasteel, Riebeek Wes, Koringberg and Ongegund (PPC).

Swartland Municipality supplements the water received from West Coast District Municipality in the Malmesbury distribution system with water from the Perdeberg Dam, which is treated by an automatic backwash rapid gravity sand filter, before it is distributed to Abbotsdale, Kalbaskraal, Riverlands and Chatsworth. A further three boreholes in Riverlands are also used as additional supply for Riverlands and Kalbaskraal. The groundwater is disinfected, before it is blended with the other potable water and distributed to the consumers in Riverlands and Kalbaskraal respectively.



Three Riverlands Boreholes



The existing internal distributions system for which Swartland Municipality is responsible are as follows:

Swartland Bulk Distribution System (Raw water from the Voëlvlei dam gravitates to the Swartland WTW. The raw water is pumped through the Swartland WTW and the final treated water from the WTW is then further pumped into the bulk distribution network by the Gouda and Kasteelberg pump stations, which are located at the WTW). The following towns receive potable water from the Swartland Bulk System.

Riebeek Wes and Ongegund: Potable water is distributed from the Kasteelberg Reservoirs on the Swartland Scheme (West Coast DM) to the Ongegund Reservoirs and the Riebeek Wes Reservoirs (Three Riebeek Wes reservoirs with a total capacity of 2.69 MI and two Ongegund reservoirs with a total capacity of 2.393 MI). Potable water is distributed from these reservoirs to the Ongegund and Riebeek Wes consumers.

Riebeek Kasteel: Potable water is distributed from the Kasteelberg Reservoirs on the Swartland Scheme (West Coast DM) via Riebeek Wes to two storage reservoirs in Riebeek Kasteel, with a combined capacity of 1.86MI. Potable water is distributed from the two reservoirs to the Riebeek Kasteel consumers.

Malmesbury (Abbotsdale, Kalbaskraal, Riverlands and Chatsworth): Potable water is supplied via the Rustfontein Pump Station to the Glen Lilly reservoirs on the Swartland Scheme. The potable water is supplemented downstream with water from the Perdeberg Dam, which is treated by an automatic backwash rapid gravity sand filter and disinfected, before it is distributed to Abbotsdale, Kalbaskraal, Riverlands and Chatsworth. Additional groundwater is also supplied from three boreholes in Riverlands, which is pumped into the reservoir (after disinfection) and blended with the other potable water, before it is distributed to the Riverlands and Chatsworth consumers.

Darling: Potable water is distributed from the Glen Lilly reservoirs on the Swartland Scheme (West Coast DM) to the Darling Reservoirs (three reservoirs with a combined capacity of 3.42MI). Potable water is distributed from the three reservoirs to the Darling consumers.

Yzerfontein: Potable water is supplied from the Swartland Scheme (West Coast DM) via the Darling Pump Station to the Yzerfontein reservoirs (2 reservoirs with combined capacity of 4.37MI). Potable water is distributed from the two reservoirs to the Yzerfontein consumers.

Withoogte Bulk Distribution System (Raw water from the Misverstand dam on the Berg River is pumped via the Misverstand pump station to the Withoogte WTWs from where treated water is distributed to the following two towns in Swartland Municipality's Management Area.

Moorreesburg: Potable water is pumped from the Withoogte WTWs (West Coast DM) to the three reservoirs in Moorreesburg with a total capacity of 8.16MI. Potable water is distributed from the three reservoirs to the Moorreesburg consumers.

Koringberg: Potable water is pumped from the Withoogte WTWs (West Coast DM) to the Koringberg reservoir of 0.27MI capacity, from where it is distributed to the consumers. The capacity of the West Coast DM's reservoir, adjacent to the Municipality's reservoir, is 0.23MI.

Swartland Municipality is responsible for the operation and maintenance of all the water and sewerage infrastructure summarised in the table below:

Table A.3.1: Summary of existing infrastructure	
Component	Description of the main functional tasks
Boreholes (3)	Bulk supply
Water Reticulation (411 km)	Distribution
Water Pump Stations (13)	Ensure adequate pressure and supply to certain areas
Reservoirs (33)	Balancing peak demands and providing some emergency storage.
Sewer Reticulation (286 km)	Collecting sewerage
Sewer Pump Stations (16)	Pumping sewerage to WWTWs
Waste Water Treatment Works (9)	WWTWs (Activated Sludge) and WWTWs (Oxidation dams).



Every WSA has a duty to ensure that at least a basic water supply and sanitation service is provided to every household within its area of jurisdiction. The definition of basic water supply and sanitation services are summarised in the table below:

Table A.3.2: Definitions of Water Supply and Sanitation Services	
Basic water supply facility	The infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections).
Basic water supply service	The provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water-use, hygiene and related practices.
Basic sanitation facility	The infrastructure necessary to provide a sanitation facility which is safe, reliable, private, protected from the weather and ventilated, keeps smells to the minimum, is easy to keep clean, minimises the risk of the spread of sanitation-related diseases by facilitating the appropriate control of disease carrying flies and pests, and enables safe and appropriate treatment and/or removal of human waste and wastewater in an environmentally sound manner.
Basic sanitation service	The provision of a basic sanitation facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices.

Following the 2011 Census survey it became evident that there was an extensive migration into the Municipal Area. The population figure for Swartland Municipality in 2001 was 72 108 (18 675 households). This figure increased substantially to 113 763 in 2011 (29 324 households).

The 2014/2015 population was estimated by applying an annual growth rate of 4.11% to the 2011 Census population figure. The resulting household and population figures are aligned to DWS's National GeoDatabase, which forms the baseline for the WSDP Guide Framework.



The tables below give an overview of the water and sanitation services in Swartland Municipality's Management Area.

Table A.3.3: Water Services Overview (Water)														
Settlement Type	2011/2012		2014/2015		Water category									
	Households	Population	Households	Population	Adequate: Formal	Adequate: Informal	Adequate: Shared Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate	Below RDP			None					
Sub-Total	0	0	0	0										
Formal Town					Adequate	Below RDP			None					
Malmesbury	9,473	35,897	10,810	40,964	P		P							
Abbotsdale	924	3,762	1,010	4,111	P		P							
Chatsworth/Riverlands	1,017	3,696	1,317	4,826	P		P							
Kalbaskraal	659	2,411	763	2,791	P		P							
Riebeek Kasteel	1,345	4,761	1,648	5,832	P		P							
Riebeek Wes	1,064	4,289	1,281	5,165	P		P							
Darling	2,800	10,420	2,971	11,058	P		P							
Moorreesburg	3,698	12,877	4,160	14,485	P		P							
Koringberg	317	1,214	357	1,366	P		P							
Yzerfontein	490	1,140	551	1,282	P		P							
Sub-Total	21,787	80,467	24,868	91,880										
Townships					Adequate	Below RDP			None					
Sub-Total	0	0	0	0										
Informal Settlements					Adequate	Below RDP			None					
Chatsworth/Riverlands	89	356	0	0										
Sub-Total	89	356	0	0										
Working towns & service centres					Adequate	Below RDP			None					
Ongegund (PPC)	79	316	80	320	P		P							
Sub-Total	79	316	80	320										
Sub-Total: (Urban)	21,955	81,139	24,948	92,200										
RURAL														
Rural / Farming					Adequate	Below RDP			None					
Farms	7,369	32,624	8,170	36,171	P		P							P
Sub-Total	7,369	32,624	8,170	36,171										
Informal Settlements					Adequate	Below RDP			None					
Sub-Total	0	0	0	0										
Sub-Total (Rural)	7,369	32,624	8,170	36,171										
TOTAL	29,324	113,763	33,118	128,371										



Table A.3.4: Water Services Overview (Sanitation)														
Settlement Type	2011/2012		2014/2015		Sanitation category									
	Households	Population	Households	Population	Adequate: Formal	Adequate: Informal	Adequate: Shared Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate	Below RDP	None							
Sub-Total	0	0	0	0										
Formal Town					Adequate	Below RDP	None							
Malmesbury	9,473	35,897	10,810	40,964	P	P								
Abbotsdale	924	3,762	1,010	4,111	P	P								
Chatsworth/Riverlands	1,017	3,696	1,317	4,826	P	P								
Kalbaskraal	659	2,411	763	2,791	P	P								
Riebeek Kasteel	1,345	4,761	1,648	5,832	P	P								
Riebeek Wes	1,064	4,289	1,281	5,165	P	P								
Darling	2,800	10,420	2,971	11,058	P	P								
Moorreesburg	3,698	12,877	4,160	14,485	P	P								
Koringberg	317	1,214	357	1,366	P	P								
Yzerfontein	490	1,140	551	1,282	P	P								
Sub-Total	21,787	80,467	24,868	91,880										
Townships					Adequate	Below RDP	None							
Sub-Total	0	0	0	0										
Informal Settlements					Adequate	Below RDP	None							
Chatsworth/Riverlands	89	356												
Sub-Total	89	356	0	0										
Working towns & service centres					Adequate	Below RDP	None							
Ongegund (PPC)	79	316	80	320	P	P								
Sub-Total	79	316	80	320										
Sub-Total: (Urban)	21,955	81,139	24,948	92,200										
RURAL														
Rural / Farming					Adequate	Below RDP	None							
Farms	7,369	32,624	8,170	36,171	P	P								P
Sub-Total	7,369	32,624	8,170	36,171										
Informal Settlements					Adequate	Below RDP	None							
Sub-Total	0	0	0	0										
Sub-Total (Rural)	7,369	32,624	8,170	36,171										
TOTAL	29,324	113,763	33,118	128,371										



B. WSDP PERFORMANCE REPORT

B.1. WSDP Reference and Status

The table below gives an overview of Swartland Municipality’s WSDP status.

Table B.1.1: WSDP and Reporting Reference						
Nr	WSDP Title and Reference	Status	Date	WSDP Year	Financial Year	Reporting year
1	Water Services Development Plan, Executive Summary for 2014/2015	Drafted:	27 March 2014	Year 1	2011/12	Year -2
		Comment submit:	Apr / May 2014	Year 2	2012/13	Year -1
		Finalised:	June 2014	Year 3	2013/14	Year 0
		Adopted:	June 2014	Year 4	2014/15	Year 1
		Published:	June 2014	Year 5	2015/16	Year 2
2	Water Services Development Plan, eWSDP, Module 2 and 3 Documents and WSDP-IDP Sector Input Report (Update 2015/2016)	Drafted:	15 May 2015	Year 1	2011/12	Year -2
		Comment submit:	Apr / May 2016	Year 2	2012/13	Year -1
		Finalised:	May 2016	Year 3	2013/14	Year 0
		Adopted:	May 2016	Year 4	2014/15	Year 1
		Published:	June 2016	Year 5	2015/16	Year 2

Legend:

- Past Financial Years
- Previous Financial Year (financial year of reporting)
- Future Years

B.2. Performance on Water Services Objectives and Strategies

The IDP is the Municipality’s single most strategic document that drives and directs all implementation and related processes. The Municipality’s budget is developed based on the priorities, programmes and projects of the IDP, after which a Service Delivery Budget Implementation Plan (SDBIP) is developed, to ensure that the organisation actually delivers on the IDP targets.

The SDBIP is the process plan and performance indicator / evaluation for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

Finally, the Annual Report, of which the Water Services Audit Report forms a part, records the success or otherwise of the previous year’s implementation.



The table below gives an overview of the Municipality's performance on the water and sanitation objectives and strategies per WSDP topic.

Table B.2.1: Performance on Water Services Objectives and Strategies per WSDP Topic														
Nr	Objective Strategy	Key Performance Indicator	Inclusion (yes/no)		WSDP Year 1		WSDP Year 2		WSDP Year 3		WSDP Year 4		WSDP Year 5	
			WSDP	IDP	FY 1	2011/12	FY 2	2012/13	FY 3	2013/14	FY 4	2014/15	FY 5	2015/16
					Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
WSDP Topic 1: Administration														
WSDP Topic 2: Demographics														
WSDP Topic 3: Service levels														
3.1	Ensure that all households have access to water within 200m in the area	% of urban households with access within 200 meters	Yes	Yes	100%	100%	100%	100%	100%	100%				
3.2	Ensure that all urban households have access to sanitation services within 200m	% of urban households with access to sanitation	Yes	Yes	100%	100%	100%	100%	100%	100%				
3.3	Ensure continuous and available water supply	% of new water connections completed within 10 working days	Yes	Yes	100%	100%	100%	100%	100%	100%	100%	100%		
WSDP Topic 4: Socio economic														
WSDP Topic 5: Water Services Infrastructure														
WSDP Topic 6: Operation Maintenance														
6.1	Ensure safety of water supply	Number of failures i.r.o. SANS 241	Yes	Yes	95%	99.58%	95%	99.83%	100%	100%	100%	100%		
6.2	Ensure effective operation and maintenance of water supply network	% of unaccounted for water	Yes	Yes	100%	100%	100%	100%	100%	92.30%	100%	97%		
6.3	Ensure effective operation and maintenance of waste water treatment works	% compliance with DWS general limits for the discharge of treated waste water	Yes	Yes	75%	81.15%	75%	87.30%	75%	88.50%	75%	84%		
WSDP Topic 7: Associated services														
WSDP Topic 8: Conservation and Demand management														
8.1	Ensure continuous and available water supply	Number of burst water mains not repaired within 10 hours after the incident has been reported	Yes	Yes			100%	100%	100%	100%	100%	100%		
WSDP Topic 9: Water Resources														
WSDP Topic 10: Financial profile														
WSDP Topic 11: Institutional Arrangements profile														
WSDP Topic 12: Social and Customer service requirements														
12.1	Ensure continuous and available water supply	Number of interruptions in continuous service to consumers, where interruptions for a single incident was greater than 48 hrs	Yes	Yes	100%	100%	100%	100%	100%	100%	100%	100%		
12.2	Ensure continuous and available water supply	Number if blockages not repaired within 10 hours after the incident has been reported	Yes	Yes					100%	100%				
12.3	Ensure continuous and available sewerage service	Number if blockages not repaired within 10 hours after the incident has been reported	Yes	Yes					100%	100%	100%	100%		
WSDP Topic 13: Needs development plan														

Legend:
 Past Financial Years
 Previous Financial Year (financial year of reporting)
 Future Years

The following water and sanitation related investigations were successfully completed during the last financial year.

- The Water Services Audit Report for the 2013/2014 financial year was finalised and approved by Council as part of the Annual Report. The non-revenue water balance models were updated for each of the distribution systems (Up to the end of June 2014) as part of the Water Services Audit Process.
- The Municipality is busy with the updating of their WSDP for the 2015/2016 financial year. The eWSDP website is populated and the WSDP-IDP Sector Input Report and Module 2 (Base Data and Compliance Data) and Module 3 (Strategies) documents are compiled.
- Swartland Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). The effluent discharged by industrial consumers is also monitored by Swartland Municipality.
- Targeted assessment of the skills and knowledge of the personnel was done and a new organogram was drafted. The new organogram was approved by the Council on the 28th of August 2014.
- The current detail Technical Process Audits for all the WWTWs were updated during 2014/2015, as required by the DWS's Green Drop Process.

The following awards / acknowledgements were also received by the Municipality:

- The West Coast District Municipality and Swartland Municipality were congratulated on their performance during the 2012 Blue Drop Assessment by the DWS, where Swartland Municipality achieved Blue Drop Status (>95%) for both their systems, Malmesbury and Moorreesburg. **The Municipality's overall Blue Drop Score was 95.24 % and the Municipality was 10th on the 2012 Blue Drop Provincial Performance Log (Western Cape) and 22nd on the 2012 National Performance Log.**

The 2013 Blue Drop Risk Profile Progress Report of the DWS is the product of a "gap" year, whereby progress is reported in terms of the improvement or decline in the risk position of the particular distribution system and WTW, compared to the previous year's risks profile. The Swartland Municipality and the West Coast District Municipality were commended by the DWS for their combined efforts in lowering the Blue Drop Risk Ratings of both systems. Both the Blue Drop systems of Malmesbury and Moorreesburg managed to attain low risk scores of below 20%.

- Swartland Municipality is also performing above average with regard to wastewater quality management, with an **overall Green Drop Score of 72.38% for DWS's 2013 assessment**. The highest Green Drop Score of 75.49% was for the Malmesbury WWTW and drainage system and the lowest Green Drop Score of 60.27% was for the Chatsworth WWTW and drainage system.

The Swartland's approach to risk abatement has received a full score for its resolve and Tender Committee approval for the implementation of the W₂RAP. At the moment, all nine (9) treatment systems remain in moderate risk positions, and the Regulator encourage the municipality to move plants towards low risk space by rigorous implementation of the W₂RAP.

- Swartland Municipality achieved 100% expenditure in the 2014/2015 financial year on their MIG (DLG) funding received.
- Aurecon received the CESA Engineering Excellence award for the Malmesbury WWTW for projects between R50M and R250M.



B.3. Status of Water Services Projects

Swartland Municipality completed the following water and sewer capital projects during the last financial year.

Table B3.1: Water Services Projects Status and Performance													
Nr	Project Title and Description	Inclusion		Total Project Cost R000	Year 0 Performance - FY2014/15			Funding Source(s)	Project Category / Type	Planned Period		Project Status	Actual Completion Year
		WSDP	IDP		FY Budget R000	Expended R000	%			From FY	To FY		
1	Vehicles Sew erage: CK 23408 Truck Replace	Yes	Yes	R1,111	R1,111	R1,111	100%	CRRF	Sew erage	2014/2015	2014/2015	Completed	2015
2	Vehicles Sew erage: CK 38709 Replace Trailer	Yes	Yes	R140	R140	R140	100%	CRRF	Sew erage	2014/2015	2014/2015	Completed	2015
3	Upgrading of WWTW Riebeek Wes and Riebeek Kasteel	Yes	Yes	R68,252	R18,120	R18,120	100%	MG	Sew erage	2010/2011	2015/2016	In Progress	-
					R21,121	R21,180	100%	CRRF					
					R1,500	R1,500	100%	Public Donation					
4	Equipment: Sew erage Telemetry	Yes	Yes	R216	R47	R45	96%	CRRF	Sew erage	2011/2012	2017/2018	In Progress	-
5	Equipment: Sew erage	Yes	Yes	R699	R30	R29	98%	CRRF	Sew erage	2011/2012	2017/2018	In Progress	-
6	Replace Lining: Reticulation Dams	No	Yes	R376	R400	R376	94%	CRRF	Water	2014/2015	2014/2015	Completed	2015
7	CK 38172 Truck Replace	Yes	Yes	R485	R485	R485	100%	CRRF	Water	2014/2015	2014/2015	Completed	2015
8	Reservoir Riebeek Kasteel 0.5Ml	Yes	Yes	R3,600	R100	R100	100%	CRRF	Water	2014/2015	2016/2017	In Progress	-
9	Secondary Chlorination	Yes	Yes	R879	R264	R263	100%	CRRF	Water	2013/2014	2016/2017	In Progress	-
10	Replacement water reticulation network	Yes	Yes	R32,213	R1,798	R1,798	100%	MG	Water	2012/2013	2017/2018	In Progress	-
					R2	R2	100%	CRRF					
11	Wesbank Water Tower: Refurbish Pumpstation	Yes	Yes	R153	R178	R153	86%	CRRF	Water	2014/2015	2014/2015	Completed	2015
12	Darling: New Reservoir (Planning)	Yes	Yes	R64	R100	R64	64%	CRRF	Water	2014/2015	2014/2015	Completed	2015
13	Equipment: Water	Yes	Yes	R337	R37	R37	100%	CRRF	Water	2011/2012	2017/2018	In Progress	-
14	Installation of Water Pump: Kalbaskraal	No	Yes	R86	R86	R86	100%	CRRF	Water	2014/2015	2014/2015	Completed	2015
Total				R108,610	R45,518	R45,489	100%						

B.4. Past Financial Year Water Services Projects Impact Declaration

The impacts of the water and sewerage capital projects, which were implemented by Swartland Municipality in the previous financial year, were as follows:

Table B.4.1: Past Financial Year Project Impact Declaration						
Nr	Project Title and Description	Project Category	Settlements which benefitted	Nr Beneficiaries		Impact Declaration
				Households	Population	
1	Vehicles Sew erage: CK 23408 Truck Replace	Vehicles	Management Area	-	-	Ensure sustainable services: Operation and Maintenance
2	Vehicles Sew erage: CK 38709 Replace Trailer	Vehicles	Management Area	-	-	Ensure sustainable services: Operation and Maintenance
3	Upgrading of WWTW Riebeek Wes and Riebeek Kasteel	WWTW	Riebeek Kasteel and Riebeek Wes	3009	11317	Increase capacity of WWTW and improve final effluent quality
4	Equipment: Sew erage Telemetry	Telemetry	Management Area	-	-	Ensure proper process control and system management
5	Equipment: Sew erage	Equipment	Management Area	-	-	Ensure adequate O&M of systems
6	Replace Lining: Irrigation Dams	Irrigation dams	Malmesbury	-	-	Prevent groundwater pollution
7	CK 38172 Truck Replace	Vehicles	Management Area	-	-	Ensure sustainable services: Operation and Maintenance
8	Reservoir Riebeek Kasteel 0.5M	Reservoirs	Riebeek Kasteel	1648	5832	Ensure adequate storage capacity for Riebeek Kasteel
9	Secondary Chlorination	Water Quality	Management Area	24948	92200	Water quality that comply with SANS:241 requirements
10	Replacement water reticulation network	Reticulation Network	Riebeek Wes, Riebeek Kasteel, Malmesbury, Darling, Yzerfontein, Kalbaskraal	13247	54622	Reduce water losses and ensure security of supply.
11	Wesbank Water Tower: Refurbish Pumpstation	Reservoirs	Wesbank (Malmesbury)	3234	12289	Ensure adequate pump capacity (Sufficient pressure at end consumers)
12	Darling: New Reservoir (Planning)	Reservoirs	Darling	2971	11058	Planning to ensure adequate storage capacity
13	Equipment: Water	Equipment	Management Area	-	-	Ensure adequate O&M of systems
14	Installation of Water Pump: Kalbaskraal	Water Pump Station	Kalbaskraal	763	2791	Ensure adequate pump capacity
TOTAL				49820	190109	

C. WATER SERVICES AUDIT REPORT

C.1. Quantity of Water Services Provided (Water Balance)

The graph below gives an overview of the total bulk water supply for the various distribution systems in Swartland Municipality’s Management Area.

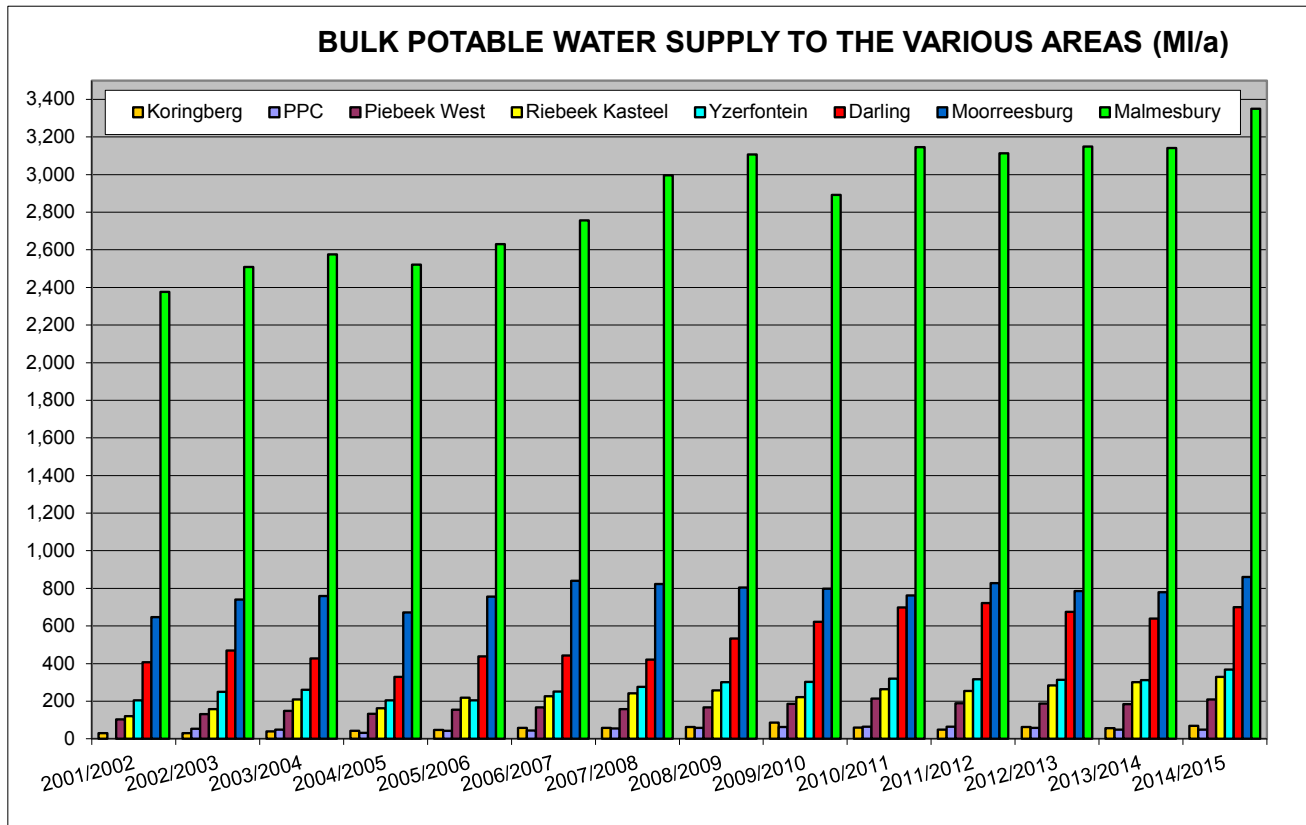


Figure C.1.1: Bulk water supply for the various distribution systems

Distribution System	Source	14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Koringberg	Misverstand Scheme	69.202	56.396	62.777	48.167	59.952	85.766
PPC	Voëlvlei Scheme	48.539	48.614	58.857	63.600	64.439	62.512
Riebeek Wes	Voëlvlei Scheme	209.227	184.210	186.744	188.371	214.216	186.384
Riebeek Kasteel	Voëlvlei Scheme	329.440	300.867	284.585	253.825	263.467	222.052
Yzerfontein	Voëlvlei Scheme	367.432	312.719	313.423	316.552	320.386	303.482
Darling	Voëlvlei Scheme	699.379	639.744	675.214	722.191	699.043	621.480
Moorreesburg	Misverstand Scheme	860.288	778.942	784.940	827.492	762.024	797.450
Malmesbury	Voëlvlei Scheme, Paardenberg dam, Boreholes	3 349.489	3 140.999	3 149.412	3 113.432	3146.105	2 892.103
Total		5 932.996	5 462.491	5 515.952	5 533.630	5 529.632	5 171.229



The table below gives an overview of the quantity of water services provided / water balance for all the distribution systems in Swartland Municipality's Management Area.

Table C.1.2: Quantity of Water Services Provided / Water Balance								
WSDP Ref. #	Regulations Ref. #	Description	m ³ per annum			Ml/d		
			Year 0	Year - 1	Year - 2	Year 0	Year - 1	Year - 2
			FY2014/15	FY2013/14	FY2012/13	FY2014/15	FY2013/14	FY2012/13
		RAW WATER						
7.2.1		Surface water purchased	0	0	0	0.00	0.00	0.00
7.1 / 7.2.2		Surface water abstracted	105,618	231,691	221,070	0.29	0.63	0.61
7.1 / 7.2.3		Ground water abstracted	28,241	16,209	12,491	0.08	0.04	0.03
7.2.14		Effluent recycled	0	0	0	0.00	0.00	0.00
7.2.4		less Raw water supplied to others	0	0	0	0.00	0.00	0.00
7.2.5		Sub-Total: Raw Water supplied	133,859	247,900	233,561	0.37	0.68	0.64
	10.2 (g) (i)	BULK WATER SUPPLY						
7.2.6		Volume of water treated	133,859	247,900	233,561	0.37	0.68	0.64
7.2.7	10.2 (a) (ii)	Purchased treated water	5,799,137	5,214,591	5,282,391	15.89	14.29	14.47
7.2.7A		Ground water not treated	0	0	0	0.00	0.00	0.00
7.2.6A		less Treated water supplied to others	0	0	0	0.00	0.00	0.00
		Sub-Total: System Input Volume	5,932,996	5,462,491	5,515,952	16.25	14.97	15.11
		WATER CONSUMPTION						
7.2.8.1		Billed Metered:	4,988,081	4,785,625	4,537,737	13.67	13.11	12.43
	10.2 (a) (i)	Domestic	3,551,971	3,273,394	3,184,102	9.73	8.97	8.72
	10.2 (a) (i)	Commercial	767,389	750,040	675,694	2.10	2.05	1.85
	10.2 (a) (i)	Industrial	2,120	3,062	2,822			
	10.2 (a) (i)	etc.	666,601	759,129	675,119	1.83	2.08	1.85
7.2.8.2		Billed Unmetered	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Domestic	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Commercial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Industrial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	etc.	0	0	0	0.00	0.00	0.00
7.2.8.3		Unbilled Metered	0	0	0	0.00	0.00	0.00
7.2.8.4		Unbilled Unmetered	11,866	10,925	11,032	0.03	0.03	0.03
	10.2 (g) (i)	Sub-Total: Authorized consumption	4,999,947	4,796,550	4,548,769	13.70	13.14	12.46
		UNACCOUNTED FOR WATER						
7.3.1		Raw water bulk loss	0	0	0	0.00	0.00	0.00
7.2.3/7.2.4		Billing losses	11,866	10,925	11,032	0.03	0.03	0.03
7.2.5		Apparent losses	158,618	113,210	164,421	0.43	0.31	0.45
7.2.5.1		Illegal connections	18,661	13,319	19,344	0.05	0.04	0.05
7.2.5.2		Inaccurate meters	93,305	66,594	96,718	0.26	0.18	0.26
7.2.5.3		Data errors	46,652	33,297	48,359	0.13	0.09	0.13
7.2.6		Real losses	774,431	552,731	802,762	2.12	1.51	2.20
	10.2 (g) (ii)	Sub-Total: Unaccounted for water	933,049	665,941	967,183	2.56	1.82	2.65
		WASTEWATER TREATMENT						
7.2.9	10.2 (a) (iii)	Total received at WWTW	2,970,312	3,019,216	2,703,436	8.14	8.27	7.41
7.2.11		Total discharged	2,400,774	2,452,572	2,192,368	6.58	6.72	6.01
7.2.13		Returned to environment	585,860	594,667	518,682	1.61	1.63	1.42
7.2.14		Recycled	1,814,914	1,857,905	1,673,686	4.97	5.09	4.59
	10.2 (a) (iv)	Quantity of water supplied not discharged to WWTW's	2,029,635	1,777,334	1,845,333	5.56	4.87	5.06

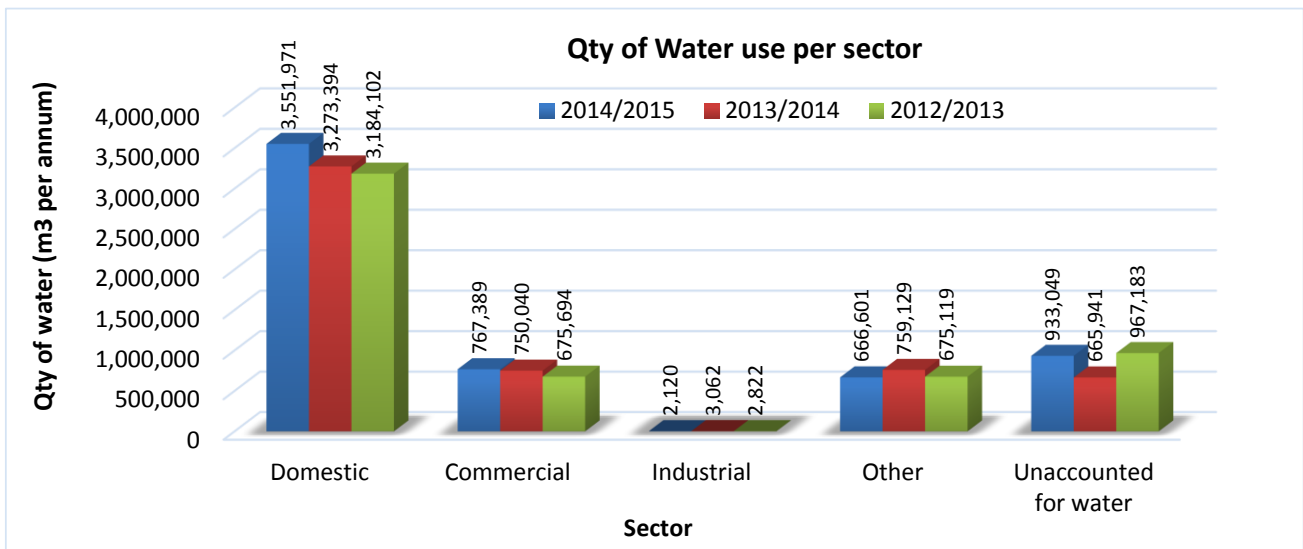


Figure C.1.2: Quantity of water services provided / water balance

Graphs of the water usage per sector for the various distribution systems within Swartland Municipality's Management Area are included as part of the water balance models in Annexure A. The table below gives a summary of the information.

Town	Year	Residential	Business & Industrial	Other	Farms	Total
Koringberg	08/09	50.193	4.588	0.306	0	55.087
	09/10	41.517	3.795	0.253	0	45.565
	10/11	42.454	3.880	0.259	0	46.594
	11/12	42.647	2.617	2.101	0	47.365
	12/13	41.440	2.698	1.929	0	46.067
	13/14	44.319	2.571	1.846	0	48.736
	14/15	52.873	3.583	2.525	0	58.981
PPC	08/09	30.389	2.478	4.679	0	37.546
	09/10	32.532	2.653	5.009	0	40.194
	10/11	33.154	2.703	5.105	0	40.963
	11/12	30.993	2.305	5.066	0	38.364
	12/13	30.921	2.261	9.938	0	43.120
	13/14	28.788	2.846	12.852	0	44.486
	14/15	31.118	1.930	4.748	0	37.796
Riebeeck Wes	08/09	107.185	39.533	0.971	0	147.690
	09/10	107.127	39.512	0.971	0	147.610
	10/11	117.410	43.305	1.064	0	161.779
	11/12	122.743	20.629	26.231	0	169.603
	12/13	122.448	22.324	19.596	0	164.368
	13/14	136.046	28.436	26.614	0	191.096
	14/15	131.796	30.236	22.229	0	184.261
Riebeeck Kasteel	08/09	174.824	51.148	0.672	1.492	228.137
	09/10	165.851	48.523	0.638	1.416	216.428
	10/11	183.815	53.779	0.707	1.569	239.870
	11/12	194.738	28.691	8.078	2.830	234.337
	12/13	193.924	27.439	6.793	3.974	232.130
	13/14	193.757	37.022	7.904	4.727	243.410
	14/15	224.115	24.410	13.490	4.995	267.010



Table C.1.3: Quantity of water used by each user sector (MI)						
Town	Year	Residential	Business & Industrial	Other	Farms	Total
Yzerfontein	08/09	216.461	15.221	16.891	0	248.573
	09/10	228.769	16.086	17.851	0	262.706
	10/11	235.259	16.542	18.358	0	270.159
	11/12	246.413	11.670	14.858	0	272.941
	12/13	257.029	10.601	23.491	0	291.121
	13/14	278.539	10.805	16.454	0	305.798
	14/15	302.994	11.351	18.852	0	333.197
Darling	08/09	272.375	147.604	4.815	0	424.793
	09/10	362.765	196.587	6.413	0	565.765
	10/11	417.677	226.345	7.383	0	651.406
	11/12	353.766	247.451	75.287	0	676.504
	12/13	357.922	182.954	113.861	0	654.737
	13/14	376.535	146.914	102.642	0	626.091
	14/15	389.988	155.304	81.533	0	626.825
Moorreesburg	08/09	457.302	194.063	32.009	10.734	694.108
	09/10	438.732	186.182	30.709	10.298	665.921
	10/11	440.755	187.041	30.851	10.346	668.992
	11/12	516.230	125.075	44.591	9.747	695.643
	12/13	502.012	131.936	57.359	7.176	698.483
	13/14	521.407	141.826	37.986	8.968	710.187
	14/15	566.974	135.372	37.202	7.394	746.942
Malmesbury	08/09	1 644.012	818.184	126.551	69.044	2 657.791
	09/10	1 566.270	779.494	120.567	65.779	2 532.109
	10/11	1 577.950	785.307	121.466	66.269	2 550.992
	11/12	1 679.448	433.374	404.285	36.950	2 554.057
	12/13	1 678.406	298.303	393.901	37.101	2 407.711
	13/14	1 694.003	382.682	502.578	36.558	2 615.821
	14/15	1 852.113	407.323	427.192	46.441	2 733.069
TOTAL	08/09	2 952.741	1 272.819	186.894	81.270	4 493.725
	09/10	2 943.563	1 272.832	182.411	77.493	4 476.298
	10/11	3 048.474	1 318.902	185.193	78.184	4 630.755
	11/12	3 186.978	871.812	580.497	49.527	4 688.814
	12/13	3 184.102	678.516	626.868	48.251	4 537.737
	13/14	3 273.394	753.102	708.876	50.253	4 785.625
	14/15	3 551.971	769.509	607.771	58.830	4 988.081

Quantity of effluent received at the WWTWs (MI/a):

A five year history of the total influent received at the Malmesbury-, Moorreesburg- and Darling WWTW is available, but it is not available for the other WWTWs. The influent received at the other WWTWs is not metered and was therefore calculated as a percentage of the billed metered consumption. The monthly flows and rainfall at the various WWTWs are also summarised in Annexure A.

The table below gives an overview of the estimated volume of effluent received at the various WWTWs.

Table C.1.4: Quantity of effluent received at the various WWTWs						
WWTWs	% of Historic Water Demands	14/15	Record : Prior (MI/a)			
			13/14	12/13	11/12	10/11
Malmesbury	N/A (Metered)	1 755.627	1 785.223	1 642.281	1 570.887	1 613.910
Moorreesburg	N/A (Metered)	451.435	451.958	323.235	322.393	358.339
Darling ⁽¹⁾	N/A (Metered)	352.744	390.035	378.518	448.715	417.091
Riebeek Wes	69%	126.772	132.756	113.085	116.687	111.304
Riebeek Kasteel	48%	127.364	116.107	110.726	111.779	114.418
Koringberg	70%	41.287	34.115	32.247	33.156	32.616
PPC	60%	22.678	26.692	25.872	23.018	24.578
Kalbaskraal	40%	26.827	25.864	25.844	25.614	21.791
Chatsworth / Riverlands	40%	65.578	56.466	51.628	45.853	35.696
Total		2 970.312	3 019.216	2 703.436	2 698.102	2 729.743

Note: (1) Volumes of effluent received at the Darling WWTW were estimated at 66% of Water Sales data for the period before 10/11.

Quantity of treated effluent returned to the water resource system:

The quantity of effluent treated by industrial consumers on their own premises and re-used by them is not known at this stage. All effluent discharged into the Municipal sewer system is however treated at the existing WWTWs and the current effluent re-used practices are as follows:

Table C.1.5: Current effluent re-used practices at the various WWTWs	
WWTWs	Current effluent re-used practices
Malmesbury	Rooiheuwels Irrigation Scheme, Irrigation of rugby and cricket fields at schools and golf course. Treated effluent not re-used is returned to the Diep River. In excess of 80% of the treated effluent is re-used.
Moorreesburg	Irrigation of rugby and cricket fields and golf course. During the summer months all treated effluent is re-used. Treated effluent not re-used is returned to the Nogo River.
Darling	Irrigation of rugby fields and golf course. During the summer months all treated effluent is re-used. Treated effluent not re-used is returned to the Groen River.
Riebeek Wes	WWTWs discharges into a farm dam next to the works from where the treated effluent is re-used for irrigation purposes.
Riebeek Kasteel	No re-use practices. Treated effluent returned into a local stream (Krom River)
Koringberg	No re-use practices. Treated effluent returned into a local stream (Brak River)
PPC	No re-use practices. Evaporate and discharges into a local stream
Kalbaskraal	No re-use practices. Evaporate
Chatsworth / Riverlands	No re-use practices. Evaporate

C.2. Water Services Delivery Profile

C.2.1. User Connection Profile

The total number of user connections in each user sector, for the consumers provided with water services by Swartland Municipality, is as follows (June 2015):

Table C.2.1.1: User Connection Profile for Water Services								
WSDP Ref. #	Category of users	Water Services						New Connections Year 0 Nr
		Year 0 FY2014/15		Year - 1 FY2013/14		Year -2 FY2012/13		
		Nr	%	Nr	%	Nr	%	
	RESIDENTIAL (DOMESTIC)							
3.3	Metered: Uncontrolled	17,674	92%	17,201	91%	17,191	92%	473
3.3	Metered: Controlled	0	0%	0	0%	0	0%	0
	Unmetered (Flat rate)	0	0%	0	0%	0	0%	0
	Communal water supply	0	0%	94	0%	94	1%	-94
	Sub-Total: Residential	17,674	92%	17,295	92%	17,285	92%	379
	EDUCATION							
3.3	Schools	31	0%	31	0%	31	0%	0
	Tertiary education facilities	0	0%	0	0%	0	0%	0
	Sub-Total: Education	31	0%	31	0%	31	0%	0
	HEALTH							
3.3	Clinics	8	0%	8	0%	8	0%	0
3.3	Hospitals	1	0%	1	0%	1	0%	0
3.3	Health Centres	1	0%	1	0%	1	0%	0
	Sub-Total: Health	10	0%	10	0%	10	0%	0
	INSTITUTIONAL							
	Public Institutions (Est)	25	0%	25	0%	25	0%	0
3.3	Magistrate Offices	2	0%	2	0%	2	0%	0
3.3	Police Stations	5	0%	5	0%	5	0%	0
3.3	Prisons	1	0%	1	0%	1	0%	0
	etc	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	33	0%	33	0%	33	0%	0
	INDUSTRIAL							
3.3	Dry industries (Incl. with Businesses)	0	0%	0	0%	0	0%	0
3.3	Wet industries	9	0%	9	0%	9	0%	0
	Sub-Total: Industrial	9	0%	9	0%	9	0%	0
	COMMERCIAL							
3.3	Businesses	806	4%	815	4%	788	4%	-9
3.3	Office Buildings (Incl. with Businesses)	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	806	4%	815	4%	788	4%	-9
	MINING							
	Mining	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	0	0%	0	0%	0	0%	0
	OTHER							
	Agriculture: raw water	0	0%	0	0%	0	0%	0
	etc	549	3%	687	4%	543	3%	-138
	Sub-Total: Other	549	3%	687	4%	543	3%	-138
	TOTAL	19,112	100%	18,880	100%	18,699	100%	232

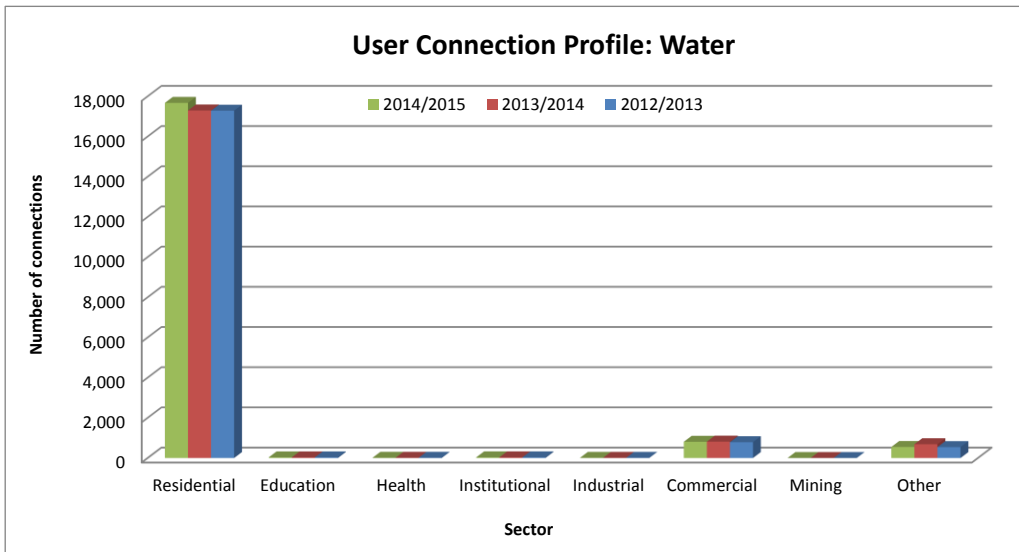


Figure C.2.1.1: User connection profile for water

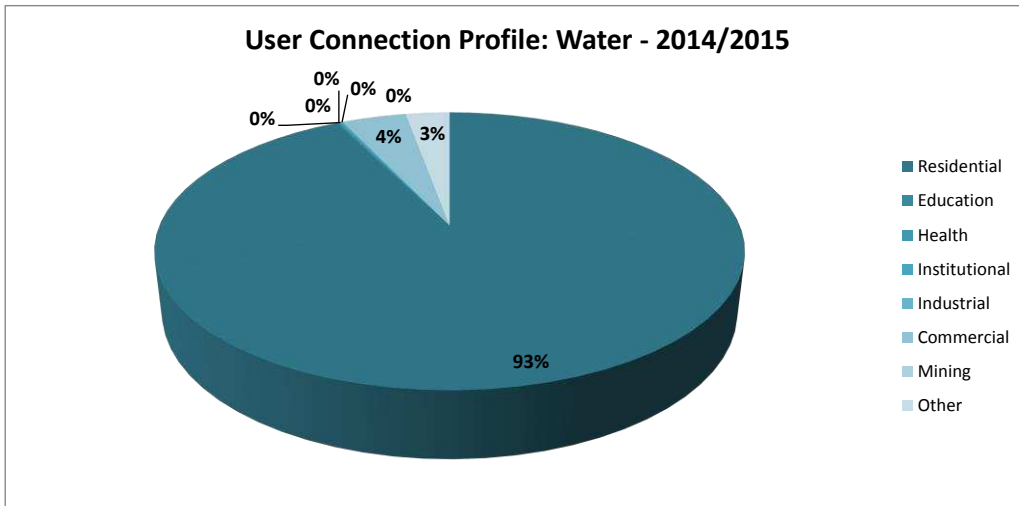


Figure C.2.1.2: User connection distribution for water – Year 2014/2015

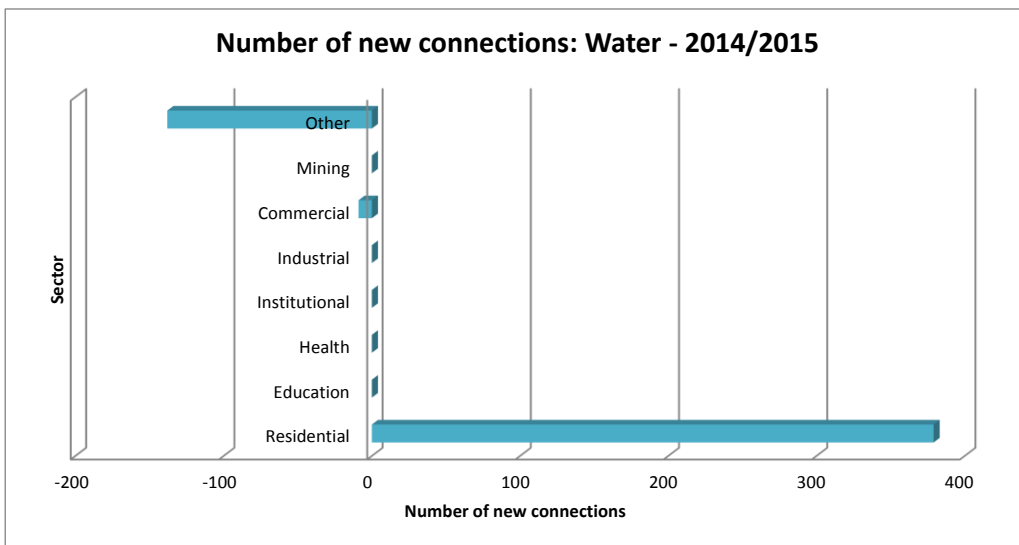


Figure C.2.1.3: Number of new water connections provided during 2014/2015



Table C.2.1.2: User Connection Profile for Sanitation Services									
WSDP Ref. #	Category of users	Water Services	Wastewater Services						New Connections Year 0
		New Connections Year 0	Year 0 FY2014/15		Year - 1 FY2013/14		Year -2 FY2012/13		
		Nr	Nr	%	Nr	%	Nr	%	
	RESIDENTIAL (DOMESTIC)								
3.3	Metered: Uncontrolled	473	17,674	92%	17,201	92%	17,191	92%	473
3.3	Metered: Controlled	0	0	0%	0	0%	0	0%	0
	Unmetered (Flat rate)	0	0	0%	0	0%	0	0%	0
	Communal water supply	-94	0	0%	0	0%	0	0%	0
	Sub-Total: Residential	379	17,674	92%	17,201	92%	17,191	92%	473
	EDUCATION								
3.3	Schools	0	31	0%	31	0%	31	0%	0
	Tertiary education facilities	0	0	0%	0	0%	0	0%	0
	Sub-Total: Education	0	31	0%	31	0%	31	0%	0
	HEALTH								
3.3	Clinics	0	8	0%	8	0%	8	0%	0
3.3	Hospitals	0	1	0%	1	0%	1	0%	0
3.3	Health Centres	0	1	0%	1	0%	1	0%	0
	Sub-Total: Health	0	10	0%	10	0%	10	0%	0
	INSTITUTIONAL								
	Public Institutions (Est)	0	25	0%	25	0%	25	0%	0
3.3	Magistrate Offices	0	2	0%	2	0%	2	0%	0
3.3	Police Stations	0	5	0%	5	0%	5	0%	0
3.3	Prisons	0	1	0%	1	0%	1	0%	0
	etc	0	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	0	33	0%	33	0%	33	0%	0
	INDUSTRIAL								
3.3	Dry industries (Incl. with Businesses)	0	0	0%	0	0%	0	0%	0
3.3	Wet industries	0	9	0%	9	0%	9	0%	0
	Sub-Total: Industrial	0	9	0%	9	0%	9	0%	0
	COMMERCIAL								
3.3	Businesses	-9	806	4%	815	4%	788	4%	-9
3.3	Office Buildings (Incl. with Businesses)	0	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	-9	806	4%	815	4%	788	4%	-9
	MINING								
	Mining	0	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	0	0	0%	0	0%	0	0%	0
	OTHER								
	Agriculture: raw water	0	0	0%	0	0%	0	0%	0
	etc	-138	549	3%	687	4%	543	3%	-138
	Sub-Total: Other	-138	549	3%	687	4%	543	3%	-138
	TOTAL	232	19,112	100%	18,786	100%	18,605	100%	326

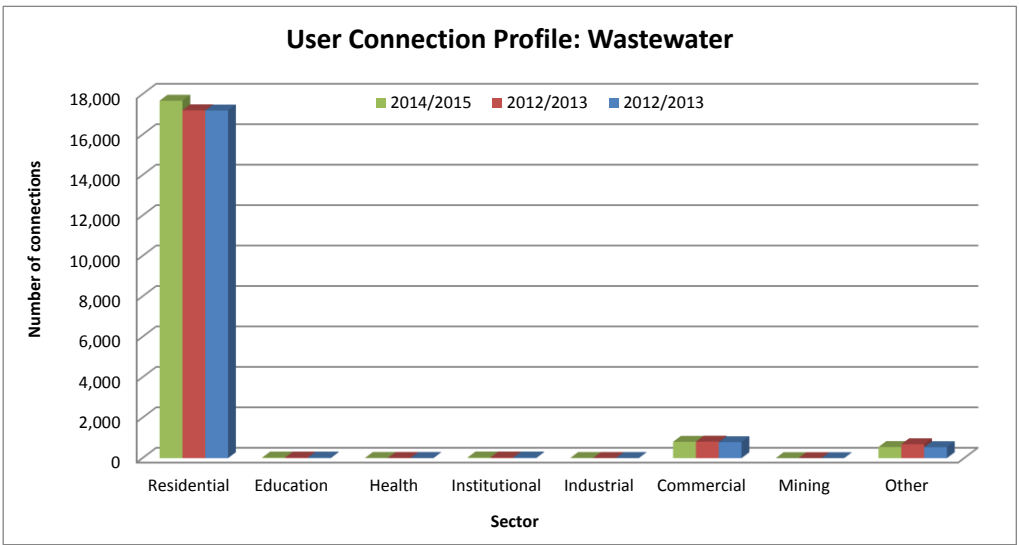


Figure C.2.1.4: User connection profile for wastewater

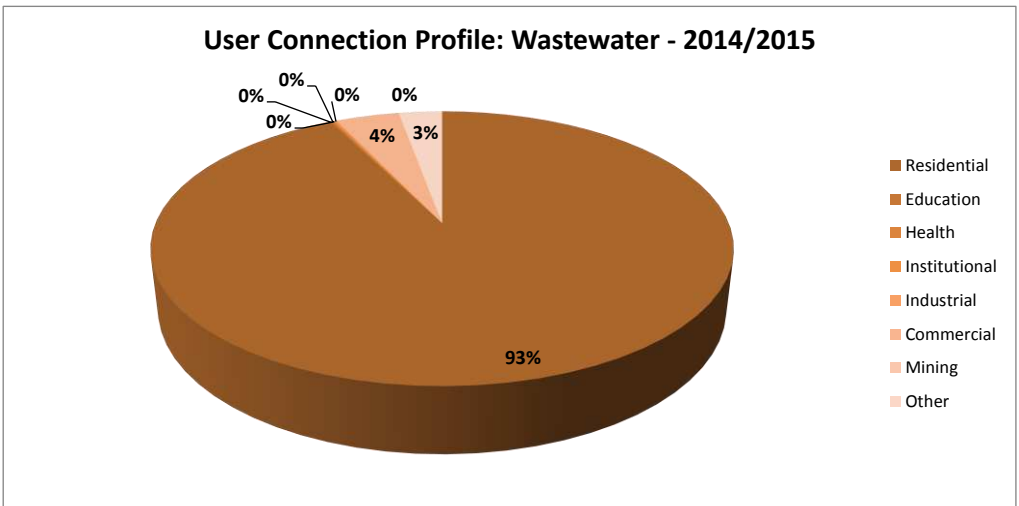


Figure C.2.1.5: User connection distribution for wastewater – Year 2014/2015

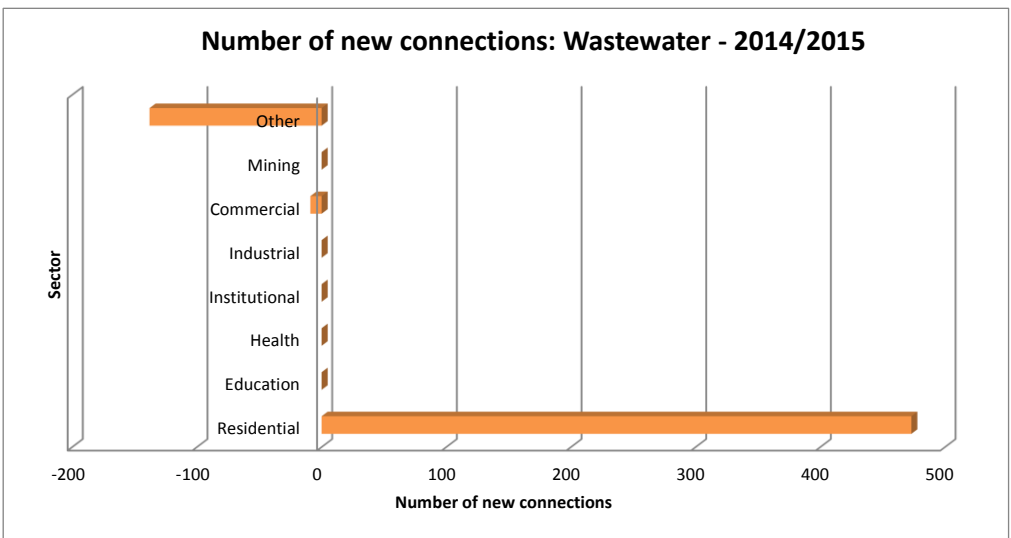


Figure C.2.1.6: Number of new wastewater connections provided during 2014/2015



The number of user connections in each user sector, for the various distribution systems in Swartland Municipality's Management Area, is as follows:

Table C.2.1.3: Number of user connections in each user sector												
Distribution System	14/15			13/14			12/13			11/12		
	Res	Bus	Other	Res	Bus	Other	Res	Bus	Other	Res	Bus	Other
Koringberg	315	9	8	311	9	8	329	9	8	372	10	8
PPC	80	3	18	79	3	18	79	3	17	79	3	14
Riebeeck Wes	694	52	31	692	45	29	689	44	28	684	43	30
Riebeeck Kasteel	1 080	32	24	1 075	32	34	1 069	32	24	1 056	33	24
Yzerfontein	1 235	22	26	1 196	21	35	1 166	21	24	1 140	21	24
Darling	2 446	107	43	2 441	105	53	2 442	105	51	2 434	100	55
Moorreesburg	2 786	193	50	2 782	196	45	2 776	195	46	2 777	192	45
Malmesbury	6 670	388	373	6 607	400	488	6 595	377	364	6 583	366	171
Abbotsdale	878	0	11	649	5	9	643	4	9	639	4	9
Kalbaskraal	420	6	10	348	6	10	405	6	10	400	4	11
Riverlands	317	2	8	312	2	8	312	1	8	312	1	9
Chatsworth	753	1	21	709	0	24	686	0	28	660	0	29
TOTALS	17 674	815	623	17 201	824	761	17 191	797	617	17 136	777	429

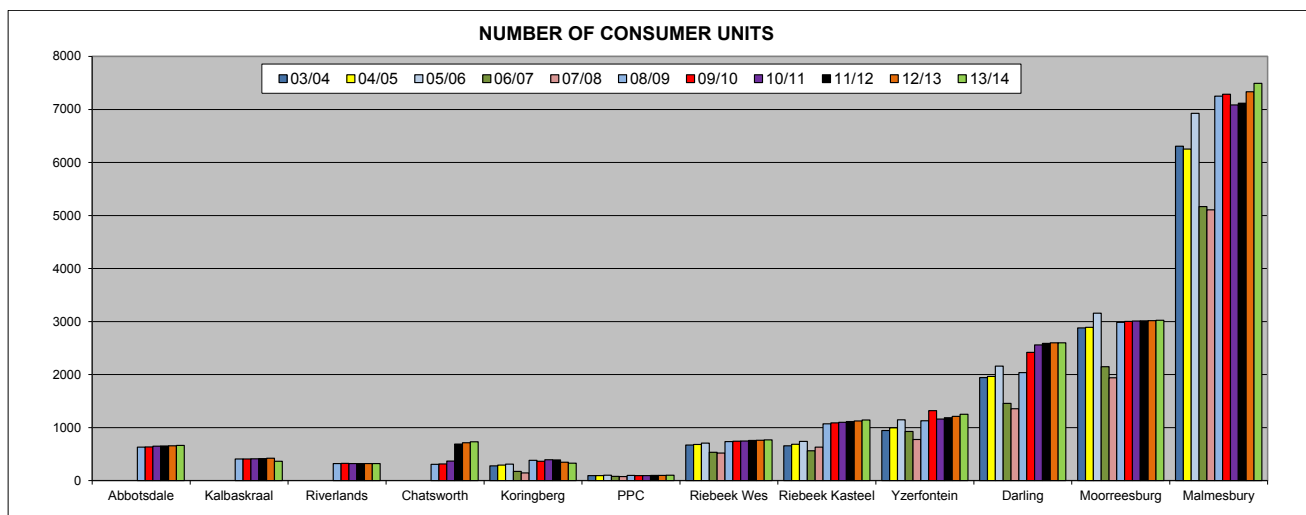


Figure C.2.1.7: Number of consumer units per distribution system

Table C.2.1.4: Total number of consumer units per town and percentage growth from 2010/2011 to 2014/2015							
Distribution System	Annual Growth % 09/10 – 14/15	14/15	13/14	12/13	11/12	10/11	09/10
Koringberg	-1.93%	332	328	346	390	394	366
PPC	1.23%	101	100	99	96	94	95
Riebeeck Wes	0.93%	777	766	761	757	746	742
Riebeeck Kasteel	0.85%	1 136	1 141	1 125	1 113	1 100	1 089
Yzerfontein	-0.57%	1 283	1 251	1 211	1 185	1 161	1 320
Darling	1.43%	2 596	2 598	2 598	2 589	2 560	2 418
Moorreesburg	0.17%	3 029	3 023	3 017	3 014	3 008	3 003
Malmesbury	0.39%	7 431	7 495	7 336	7 120	7 087	7 289
Abbotsdale	6.96%	889	663	656	652	647	635
Kalbaskraal	1.29%	436	365	421	415	411	409
Riverlands	0.18%	327	322	321	322	322	324
Chatsworth	19.88%	775	733	714	689	369	313
TOTALS	1.20%	19 112	18 785	18 605	18 342	17 899	18 003

The number of new water and sanitation connection made:

The financial system indicated that 473 new residential water and sewer connections were provided during the 2014/2015 financial year, as also indicated in Tables C.2.1.1 and C.2.1.2. All the formal households in the urban areas of Swartland Municipality's Management Area are provided with water connections inside the houses. Informal areas are supplied with shared services as an intermediary measure. Swartland Municipality is committed to work with the private landowners to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services still below RDP standard.

All industrial effluent discharge into the sewer system of Swartland Municipality is monitored. The Municipality's Water Services By-laws, with regard to the discharge of industrial effluent into the sewer system, were promulgated and all industrial consumers formally apply for the discharge of industrial effluent into the sewer system. The quality of the industrial effluent discharged by industrial consumers into Swartland Municipality's sewer system is also monitored through a comprehensive sampling programme.

C.2.2. Residential Water Services Delivery Access Profile

The table below gives an overview of the water services delivery access profile of Swartland Municipality.

Table C.2.2.1: Residential Water Services Delivery Access Profile: Water							
Census Category	Description	Year 0 FY2014/15		Year - 1 FY2013/14		Year -2 FY2012/13	
		Nr	%	Nr	%	Nr	%
	WATER (ABOVE MIN LEVEL)						
Piped (tap) water inside dwelling/institution	House connections	23,833	71%	22,867	70%	24,083	79%
Piped (tap) water inside yard	Yard connections	9,477	28%	9,017	28%	5,865	19%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	335	1%	424	1%	429	1%
	Sub-Total: Minimum Service Level and Above	33,645	100%	32,308	100%	30,377	99%
	WATER (BELOW MIN LEVEL)						
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	Standpipe connection: > 200 m < 500 m	61	0%	61	0%	61	0%
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	Standpipe connection: > 500 m < 1 000 m	18	0%	18	0%	18	0%
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	Standpipe connection: > 1 000 m	3	0%	3	0%	3	0%
No access to piped (tap) water	No services	75	0%	75	0%	75	0%
	Sub-Total: Below Minimum Service Level	157	0%	157	0%	157	1%
	Total number of households	33,802	100%	32,465	100%	30,534	100%

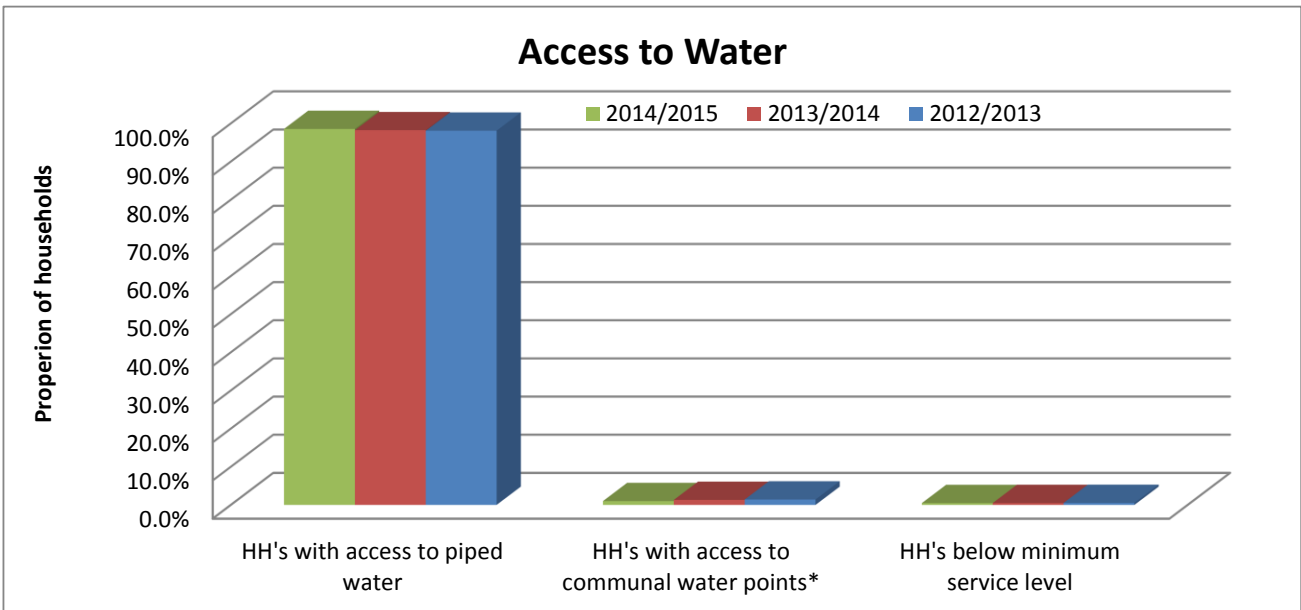


Figure C.2.2.1: Household water access profile

Number of households provided with water through communal water services:

All the households in the urban areas are supplied with water connections inside the houses. Informal areas are supplied with shared services as an intermediary measure. The only other areas where communal water services are currently still in use is on some of the farms in the rural areas.



Table C.2.2.2: Residential water service levels (Consumer Units)													
Service Level	Malmesbury	Abbotsdale	Riverlands	Chatsworth	Kalbas-kraal	Riebeek Kasteel	Riebeek Wes	Darling	Moorreesburg	Koringberg	Yzerfontein	Farms	Total
No Water Services	0	0	0	0	0	0	0	0	0	0	0	75 ³⁾	75
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	0	0	0	82 ⁴⁾	82
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)	0	0	0	0	0	0	0	0	0	0	0	157	157
Below Housing Interim ⁵⁾	0	0	0	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent ⁶⁾	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Housing Need	0	0	0	0	0	0	0	0	0	0	0	0	0
Standpipes	0	0	0	0	0	0	0	0	0	0	0	335	335
Yard Connections ⁷⁾	4 140	132	73	174	343	568	587	525	1 374	42	0	1 519	9 477
House Connections ²⁾	6 670	878	317	753	420	1 080	774	2 446	2 786	315	1 235	6 159	23 833
Total Adequate	10 810	1 010	390	927	763	1 648	1 361	2 971	4 160	357	1 235	8 013	33 645
Total per Area	10 810	1 010	390	927	763	1 648	1 361	2 971	4 160	357	1 235	8 170	33 802

- Notes: 1) There are no households in the urban areas with existing water service levels below RDP standard.
 2) Number of residential consumer units for the various towns for 2014/2015, as calculated from the financial data.
 3) Census 2011: Number of households with no access to piped (tap) water 75
 4) Census 2011: Number of households with communal services (200m – 500m) 61, (500m – 1000m) 18 and (>1000m) 3
 5) Below Housing Interim in the above table is the number of shacks in informal areas without basic water services. There are no such areas in Swartland Municipality's Management Area.
 6) Adequate Housing Permanent in the above table is the number of shacks in informal areas with communal water services. There are no such areas in Swartland Municipality's Management Area.
 7) Projected number of residential households (2014/2015) – Number of residential consumers units (2014/2015) = Estimated number of backyard dwellers.



The table below gives an overview of the sanitation services delivery access profile of Swartland Municipality.

Table C.2.2.3: Residential Water Services Delivery Access Profile: Sanitation							
Census Category	Description	Year 0 FY2014/15		Year - 1 FY2013/14		Year -2 FY2012/13	
		Nr	%	Nr	%	Nr	%
	SANITATION (ABOVE MIN LEVEL)						
Flush toilet (connected to sewerage system)	Waterborne	23,832	71%	22,737	70%	21,322	70%
	Waterborne: Low Flush	0	0%	0	0%	0	0%
Flush toilet (with septic tank)	Septic tanks / Conservancy	8,114	24%	7,783	24%	7,262	24%
Chemical toilet		54	0%	54	0%	54	0%
Pit toilet with ventilation (VIP)	Non-waterborne (above min. service level)	211	1%	211	1%	211	1%
Other / Communal Services		0	0%	89	0%	94	0%
	Sub-Total: Minimum Service Level and Above	32,211	95%	30,874	95%	28,943	95%
	SANITATION (BELOW MIN LEVEL)						
Pit toilet without ventilation	Pit toilet	401	1%	401	1%	401	1%
Bucket toilet	Bucket toilet	303	1%	303	1%	303	1%
Other toilet provision (below min. service level)	Other	380	1%	380	1%	380	1%
No toilet provisions	No services	507	1%	507	2%	507	2%
	Sub-Total: Below Minimum Service Level	1,591	5%	1,591	5%	1,591	5%
	Total number of households	33,802	100%	32,465	100%	30,534	100%

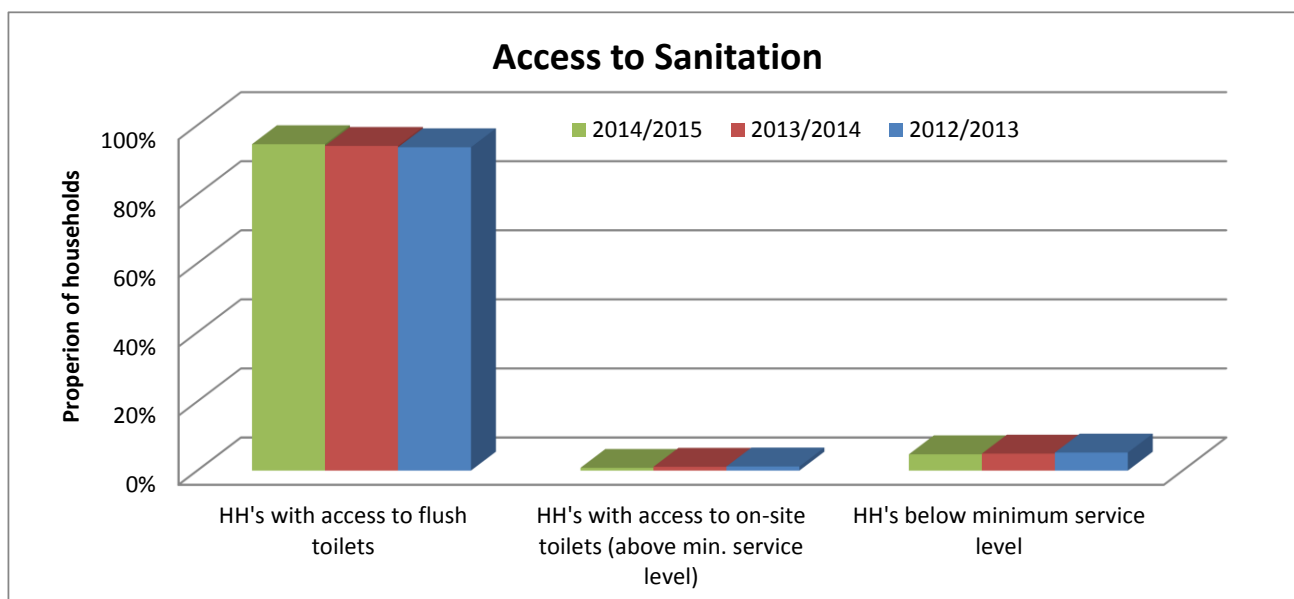


Figure C.2.2.2: Household sanitation access profile



The existing sanitation service levels in Swartland Municipality's Management Area are estimated as follows:

Table C2.2.4: Residential sanitation service levels (Consumer Units)													
Service Levels	Malmesbury	Abbotsdale	Riverlands	Chatsworth	Kalbasraal	Riebeeek Kasteel	Riebeeek Wes	Darling	Moorreesburg	Koringberg	Yzerfontein	Farms	Total
No Sanitation Services	0	0	0	0	0	0	0	0	0	0	0	507 ³⁾	507
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	0	0	0	1 138 ⁴⁾	1 138
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)	0	0	0	0	0	0	0	0	0	0	0	1 645	1 645
Below Housing Interim ⁶⁾	0	0	0	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent ⁷⁾	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Housing Need	0	0	0	0	0	0	0	0	0	0	0	0	0
None Waterborne	0	0	0	0	0	0	0	0	0	0	0	211 ⁵⁾	211
Waterborne Low Flush	0	0	0	0	0	0	0	0	0	0	0	0	0
Septic Tanks / Conservancy ¹⁾	12	6	1	81	78	33	151	62	62	79	1 235	6 314	8 114
Waterborne WWTW ²⁾	10 798	1 004	389	846	685	1 615	1 210	2 909	4 098	278	0	0	23 832
Total Adequate	10 810	1 010	390	927	763	1 648	1 361	2 971	4 160	357	1 235	6 525	32 157
Total per Area	10 810	1 010	390	927	763	1 648	1 361	2 971	4 160	357	1 235	8 170	33 802

Notes: 1) The number of tanks per town was calculated from the total number of tanks pumped during 2014/2015 divided by 4.

2) Include Backyard dwellers

3) Census 2011: Number of households with no toilet facility 507.

4) Census 2011: Number of households with existing buckets 303, chemical toilets 54, pit toilets without ventilation 401 and "other" 380

5) Census 2011: Number of households with pit toilets with ventilation 211.

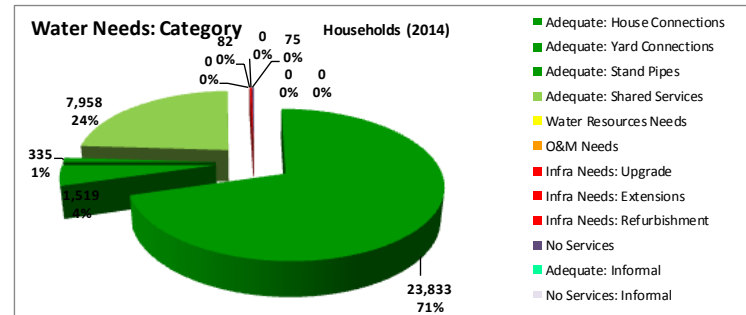
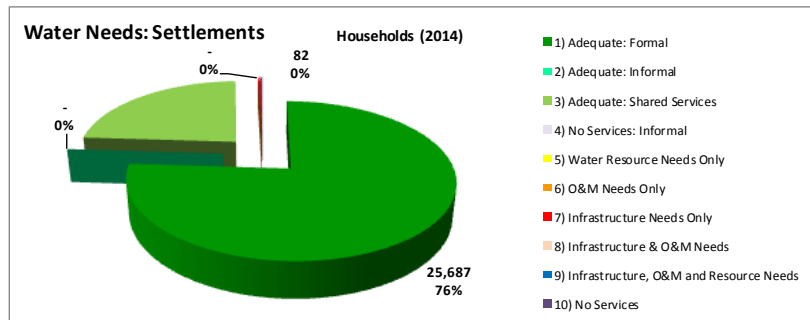
6) Inadequate Housing Interim in the above table is the number of shacks in informal areas without basic sanitation services. There are no such areas in Swartland Municipality's Management Area.

7) Inadequate Housing Permanent in the above table is the number of shacks in informal areas with communal ablution facilities. There are no such areas in Swartland Municipality's Management Area.

C.2.3. Residential Water Services Delivery Adequacy Profile

The existing residential water service levels in Swartland Municipality's Management Area are estimated as follows:

		FORMAL																INFORMAL					
Water Categorisation	Number of settlements	Adequate								Water Resource needs	O & M Needs				Infrastructure Needs				No services	Adequate		No services	
		House Connections		Yard Connections		Stand Pipes		Shared Services			Upgrades		Extensions		Refurbishment		Adequate			No services			
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%		
1	37	23,833	100%	1,519	100%	335	100%																
2	1																						
3	10						7,958	100%															
4	0																						
5	0																						
6	0																						
7	3												82	100%									
8	0																						
9	0																						
10	3																75	100%					
Total Household Interventions required		23,833		1,519		335		7,958		0		0		82		0		75		0		0	

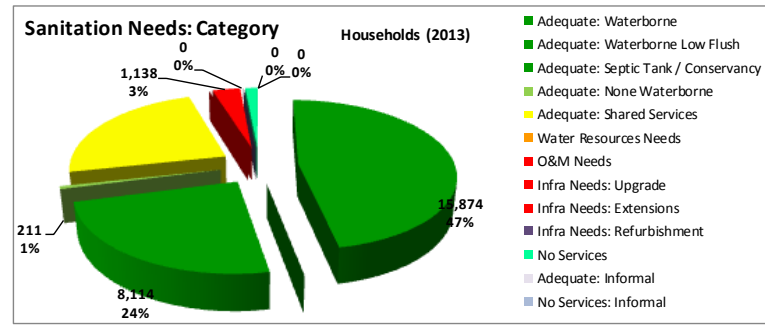
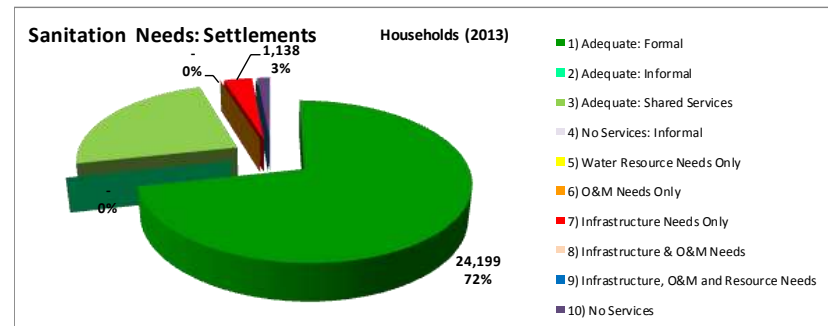


1	Adequate	3	Adequate: Shared services	5	Water Resources Needs <u>Only</u>	7	Infrastructure Needs <u>Only</u>	9	Infrastructure, O&M & Resource Needs
2	Adequate: Informal	4	No Services: Informal	6	O & M Needs <u>Only</u>	8	Infrastructure & O&M needs	10	No Services



The existing residential sanitation service levels in Swartland Municipality's Management Area are estimated as follows:

Table C.2.3.2: Residential Water Services Delivery Adequacy Profile (Sanitation)																												
Water Categorisation	Number of settlements	FORMAL																				INFORMAL						
		Adequate										Water Resource needs		O & M Needs		Infrastructure Needs						No services		Adequate		No services		
		Waterborne		Waterborne Low flush		Septic Tank/ Conservancy		None Waterborne		Shared Services						Upgrades		Extensions		Refurbishment				Adequate		No services		
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	
1	37	15,874	100%			8,114	100%	211	100%																			
2	1																											
3	10									7,958	100%																	
4	0																											
5	0																											
6	0																											
7	3															1,138	100%											
8	0																											
9	0																											
10	3																					507	100%					
Total Household Interventions required		15,874		0		8,114		211		7,958		0		0		1,138		0		0		0		507		0		0



1	Adequate	3	Adequate: Shared services	5	Water Resources Needs <u>Only</u>	7	Infrastructure Needs <u>Only</u>	9	Infrastructure, O&M & Resource Needs
2	Adequate: Informal	4	No Services: Informal	6	O & M Needs <u>Only</u>	8	Infrastructure & O&M needs	10	No Services

C.3. Cost Recovery and Free Basic Services

C.3.1. Tariffs

The water tariff structures for Swartland Municipality for the 2014/2015 financial year and the previous four financial years are summarised in the table below (Subject to 14% VAT).

Table C.3.1: Water tariffs for 2014/2015 and the previous four financial years						
Consumer/Description	Category	14/15	13/14	12/13	11/12	10/11
All	Availability Fees per month	R55-74	R54-12	R49-14	R43-69	R39-36
Residential Consumers No fix minimum (Basic)	Free Water 0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R9-29	R8-68	R8-19	R7-28	R6-56
	31 – 60 Kl	R12-79	R11-95	R11-27	R10-02	R9-03
	61 kl and more	R19-80	R18-50	R17-45	R15-51	R13-97
Indigent Households No fix minimum (Basic)	Free Water 10 Kl (6 Kl council + 4 Kl EQS)	R0-00	R0-00	R0-00	R0-00	R0-00
	11 – 30 Kl	R9-29	R8-68	R8-19	R7-28	R6-56
	31 – 60 Kl	R12-79	R11-95	R11-27	R10-02	R9-03
	61 kl and more	R19-80	R18-50	R17-45	R15-51	R13-97
Any other Institution No fix minimum (Basic)	From 1 kl and above – R/Tariff per Kl	R11-16	R10-43	R9-84	R8-75	R7-87
Yzerfontein (None permanent residents)	Fix minimum fees for 0 to 6 Kl	N/A	N/A	N/A	N/A	N/A
Yzerfontein (Permanent Residents)	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R9-29	R8-68	R8-19	R7-28	R6-56
	31 – 60 Kl	R12-79	R11-95	R11-27	R10-02	R9-03
	61 kl and more	R19-80	R18-50	R17-15	R15-51	R13-97
Farms (Residential) No fix minimum (Basic)	Free Water 0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R9-29	R8-68	R8-19	R7-28	R6-56
	31 – 60 Kl	R12-79	R11-95	R11-27	R10-02	R9-03
	61 kl and more	R19-80	R18-50	R17-45	R15-51	R13-97
Farms (Businesses)	From first Kl	R11-16	R10-43	R9-84	R8-75	R7-87
Municipality (Departmental)	Per Kl	R9-29	R8-68	R8-19	R7-28	R6-56
Agricultural Water	Per Kl	R11-16	R10-43	R9-84	R8-75	R7-87
Sport Clubs	Per Kl	R11-16	R10-43	R9-84	R8-75	R7-87
Prepaid Water Meters	0 – 6 Kl	-	-	-	-	R0-00
	7 – 30 Kl	-	-	-	-	R6-56
	31 – 60 Kl	-	-	-	-	R9-03
	61 kl and more	-	-	-	-	R13-97
Spice Route and Country Fair	From first Kl	R11-16	R10-43	R9-84	R8-75	R7-87
Raw Water (Un-chlorified) to Anne Pienaar Primary School	From first Kl	R2-41	R2-28	-	-	-
5% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R9-75	R9-11	R8-60	R7-64	R6-89
	31 – 60 Kl	R13-43	R12-55	R11-83	R10-52	R9-48
	Above 60 Kl	R20-79	R19-43	R18-32	R16-29	R14-67
5% Increase in Tariffs Businesses	From first Kl	R11-72	R10-95	R10-33	R9-19	R8-26
10% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R10-22	R9-55	R9-01	R8-01	R7-22
	31 – 60 Kl	R14-07	R13-15	R12-40	R11-02	R9-93
	Above 60 Kl	R21-78	R20-35	R19-20	R17-06	R15-37
10% Increase in Tariffs Businesses	From first Kl	R12-28	R11-47	R10-82	R9-63	R8-66



Table C.3.1: Water tariffs for 2014/2015 and the previous four financial years						
Consumer/Description	Category	14/15	13/14	12/13	11/12	10/11
15% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R10-68	R9-98	R9-42	R8-37	R7-54
	31 – 60 Kl	R14-71	R13-74	R12-96	R11-52	R10-38
	Above 60 Kl	R22-77	R21-28	R20-07	R17-84	R16-07
15% Increase in Tariffs Businesses	From first Kl	R12-83	R11-99	R11-32	10-06	R9-05
20% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R11-15	R10-42	R9-83	R8-74	R7-87
	31 – 60 Kl	R15-35	R14-34	R13-52	R12-02	R10-84
	Above 60 Kl	R23-76	R22-20	R20-94	R8-61	R16-76
20% Increase in Tariffs Businesses	From first Kl	R13-39	R12-52	R11-84	R10-50	R9-44
25% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R11-61	R10-85	R10-24	R9-10	R8-20
	31 – 60 Kl	R15-99	R14-94	R14-09	R12-53	R11-29
	Above 60 Kl	R24-75	R23-13	R21-81	R19-39	R17-46
25% Increase in Tariffs Businesses	From first Kl	R13-95	R13-04	R12-30	R10-94	R9-84
30% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R12-08	R11-28	R10-65	R9-46	R8-53
	31 – 60 Kl	R16-63	R15-54	R14-65	R13-03	R11-74
	Above 60 Kl	R25-74	R24-05	R22-69	R20-16	R18-16
30% Increase in Tariffs Businesses	From first Kl	R14-51	R13-56	R12-79	R11-38	R10-23
35% Increase in Tariffs Residential	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R12-54	R11-72	R11-06	R9-83	R8-86
	31 – 60 Kl	R17-27	R16-13	R15-21	R13-53	R12-19
	Above 60 Kl	R26-73	R24-98	R23-56	R20-94	R18-86
35% Increase in Tariffs Businesses	From first Kl	R15-07	R14-08	R13-28	R11-81	R10-62
Connection Low Cost		Contract	Contract	Contract	Contract	Contract
Connection (15mm)		R3 903-51	R3 414-91	R3 414-91	R3 697-37	R3 520-00
Connection (22mm)		R4 385-97	R4 049-12	R3 995-18	R4 149-12	R3 832-00
Connection 22mm Private Developments		R2 644-74	R2 352-63	R2 313-60	R2 675-44	R2 446-00
Deposit Payable: Renting of Municipal Standpipe		R4 000-00	R3 508-77	R3 245-61	R3 070-18	R3 000-00
Test of water meter		R307-02	R289-47	R263-16	R241-23	R250-00

The sewerage tariff structures for Swartland Municipality for the 2014/2015 financial year and the previous four financial years are summarised in the table below (Subject to 14% VAT).

Table C.3.2: Sewerage tariffs for 2014/2015 and the previous four financial years						
Consumer/Description	Category	14/15	13/14	12/13	11/12	10/11
All	Availability Fees per month	R161-79	R143-18	R126-71	R110-18	R95-85
For each additional pan	Businesses, etc. per month	R24-27	R21-48	R19-01	R12-51	R14-38
Sewer connections	100mm PVC as from 2011/2012	R3 368-42	R3 365-79	R2 895-61	R2 942-98	R3 420-00
Sewer connections	150mm PVC as from 2011/2012	R3 701-75	R3 501-75	R3 174-56	R3 164-91	R3 890-00
Sewer blockages	Office hours	R381-58	R357.02	R357-00	R462-28	R424-00
Sewer blockages	After hours	R543-86	R506.14	R506-14	R664-91	R603-00
Emptying of tanks	For two times per month	R161-79	R143-18	R126-71	R110-18	R109-27
	Every additional emptying	R679-82	R513-16	R501-75	R603-51	R594-00
Emptying of tanks (Riebeeck Kasteel and Abbotsdale)	Once per month	R679-82	R513-16	501-75	R603-51	R594-00
	Fixed Monthly Fee	R184-44 (VAT incl.)	R163-23 (VAT incl.)	R125-61 (VAT incl.)	R125-61 (VAT incl.)	R109-27
Ad-hoc emptying of tanks	After hours	R798-25	R744-74	R640-35	R793-86	R717-00
Treated effluent	Per Kl	R1-96	R1-83	R1-69	R1-02	R1-11
Partially connection (Emptying)		R80-89	R70-18	R63-36	R55-09	R54-64
Industrial discharge per Kl (COD)		R8-16	R7-56	R7-00	R6-58	R5-89
Grotto Baai, Jakkelsfontein status quo		R1 021-93	R961-40	R941-23	R1 206-14	R1187-00
Farms = Outside areas status quo		R1 021-93	R961-40	R941-23	R1 206-14	R1187-00

C.3.2. Metering, Billing and Free Basic Services

The table below gives an overview of the metering, billing and free basic services of Swartland Municipality.

Table C.3.2.1: Overview of Metering, Billing and Free Basic Services					
Regulations Ref. #	Description	Unit	Year 0	Year - 1	Year - 2
			FY2014/15	FY2013/14	FY2012/13
	UNITS SUPPLIED (as per water services access profile)				
10.2 (b) (i)	Household water connections (house and yard connections)	Nr	33,310	31,884	29,948
10.2 (b) (iv)	Household sewerage connections	Nr	31,946	30,520	28,584
	METERING				
	Metered Water Connections (aligned with Table C2.1)				
	Residential	Nr	17,674	17,295	17,285
	Commercial / Business	Nr	806	815	788
	Industrial	Nr	9	9	9
	Government / Institutional	Nr	74	74	74
	Other	Nr	549	687	543
	Sub-Total: Metered Water Connections	Nr	19,112	18,880	18,699
	Proportion of metered connections (residential)*	%	53%	54%	58%
	Total number of meters	Nr	19,112	18,880	18,699
10.2 (b) (vi)	Total number of new connections (aligned with Table C.2.1)	Nr	232	181	296
10.2 (e) (i)	Total number of new meters installed	Nr	232	181	296
	Proportion of new connections, metered	%	100.0%	100.0%	100.0%
	Number of meters tested	Nr	0	0	0
10.2 (e) (ii)	Proportion of meters tested to total number of meters	%	0.0%	0.0%	0.0%
	Number of meters replaced	Nr	582**	787	1,350
10.2 (e) (ii)	Proportion of meters replaced to total number of meters	%	3.0%	4.2%	7.2%
	BILLING				
	Customer billing (water and sewerage)		Nr	Nr	Nr
	Residential	Nr	17,674	17,295	17,285
	Commercial / Business	Nr	806	815	788
	Industrial	Nr	9	9	9
	Government / Institutional	Nr	74	74	74
	etc.	Nr	549	687	543
	Sub-Total: Customers billed	Nr	19,112	18,880	18,699
	Proportion of bills to metered connections	%	100%	100%	100%
	Residential	%	100%	100%	100%
	Commercial / Business	%	100%	100%	100%
	Industrial	%	100%	100%	100%
	Government / Institutional	%	100%	100%	100%
	etc.	%	100%	100%	100%
	FREE BASIC SERVICES				
	Nr customers receiving:				
	Free Basic Water	Nr	17,674	17,295	17,285
10.2 (b) (v)	Free Basic Sanitation	Nr	7,866	5,068	4,818
	Proportion of Free Basic Services				
	Water	%	100%	100%	100%
	Sewerage	%	25%	17%	17%

Note:

* All residential consumers in the urban areas of Swartland Municipality's Management Area are metered. The "Water Services Access Profile" however includes the consumers on the farms and the backyard dwellers on formal erven in the urban areas. Backyard dwellers use the service of the main house, which is metered. Consumers on the farms utilise their own water sources, which is not metered by the Municipality, therefore the 50% - 60% compliance in the above table.

** Include new meters installed

C.3.3. Revenue Collection and Cost Recovery

The table and figures below gives an overview of Swartland Municipality's water services revenue collection and cost recovery.

Table C.3.3.1: Overview of Water Services Revenue Collection and Cost Recovery				
Regulations Ref. #	Description	Year 0	Year - 1	Year - 2
		FY2014/15	FY2013/14	FY2012/13
	INCOME	R'000	R'000	R'000
	Billed			
	Water reticulation / provision	R 42,551	R 35,685	R 35,334
	Sewerage / wastewater	R 30,382	R 30,427	R 27,040
	Sub-Total: Billed	R 72,933	R 66,112	R 62,374
	Collections			
	Water reticulation / provision	R 43,577	R 37,461	R 36,803
	Sewerage / wastewater	R 39,666	R 39,455	R 33,524
	Sub-Total: Collections	R 83,243	R 76,916	R 70,326
	Equitable share income			
	Water reticulation / provision	R 2,913	R 2,424	R 1,954
	Sewerage / wastewater	R 11,442	R 9,629	R 7,735
	Sub-Total: Equitable share income	R 14,355	R 12,053	R 9,689
	EXPENDITURE (O&M)	R'000	R'000	R'000
	Water services	R 40,004	R 43,192	R 42,119
	Sewerage / wastewater services	R 28,770	R 36,244	R 29,201
	Total: Water Services O&M	R 68,774	R 79,435	R 71,319
	COST RECOVERY ANALYSIS / RATIO'S	%	%	%
10.2 (d) (ii)	Billed as % of Cost			
	Water	114%	88%	89%
	Sewerage	145%	111%	119%
	Total	127%	98%	101%
10.2 (d) (iii)	Unrecovered as % of Cost			
	Water services	5%	1%	1%
	Sewerage / wastewater services	8%	2%	4%
	Total	6%	2%	2%



The figure below gives an overview of the revenue collection and cost recovery profile for water services for Swartland Municipality.

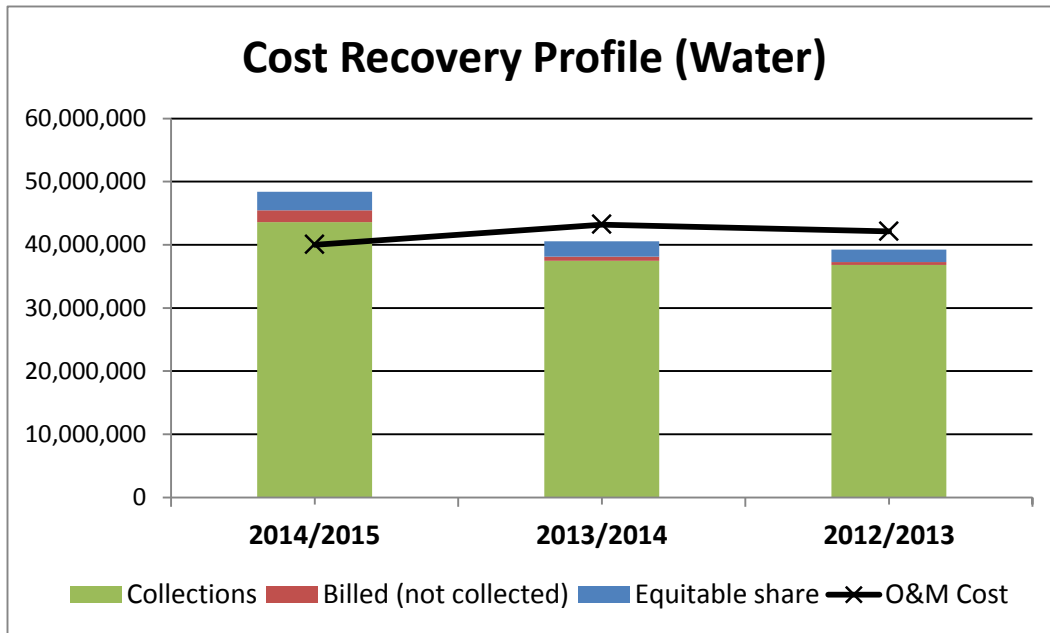


Figure C.3.3.1: Revenue collection and cost recovery profile (Water)

The figure below gives an overview of the revenue collection and cost recovery profile for wastewater services for Swartland Municipality.

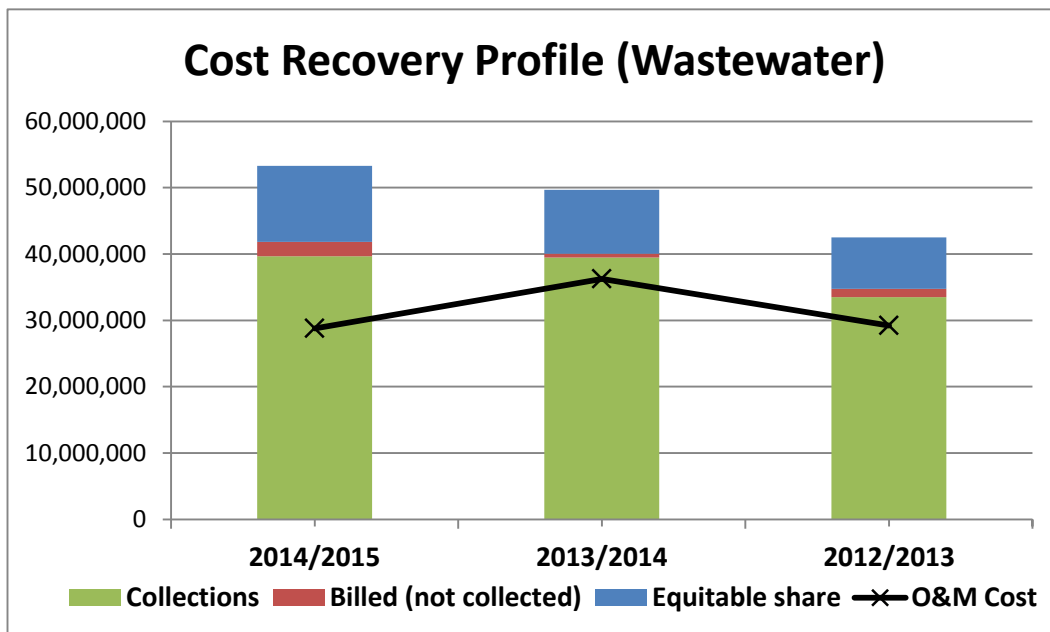


Figure C.3.3.2: Revenue collection and cost recovery profile (Wastewater)



Swartland Municipality's Operational and Maintenance Budget for water services for the last six years are summarised in the table below. A more detail breakdown of the water operational budgets are also included in Annexure E.

Table C.3.3.2: Operational and Maintenance budget for water services						
Description	Actual 14/15	Record : Prior				
		Actual 13/14	Actual 12/13	Actual 11/12	Actual 10/11	Audit 09/10
EXPENDITURE						
Wages and Salaries	R7 970 486	R7 588 673	R7 536 669	R6 645 698	R5 869 480	R4 688 529
Social Contributions	R1 357 840	R1 211 685	R1 164 776	R1 081 736	R939 834	R818 402
Bad Debts	R728 932	R0	R0	R0	R0	R0
Depreciation: Property, plant and equipment	R43 299	R9 590 265	R9 411 007	R0	R0	R0
Repairs and Maintenance	R873 016	R1 063 401	R887 816	R861 486	R922 783	R700 958
Interest Expense: External Borrowings	R101 869	R117 387	R165 889	R210 563	R278 089	R282 534
General Expenses: Bulk Purchases	R25 564 759	R20 508 087	R20 224 034	R18 555 930	R17 760 693	R14 648 798
General Expenses: Departmental	R1 392 138	R1 353 343	R1 104 427	R1 215 667	R1 077 490	R1 383 157
Inter Departmental Recoveries	R350 400	R310 830	R292 975	R0	R0	R0
General Expenses: Other	R1 621 469	R1 447 889	R1 330 985	R1 110 758	R1 280 275	R1 172 513
Expenditure Total	R40 004 208	R43 191 560	R42 118 578	R29 681 838	R28 128 643	R23 694 891
INCOME						
Service Charges (maintenance and repairs)	-R41 546 670	-R35 287 372	-R33 938 637	-R29 539 537	-R27 918 747	-R23 820 217
Grants and Subsidies received: Operating	-R403 572	R0	R0	R0	-R150 000	R0
Unconditional and Other Grants: Operating	-R2 912 925	-R2 423 823	-R1 953 521	R0	R0	R0
Other Revenue	-R2 439 339	-R1 428 121	-R2 265 872	-R1 807 598	-R1 334 837	-R1 000 100
Less Revenue Foregone	R1 838 844	R1 030 375	R870 537	R739 243	R2 172 191	R0-00
Income Total	-R45 463 662	-R38 108 941	-R37 287 493	-R30 607 892	-R27 231 393	-R24 820 317
Nett Surplus / Deficit	-R5 459 454	R5 082 619	R4 831 085	-R926 054	R897 250	-R1 125 426



Swartland Municipality's Operational and Maintenance Budget for sanitation services for the last six years are summarised in the table below. A more detail breakdown of the sanitation operational budgets are also included in Annexure E.

Table C.3.3.3: Operational and Maintenance budget for sanitation services						
Description	Actual 14/15	Record : Prior				
		Actual 13/14	Actual 12/13	Actual 11/12	Actual 10/11	Audit 09/10
EXPENDITURE						
Wages and Salaries	R4 740 456	R4 429 584	R4 269 687	R3 674 853	R3 524 577	R3 352 582
Social Contributions	R663 104	R653 065	R586 683	R534 743	R524 708	R525 112
Bad Debts	R1 264 334	R0	R0			
Depreciation: Property, plant and equipment	R1 136	R9 185 208	R9 577 765	R0	R0	R0
Repairs and Maintenance	R1 967 088	R1 771 375	R1 787 572	R1 570 470	R1 459 466	R1 391 369
Interest Expense: External Borrowings	R11 846 704	R12 113 896	R5 074 955	R11 184 440	R1 273 666	R2 785 266
General Expenses: Bulk Purchases Electricity	R426 074	R235 556	R199 945	R169 492	R115 690	R0-00
General Expenses: Departmental	R614 567	R654 977	R525 753	R4 403 655	R512 930	R2 803 449
Interdepartmental Recoveries	R4 382 189	R4 279 491	R4 349 275			
General Expenses: Other	R2 863 848	R2 920 769	R2 829 065	R2 731 634	R2 297 193	R1 913 764
Nett Expenditure	R28 769 500	R36 243 921	R29 200 700	R24 269 287	R9 708 230	R12 771 542
INCOME						
Service Charges	-R39 651 177	-R34 421 487	-R30 490 861	-R26 124 744	-R21 914 976	-R18 579 846
Grants and Subsidies Received Operational	-R36 925	-R39 259	-R48 032	R0	R0	R0
Unconditional and Other grants	-R11 442 486	-R9 628 839	-R7 735 333	R0	R0	R0
Other Revenue	-R5 645 697	-R4 620 632	-R3 815 518	-R4 289 825	-R5 003 694	-R3 467 661
Less Revenue Foregone	R14 951 898	R8 654 290	R7 314 312	R6 096 165	R5 122 102	R0-00
Income Total	-R41 824 387	-R40 055 927	-R34 775 432	-R24 318 404	-R21 796 567	-R22 047 507
Nett Surplus / Deficit	-R13 054 887	-R3 812 006	-R5 574 732	-R49 117	-R12 088 337	-R9 275 965



The table below gives an overview of the analysis of the consumer debtors' age in days for the last four financial years as on the 30th of June 2015.

Table C.3.3.4: Analysis of Consumer Debtors age in days as on the 30th of June						
Service	Total	Current 0-30 Days	31 – 60 Days	61 – 90 Days	91 – 120 Days	120+ Days
2014/2015						
Electricity	R29 796 750	R26 239 623	R2 639 145	R74 023	R28 995	R814 964
Water	R8 135 637	R4 871 093	R943 943	R273 934	R222 852	R1 823 815
Sewerage	R4 458 378	R2 063 276	R575 637	R155 411	R115 558	R1 548 496
Refuse Removal	R3 800 321	R1 593 719	R460 542	R121 623	R98 797	R1 525 640
Housing Rentals	R48 233	R28 758	R15 896	R836	R371	R2 372
Other Debtors	R2 037 166	R1 048 616	R115 697	R74 961	R74 807	R723 085
Total	R48 276 485	R35 845 085	R4 750 860	R700 788	R541 380	R6 438 372
2013/2014						
Electricity	R22 222 509	R19 698 520	R1 719 742	R55 513	R45 423	R703 311
Water	R6 458 190	R3 598 797	R633 400	R185 280	R199 973	R1 840 740
Sewerage	R5 343 630	R1 796 649	R564 457	R157 305	R196 471	R2 628 748
Refuse Removal	R4 652 584	R1 616 546	R552 773	R174 543	R163 158	R2 055 564
Housing Rentals	R115 609	R30 056	R16 554	R1 564	R1 443	R65 992
Other Debtors	R3 180 263	R1 711 824	R166 814	R66 245	R34 191	R1 201 189
Total	R41 882 785	R28 452 392	R3 653 740	R640 450	R640 659	R8 495 544
2012/2013						
Electricity	R22 201 007	R19 677 018	R1 719 742	R55 513	R45 423	R703 311
Water	R6 577 340	R3 717 947	R633 400	R185 280	R199 973	R1 840 740
Sewerage	R5 345 027	R1 798 046	R564 457	R157 305	R196 471	R2 628 748
Refuse Removal	R4 595 732	R1 649 694	R552 773	R174 543	R163 158	R2 055 564
Total	R38 719 106	R26 842 705	R3 470 372	R572 641	R605 025	R7 228 363
2011/2012						
Electricity	R20 420 130	R18 346 318	R1 314 279	R81 211	R60 792	R617 530
Water	R5 735 495	R3 328 119	R543 262	R217 747	R191 385	R1 454 982
Sewerage	R4 364 421	R1 595 188	R481 875	R181 231	R160 915	R1 945 212
Refuse Removal	R3 383 598	R1 358 102	R431 061	R124 361	R107 068	R1 363 006
Total	R33 903 644	R24 627 727	R2 770 477	R604 550	R520 160	R5 380 730



C.4. Water Quality

C.4.1. Sampling Programme

The table below gives an overview of the West Coast District Municipality's and Swartland Municipality's compliance sampling programmes for potable water quality, as compiled from the compliance sample results.

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Withoogte and Swartland Final (West Coast DM)								
Registered Sites per Scheme		Active (yes/no)			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2014/15	FY2013/14	FY2012/13		FY2014/15	FY2013/14	FY2012/13
33687	Withoogte Final (WCDM)	Yes	Yes	Yes	Microbiological (Health)			
32210	Swartland Final (WCDM)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
					Aesthetic			
					Conductivity at 25°C (mS/m)	30	30	30
					Colour (mg/l)	30	30	30
					Total Dissolved Solids (mg/l)	30	30	30
					Chloride as Cl (mg/l)	30	30	30
					Operational			
					pH at 25°C	30	30	30
					Turbidity NTU	30	30	30
					Total Coliforms count per 100ml	30	30	30
					Heterotrophic Plate Count per 1 ml	30		
					Disinfectant Residual			
					Free Chlorine	30	30	30
					Not in STD / Limit Set			
					Total Alkalinity (as CaCO ₃)	30	30	30
					Total Hardness (as CaCO ₃)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Yzerfontein, Darling, Koringberg and Malmesbury (West Coast DM)								
Registered Sites per Scheme		Active (yes/no)			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2014/15	FY2013/14	FY2012/13		FY2014/15	FY2013/14	FY2012/13
33818	Yzerfontein (WCDM)	Yes	Yes	Yes	Microbiological (Health)			
25274	Darling (WCDM)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
26627	Koringberg (WCDM)	Yes	Yes	Yes				
27846	Malmesbury (WCDM)	Yes	Yes	Yes	Aesthetic			
					Conductivity at 25°C (mS/m)	30	30	30
	E.Coli and Total Coliforms samples are also taken by Swartland Municipality at the Darling and Malmesbury Municipal Offices on a monthly basis.				Operational			
					pH at 25°C	30	30	30
					Turbidity	30	30	30
					Total Coliforms count per 100ml	30	30	30
					Heterotrophic Plate Count per 1 ml	30		
					Disinfectant Residual			
					Free Chlorine	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Moorreesburg, Riebeek Kasteek, Riebeek Wes, Riverlands, Abbotsdale, Chatsworth (Swartland Mun.)								
Registered Sites per Scheme		Active (yes/no)			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2014/15	FY2013/14	FY2012/13		FY2014/15	FY2013/14	FY2012/13
1	Moorreesburg Distrik Munisipaal (30 Days)	Yes	Yes	Yes	Microbiological (Health)			
2	Moorreesburg Munisipale Kantoor (30 Days)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
3	Riebeek Kasteel Muns Kantore (60 Days)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	60	60	60
4	Riebeek Wes Muns Kantore (60 Days)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	90	90	90
5	Riverlands Primere Skool (90 Days)	Yes	Yes	Yes				
6	Abbotsdale Skool (90 Days)	Yes	Yes	Yes	Operational			
7	Chatsworth Mountain View Store or School (90 Days)	Yes	Yes	Yes	Total Coliforms count per 100 ml	30	30	30
					Total Coliforms count per 100 ml	60	60	60
					Total Coliforms count per 100 ml	90	90	90

A comprehensive Operational Sampling programme is implemented by the West Coast District Municipality at their two bulk WTWs. The current samples taken by the West Coast District Municipality and Swartland Municipality, over and above the existing Operational Sampling programme at the bulk WTWs, and the proposed additional samples to be taken are summarised in the table below.

Table C.4.1.2: Current parameters sampled by the West Coast District Municipality and Swartland Municipality: Routine monitoring of Process Indicators			
System	Sampling Point	Current Parameters Sampled (Number of samples and frequency)	Additional Proposed Parameters, (Number of samples and frequency)
Abbotsdale, Kalbaskraal, Riverlands, Chatsworth	Intake Paardenberg	-	pH Daily
		-	Conductivity Daily
		-	Turbidity Daily
	Final Water Paardenberg	-	pH Daily
		-	Conductivity Morning and Afternoon
		-	Turbidity Morning and Afternoon
	Distribution Systems	E. Coli and Total Coliform Count (3 Sample points, Three Monthly)	E. Coli Weekly
Distribution Systems	E. Coli and Total Coliform Count (3 Sample points, Three Monthly)	pH, Turbidity, Free Chlorine, Total Coliform Count and E. Coli (4 Samples, Monthly). 2 Sample points in Abbotsdale / Kalbaskraal and 2 sample points for Riverlands / Chatsworth	
Moorreesburg	Distribution System	E. Coli and Total Coliform Count (2 Sample points, Monthly)	<i>Adequately covered by the sampling done at the Withoogte WTW (West Coast District Municipality)</i>
Koringberg	Distribution System	pH, Turbidity, Conductivity, Free Chlorine, Total Coliform Count and E. Coli (1 Sample point, Fortnightly)	-
Malmesbury	Distribution System	pH, Turbidity, Conductivity, Free Chlorine, Total Coliform Count and E. Coli (1 Sample point, Fortnightly)	pH, Turbidity, Conductivity, Free Chlorine, Total Coliform Count and E. Coli (Further 3 Samples, Monthly)
Riebeek Wes	Distribution System	E. Coli and Total Coliform Count (1 Sample point, Two Monthly)	<i>Adequately covered by the sampling done at the Swartland WTW (West Coast District Municipality)</i>
Riebeek Kasteel	Distribution System	E. Coli and Total Coliform Count (1 Sample point, Two Monthly)	<i>Adequately covered by the sampling done at the Swartland WTW (West Coast District Municipality)</i>
Yzerfontein	Distribution System	pH, Turbidity, Conductivity, Free Chlorine, Total Coliform Count and E. Coli (1 Sample point, Fortnightly)	-
Darling	Distribution System	pH, Turbidity, Conductivity, Free Chlorine, Total Coliform Count and E. Coli (1 Sample point, Fortnightly)	-

The number of current and required sampling for E.Coli (or faecal coliforms) in the distribution systems of Swartland Municipality are summarised in the table below:

Table C.4.1.3: Current and required sampling for E.Coli (or faecal coliforms) in the distribution systems				
Distribution System	Population served	Required number of monthly samples (SANS 241-2:2011: Table 2)	Number of monthly samples taken during 2014/2015	Current microbiological samples taken by Swartland Municipality (SM) and the West Coast District Municipality (WC DM)
Withoogte Bulk System				
Moorreesburg	14 485	2.9	1.7	2 Sampling points, monthly (SM) and 1 Sampling point monthly at Withoogte WTW (WC DM)
Koringberg	1 366	2	2.2	1 Sampling point fortnightly (WC DM)
Swartland Bulk System				
Malmesbury	40 964	8.2	3.2	1 Sampling point, monthly (SM) and 1 Sampling point fortnightly (WC DM)
Riebeek Wes	5 485	2	0.5	1 Sampling point, two monthly (SM) and 1 sampling point monthly at Swartland WTW (WC DM)
Riebeek Kasteel	5 832	2	0.7	1 Sampling point, two monthly (SM) and 1 sampling point monthly at Swartland WTW (WC DM)
Yzerfontein	1 282	2	2.1	1 Sampling point fortnightly (WC DM)
Darling	11 058	2.2	3.0	1 Sampling point, monthly (SM) and 1 Sampling point fortnightly (WC DM)
Swartland Bulk System, Perdeberg Dam and Three Riverlands Boreholes				
Abbotsdale	4 111	2	0.5	1 Sampling point, three monthly (SM)
Kalbaskraal	2 791	2	0.08	-
Riverlands and Chatsworth	4 826	2	0.75	2 Sampling points, three monthly (SM)

The table below gives an overview of Swartland Municipality's compliance sampling programme for wastewater (final effluent) quality, as compiled from the final effluent compliance sample results.

Table C.4.1.4: Sampling Programme for Wastewater Effluent Quality								
Registered Sites		Active			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2014/15	FY2013/14	FY2012/13		FY2014/15	FY2013/14	FY2012/13
1	Malmesbury	Yes	Yes	Yes	Microbiological			
2	Darling	Yes	Yes	Yes	Faecal Coliforms (Count per 100ml)	30	30	30
3	Moorreesburg	Yes	Yes	Yes				
4	PFC	Yes	Yes	Yes	Chemical			
5	Chatsworth	Yes	Yes	Yes	Ammonia Nitrogen (mg/l as N)	30	30	30
6	Kalbaskraal	Yes	Yes	Yes	Nitrate Nitrogen (mg/l as N)	30	30	30
7	Koringberg	Yes	Yes	Yes	Nitrite Nitrogen (mg/l as N)	30	30	30
8	Riebeek Kasteel	Yes	Yes	Yes	Ortho Phosphate (mg/l as P)	30	30	30
9	Riebeek Wes	Yes	Yes	Yes	COD (mg/l) Filtered	30	30	30
					Physical			
					Free Chlorine	30	30	30
					Conductivity (mS/m at 25°C)	30	30	30
					pH	30	30	30
					TSS (mg/l)	30	30	30



The table below gives an overview of the water quality compliance with regard to the West Coast District Municipality's Water Quality Sampling Programme and the wastewater quality compliance with regard to the Swartland Municipality's Wastewater Quality Sampling Programme, as taken from the BDS and GDS.

Table C.4.1.5: Compliance to the Sampling Programme (s)													
Measurable / Enabling Factor	Unit	Year 0				Year-1				Year-2			
		FY2014/15				FY2013/14				FY2012/13			
		M	C	P	O	M	C	P	O	M	C	P	O
Potable Water Quality													
Supply system submissions	Nr registered	2	Taken by the West Coast District Municipality	2	2	Taken by the West Coast District Municipality	2	2	Taken by the West Coast District Municipality	2	2	Taken by the West Coast District Municipality	2
	Nr submitted	2		2	2		2	2		2			
	Annual %	91%		91%	96%		96%	100%		100%			
Monitoring compliance	Average %	53%		53%	60%		60%	67%		60%	67%		67%
Data Credibility	Average %	100%		100%	100%		100%	100%		100%	100%		100%
BDS In-Time Submission	Annual %	71%		71%	50%		50%	48%		50%	48%		48%
Wastewater Quality													
Monitoring compliance	Average %	33%				74%				56%			
Operational monitoring compliance	Average %	Not captured on GDS and recorded by Process Controllers at each of the WWTW											

Legend M: Microbiological; C: Chemical; P: Physical; O: Operational

The table below gives an overview of the water quality monitoring from the WSDP Guide Framework perspective.

Table C.4.1.6: Water Quality Monitoring Overview from WSDP Guide Framework Perspective						
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2	
			FY2014/15	FY2013/14	FY2012/13	
6.3	Water Supply and Quality (West Coast Bulk WTWs)					
6.3.2	Process Control in place	yes/total WTW in %	100%	100%	100%	
6.3.3	Monitoring Programme in place	yes/total schemes in %	100%	100%	100%	
6.3.4	Sample Analysis Credibility	Average %	100%	100%	100%	
9.2	Monitoring					
9.2.1	% of water abstracted monitored: Surface water	Q monitored / Q abstracted in %	100%	100%	100%	
9.2.2	% of water abstracted monitored: Ground water	Q monitored / Q abstracted in %	100%	100%	100%	
9.2.3	% of water abstracted monitored: External Sources (Bulk purchase)	Q monitored own / Q purchased in %	100%	100%	100%	
9.2.6	Water quality for formal schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	Monthly	Monthly	Monthly	
9.2.7	Water quality for rudimentary schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	N/A	N/A	N/A	
9.2.9	Is the number sufficient in accordance to the SANS241 requirements?	yes/no	No	No	No	
9.3	Water Quality					
	Is there a water safety plan in place?	yes/no	Yes	Yes	Yes	
9.3.1	Reporting on quality of water taken from source: urban & rural	yes/total schemes in %	Yes	Yes	Yes	
9.3.5	Quality of water taken from source: urban - % monitored by WSA self?	monitored by WSA / total schemes in %	100%	100%	100%	
9.3.6	Quality of water taken from source: rural - % monitored by WSA self?	monitored by WSA / total schemes in %	N/A	N/A	N/A	
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes	

The table below gives an overview of the wastewater quality monitoring from the WSDP Guide Framework perspective.

Table C.4.1.7 : Wastewater Quality Monitoring Overview from WSDP Guide Framework Perspective					
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2014/15	FY2013/14	FY2012/13
5.3.1	Monitoring and Sample Failure				
5.3.1.1	<u>Compliance Monitoring:</u> % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	33%	74%	56%
5.3.1.2	<u>Operational:</u> % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	Not captured on GDS and recorded by Process Controllers at each of the WWTW		
6.4	Wastewater Supply and Quality				
6.4.2	Process Control in place	yes/total WWTW in %	70%	70%	70%
6.4.3	Monitoring Programme in place	yes/total WWTW in %	91%	91%	91%
6.4.4	Sample Analysis Credibility	Average %	100%	100%	100%
9.2	Monitoring				
9.2.10	Is the number sufficient in accordance to licences?	yes/no	Yes	Yes	Yes
9.3	Water Quality				
	Is there a wastewater risk abatement plan in place?	yes/no	Yes	Yes	Yes
9.3.2	Reporting on quality of water returned to the resource: urban	yes/total WWTW in %	100%	100%	100%
9.3.3	Reporting on quality of water returned to the resource: rural	yes/total WWTW in %	N/A	N/A	N/A
9.3.7	Quality of water returned to resource: urban - % monitored by WSA self?	monitored by WSA / urban WWTW in %	100%	100%	100%
9.3.8	Quality of water returned to resource: rural - % monitored by WSA self?	monitored by WSA / rural WWTW in %	N/A	N/A	N/A
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes

DWS's Blue Drop Process

The DWS launched the blue and green drop certification, with regard to drinking water quality and the quality of treated effluent discharged from WWTWs, at the Municipal Indaba during September 2008. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. The Blue Drop Certification programme is in its six year of existence and promises to be the catalyst for sustainable improvement of South African drinking water quality management in its entirety. The blue drop performance of Swartland Municipality is summarised as follows in the DWS's 2012 Blue Drop Report:

Table C.4.1.8: Blue Drop Performance of the Municipality (DWS's 2012 Blue Drop Report)	
Municipal Blue Drop Score	95.24%
<p>Regulatory Impression: The West Coast District Municipality and Swartland Municipality are congratulated on a fine performance that sees another two new systems obtain Blue Drop certification. However it should be noted that these certifications are deserved mostly because of the excellent work done by the water service provider.</p> <ol style="list-style-type: none"> The inspectors found that the lack of embracing the risk management (Water safety planning) concept and the thorough implementation thereof within the Swartland Municipality to immediately pose a threat to retain this Blue Drop status (especially in Malmesbury). The Authority and Provider are hereby encouraged to commence joint efforts to ensure that the drinking water quality is effectively managed within the context of water safety planning. It is however noted that the Municipality made provision to commence water safety planning processes later this year. It would be most valuable if these processes could link in with the bulk risk management plans and cover the potential risk gaps in the reticulation network. Swartland Municipality is commended for taking this progressive step since this is the essential missing part in their valiant efforts to consistently supply safe drinking water to their constituencies. The inspectors noted the following on the performance of the West Coast District Municipality: <i>"The West Coast District Municipality was represented by a small but dynamic drinking water quality team despite the numerous uncertainties under which they are compelled to function they have performed well in terms of the Blue Water Services Certification Programme."</i> 	



Performance Area	Malmesbury	Moorreesburg / Koringberg
Water Safety Planning	88	88
Treatment Process Management	100	100
DWQ Compliance	96	96
Management, Accountability	91	91
Asset Management	98	98
Bonus Scores	2.04	2.04
Penalties	0	0
Blue Drop Score (2012)	95.24%	95.24%
Blue Drop Score (2011)	92.88%	92.90%
Blue Drop Score (2010)	71.94%	71.94%
System Design Capacity (Ml/d)	29.000	73.300
Operational Capacity (% ito Design)	62.07	62.62
Population Served	23 762	4 950
Average daily consumption (l/p/d)	Not applicable	Not applicable
Microbiological Compliance (%)	97.0%	99.9%
Chemical Compliance (%)	>99.9%	>99.9%

The 2013 Blue Drop Risk Profile Progress Report of the DWS is further the product of a “gap” year, whereby progress is reported in terms of the improvement or decline in the risk position of the particular distribution system and WTW, compared to the previous year’s risks profile. This tool to collect, assess and report the risk profile is called the Blue Drop Progress Assessment Tool (PAT). The PAT progress assessment period was done on compliance data, information and actions during January 2012 – December 2012, which represents the year immediately following the 2012 Blue Drop assessment period. The results for Swartland Municipality were summarised as follows in DWS’s 2013 Blue Drop Risk Profile Progress Report.

Table C.4.1.9: DWS’s 2013 Blue Drop Risk Profile Progress Report results for Swartland Municipality			
Municipal Blue Drop Risk Rating			16.03%
<p>Regulatory Impression: The Swartland Local Municipality and West Coast District Municipality are commended by the Department for their combined efforts in lowering the Blue Drop Risk Ratings of both systems. Both the Blue Drop systems of Malmesbury and Moorreesburg managed to attain low risk scores of below 20%.</p> <p>The Department also commends West Coast District Municipality in its efforts to comply with the draft Regulation 17 requirements. The West Coast District Municipality is encouraged to continue this momentum going forward.</p> <p>While Micro Monitoring Programme Compliance within Malmesbury decreased by 1%, the Moorreesburg system increased its Micro Monitoring Programme Compliance from 87% to 92%. It is encouraging to see an increase of the combined Microbiological Quality Compliance from 97% to 99.06% within the Malmesbury system. The same could not be said for the Moorreesburg which indicated a decrease in the combined Microbiological Quality Compliance from 99.9% to 96.62%.</p> <p>Chemical Quality Compliance in both systems has also decreased and the Department trusts that incident management protocols are being implemented and documented to prevent recurring failures.</p> <p>Both Swartland Local Municipality and West Coast District Municipality are encouraged to ensure that the Water Safety Planning processes by both institutions are integrated to effectively address all risks from catchment to consumer. It should also be noted that only the West Coast District Municipality was observed conducting a full SANS 241 analysis for 2012.</p>			
Assessment Area	Malmesbury		Moorreesburg
Process Control RR	34.15%		31.71%
Drinking Water Quality RR	11.11%		18.52%
Risk Management RR	47.83%		39.13%
Microbiological Quality	99.06%		96.62%
Chemical Quality	95.50%		97.20%
Blue Drop Risk Rating 2013	17.41%		15.48%
Blue Drop Risk Rating 2012 (+ Progress Indicator)	79.49%	IMPROVE	78.66%
Upgrades Capital Expenditure (Rm)	R 43 835 000		R 25 813 449



DWS's Green Drop Process

The DWS also completed their Third Order Assessment of Municipal Waste Water Treatment Plants, DWS's Green Drop Report for 2013, which provides a scientific and verifiable status of municipal waste water treatment. Green drop status is awarded to those WSAs that comply with 90% criteria on key selected indicators on waste water quality management. The green drop performance of Swartland Municipality is summarised as follows in the DWS's 2013 Green Drop Report.

Table C.4.1.10: Green Drop Performance of the Municipality (DWS's 2013 Green Drop Report)	
Average Green Drop Score	2009 – 75.00%, 2011 – 72.70%, 2013 –72.38%
<p>Regulatory Impression: Swartland Local Municipality's commitment to its wastewater business and ambition towards Green Drop Certification cannot be faulted. This inspectorate was welcomed by the Mayor, the Municipal Manager and Senior Technical- and Financial Managers. The Regulator is of firm opinion that with such leadership, management and true understanding of the requirements to wastewater excellence, Swartland will improve in strides going forward. The team wishes to encourage the Municipality to continue being so positive.</p> <p>Swartland has managed to maintain its municipal Green Drop score at 75.3%, marking an above average performance. This is no small feat, given the stringent standard of the GWSA criteria for 2013. The team is congratulated and encouraged to use the feedback to address the remaining shortcomings.</p> <p>The most significant factor that retained scores below the 80% (and even 90%) mark, has been the uncertainties of the applicable standards to calculate compliance. The municipality must make a concerted effort to resolve authorisations, especially as pertaining to irrigation- and no-discharge systems. The WSA's resolve to use General Limits as internal standard is commendable and evidence of this accomplished team upholding of good practice. However, by addressing this single aspect, a significant upwards change can be expected during the next cycle GWSA scoring. A special mention of the Process Controllers on Malmesbury WWTW for display of their practical knowledge of the systems – continue to transfer this know-how to fellow practitioners. This is indeed a scarce skill.</p> <p>Swartland's approach to risk abatement has received a full score for its resolve and Tender Committee approval for the implementation of the W₂RAP. At the moment, all 9 treatment systems remain in moderate risk positions, and the Regulator encourage the municipality to move plants towards low risk space by rigorous implementation of the W₂RAP. Already, the municipality's construction of the new Malmesbury WWTW and planning of the Riebeeck valley WWTW is a proactive step to relieve the pressure on the current systems. Note the recommendation to include the WIMP (O&M) and alert levels specifications in the W₂RAP and GDIP.</p> <p>Green Drop findings:</p> <ol style="list-style-type: none"> 1. Regulation 17 compliance is not in place for most plants, and registration of process controllers should be fast-tracked. 2. A number of systems did not have process assessments and network inspection in place, this should be the basis to inform the W₂RAP. 3. Effluent quality fails at 9 of 9 treatment systems. 4. Four (4) of 9 treatment plants are operated above their hydraulic design capacity, and 1 plant do not have base information to complete this calculation (assume highest risk of 151%). 	



GREEN DROP REPORT CARD									
Key Performance Area	Malmesbury-Abbotsdale	Darling	Chatsworth	Kalbaskraal	Riebeek Kasteel	Riebeek Wes	Moorreesburg	Koringberg	Ongegund (PPC)
Process Control, Maintenance and Management Skill	80	84	80	80	50	50	80	80	50
Monitoring Programme	100	100	83	83	75	95	100	100	85
Submission of Results	20	50	50	100	50	100	100	50	100
Effluent Quality Compliance	20	20	0	20	20	0	20	0	24
Risk Management	100	96	96	96	100	100	86	96	84
Local Regulation	100	100	100	100	100	100	100	100	100
Treatment Capacity	100	100	63	19	55	35	48	29	44
Asset Management	85	59	60	80	79	73	70	80	60
Bonus Scores	7.74	5.54	7.24	5.76	6.46	6.85	5.60	6.61	6.55
Penalties	0.00	0.00	1.37	1.09	1.22	1.29	1.06	0.00	2.48
Green Drop Score (2013)	75.49%	70.65%	60.27%	68.40%	64.53%	62.41%	69.27%	64.96%	62.82%
Green Drop Score (2011)	73.90%	72.90%	61.90%	68.80%	65.90%	64.40%	71.40%	66.40%	78.30%
Green Drop Score (2009)	77.00%	75.00%	0.00%	0.00%	0.00%	0.00%	73.00%	0.00%	0.00%
System Design Capacity (Ml/d)	5.000	1.500	0.118	0.157	0.200	0.300	1.500	0.030	0.150
Capacity Utilisation (% ADWF ito Design Capacity)	110.00%	73.33%	83.05%	38.22%	157.50%	120.00%	53.33%	NI (151.00%)	100.00%
Resource Discharged into	Diepriver	Unknown. Irrigation to land	No discharge	No discharge	Overflow to land	No discharge	No Go river (tributary of Berg River)	No discharge	Unknown
Microbiological Compliance	50.00%	50.00%	58.33%	25.00%	8.33%	41.67%	50.00%	58.33%	75.00%
Chemical Compliance	52.08%	50.00%	22.92%	25.00%	68.75%	68.75%	22.92%	22.92%	58.33%
Physical Compliance	61.11%	69.44%	61.11%	50.00%	75.00%	72.22%	72.22%	33.33%	91.67%
Overall Compliance	55.21%	57.29%	41.67%	34.38%	63.54%	66.67%	44.79%	31.25%	72.92%
Wastewater Risk Rating (2012)	54.50%	58.90%	41.20%	41.20%	41.20%	58.80%	47.10%	41.20%	52.90%
Wastewater Risk Rating (2013)	70.59%	52.94%	58.82%	35.29%	64.71%	58.82%	52.94%	52.94%	52.94%



C.4.2. Water Quality Compliance

The table below gives an overview of the West Coast District Municipality's water quality compliance, as taken from the BDS. The 0% compliance with regard to chemical parameters in the table below is not correct and the District Municipality requested the DWS to look at the information on the BDS. It is therefore suggested to rather look at the percentage compliance as included in Table C.4.2.2, as calculated from the sample results.

Table C.4.2.1: Overview of Water Quality Compliance														
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0				Year-1				Year-2			
			FY2014/15				FY2013/14				FY2012/13			
			M	C	P	O	M	C	P	O	M	C	P	O
Results per the Blue Drop System														
n/a	Analysis compliance	Total	91	Taken by the West Coast District Municipality	91	128	Taken by the West Coast District Municipality	128	94	Taken by the West Coast District Municipality	94			
n/a		Nr Failures	2		3	0		1	1		6			
n/a		Compliance %	98%		97%	100%		99%	99%		94%			
n/a	Samples frequency	Total	90	Taken by the West Coast District Municipality	90	122	Taken by the West Coast District Municipality	122	89	Taken by the West Coast District Municipality	89			
n/a		Nr Failures	2		3	0		1	1		5			
n/a		Compliance %	98%		97%	100%		99%	99%		94%			
n/a	Sites compliance	Total	52	Taken by the West Coast District Municipality	52	59	Taken by the West Coast District Municipality	59	49	Taken by the West Coast District Municipality	49			
n/a		Nr Failures	1		2	0		1	1		4			
n/a		Compliance %	98%		96%	100%		98%	98%		92%			
6.3 Water Supply and Quality														
6.3.6	Blue Drop Status	last year certified by DWS	Blue Drop Score not yet published			16.03% (Blue Drop Risk Rating)			95.24% Blue Drop Score					
9.3 Water Quality														
9.3.10	% Time (days) within SANS 241 standards per year	Average of analysis compliance %	97%			100%			96%					

Legend M: Microbiological; C: Chemical; P: Physical; O: Operational

The water quality compliance sample results are included in Annexure C for each of the distribution systems. The overall percentage of compliance of the water quality samples taken over the period July 2014 to June 2015 is summarised in the table below per distribution system (DWS's 2014 Blue Drop Limits).

Table C.4.2.2: Percentage compliance of the water quality samples for the period July 2014 to June 2015			
Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2011)	% Sample Compliance according to DWS's 2014 Blue Drop Limits	Number of Samples taken into account
Withoogte Final			
Acute Health – 1 Chemical	No (Excellent)	100.0%	4
Acute Health – 1 Microbiological	No (Excellent)	100.0%	24
Acute Health – 2 Microbiological	No (Excellent)	100.0%	6
Chronic Health	No (Excellent)	100.0%	60
Aesthetic	No (Excellent)	100.0%	161
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	96
Operational Efficiency	No (Good)	91.9%	111
Moorreesburg			
Acute Health – 1 Chemical	No (Excellent)	100.0%	10
Acute Health – 1 Microbiological	No (Excellent)	100.0%	20
Acute Health – 2 Microbiological	No (Excellent)	100.0%	5
Chronic Health	No (Excellent)	100.0%	45
Aesthetic	No (Excellent)	100.0%	28
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	86
Operational Efficiency	No (Excellent)	100.0%	32
Koringberg			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Good)	96.2%	26
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	46
Aesthetic	No (Excellent)	100.0%	62
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	83
Operational Efficiency	No (Excellent)	96.1%	102



Table C.4.2.2: Percentage compliance of the water quality samples for the period July 2014 to June 2015			
Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2011)	% Sample Compliance according to DWS's 2014 Blue Drop Limits	Number of Samples taken into account
Swartland Final			
Acute Health – 1 Chemical	No (Excellent)	100.0%	4
Acute Health – 1 Microbiological	No (Good)	95.7%	23
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	69
Aesthetic	No (Excellent)	100.0%	170
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	99.0%	101
Operational Efficiency	No (Excellent)	95.6%	113
Malmesbury			
Acute Health – 1 Chemical	No (Excellent)	100.0%	10
Acute Health – 1 Microbiological	No (Excellent)	100.0%	38
Acute Health – 2 Microbiological	No (Excellent)	100.0%	5
Chronic Health	No (Excellent)	100.0%	69
Aesthetic	No (Excellent)	100.0%	76
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	128
Operational Efficiency	No (Excellent)	95.8%	120
Darling			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	36
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	46
Aesthetic	No (Excellent)	100.0%	62
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	93
Operational Efficiency	Yes (Unacceptable)	88.4%	112
Riebeeck Kasteel			
Acute Health – 1 Chemical	No (Excellent)	100.0%	10
Acute Health – 1 Microbiological	Yes (Unacceptable)	87.5%	8
Acute Health – 2 Microbiological	No (Excellent)	100.0%	5
Chronic Health	No (Excellent)	100.0%	45
Aesthetic	No (Excellent)	100.0%	28
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	98.6%	74
Operational Efficiency	No (Excellent)	95.0%	20
Riebeeck Wes			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	6
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	22
Aesthetic	No (Excellent)	100.0%	14
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	39
Operational Efficiency	No (Excellent)	100.0%	12
Yzerfontein			
Acute Health – 1 Chemical	No (Excellent)	100.0%	10
Acute Health – 1 Microbiological	No (Excellent)	100.0%	25
Acute Health – 2 Microbiological	No (Excellent)	100.0%	5
Chronic Health	No (Excellent)	100.0%	65
Aesthetic	No (Excellent)	100.0%	76
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	111
Operational Efficiency	Yes (Unacceptable)	82.1%	106
Riverlands			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	5
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	22

Table C.4.2.2: Percentage compliance of the water quality samples for the period July 2014 to June 2015			
Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2011)	% Sample Compliance according to DWS's 2014 Blue Drop Limits	Number of Samples taken into account
Aesthetic	Yes (Unacceptable)	85.7%	14
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	38
Operational Efficiency	No (Good)	90.9%	11
Abbotsdale			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	6
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	20
Aesthetic	No (Excellent)	100.0%	14
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	37
Operational Efficiency	Yes (Unacceptable)	75.0%	12
Chatsworth			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	4
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	22
Aesthetic	No (Excellent)	100.0%	14
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	37
Operational Efficiency	No (Good)	90.0%	10
Kalbaskraal			
Acute Health – 1 Chemical	No (Excellent)	100.0%	5
Acute Health – 1 Microbiological	No (Excellent)	100.0%	1
Acute Health – 2 Microbiological	No (Excellent)	100.0%	3
Chronic Health	No (Excellent)	100.0%	22
Aesthetic	No (Excellent)	100.0%	14
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%	34
Operational Efficiency	No (Excellent)	100.0%	7

The table below gives an overview of the five categories under which the risks posed by micro-organism, physical or aesthetic property or chemical substance of potable water is normally classified:

Table C.4.2.3: Five categories under which the risks posed by micro-organism, physical or aesthetic property or chemical substance of potable water is normally classified	
Category	Risk
Acute Health - 1	Routinely quantifiable determinand that poses an immediate unacceptable health risk if consumed with water at concentration values exceeding the numerical limits specified in SANS 241.
Acute Health - 2	Determinand that is presently not easily quantifiable and lacks information pertaining to viability and human infectivity which, however, does pose immediate unacceptable health risks if consumed with water at concentration values exceeding the numerical limits specified in SANS 241.
Aesthetic	Determinand that taints water with respect to taste, odour and colour and that does not pose an unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241.
Chronic Health	Determinand that poses an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241.
Operational	Determinand that is essential for assessing the efficient operation of treatment systems and risks from infrastructure



The table below gives an overview of Swartland Municipality’s wastewater quality compliance, as taken from the GDS.

Table C.4.2.4: Overview of Wastewater Quality Compliance														
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0				Year-1				Year-2			
			FY2014/15				FY2013/14				FY2012/13			
			M	C	P	O	M	C	P	O	M	C	P	O
Results per the Green Drop System														
n/a	Regulatory compliance	Total												
n/a		Nr Failures												
n/a		Compliance %	9%	19%	21%	N/A	26%	37%	40%	N/A	21%	32%	36%	N/A
n/a	Operational compliance	Total	Not captured on BDS and recorded by Process Controllers at each of the WWTW											
n/a		Nr Failures												
n/a		Compliance %												
5.3.1 Monitoring and Sample Failure														
5.3.1.3	Average % of sample failure	Failure %	91%	81%	79%	N/A	74%	63%	60%	N/A	79%	68%	64%	N/A
5.3.1.4														
5.3.1.5														
6.3 Water Supply and Quality														
6.4.6	Green Drop Status	last year certified by DWS	Risk Ratings not yet published				72.38% Green Drop Score				Risk Ratings were determined for each WWTW (PAT)			

Legend M: Microbiological; C: Chemical; P: Physical; O: Operational

The final effluent quality compliance sample results are included in Annexure C for each of the WWTWs. The overall percentage compliance of the final effluent samples taken over the period July 2014 to June 2015 at the various WWTWs for Swartland Municipality are summarised in the table below.

Table C4.2.5: Percentage Faecal Coliforms compliance of the compliance samples taken at the various WWTWs			
WWTW	Number of Samples Taken	Number of Samples Complying with General Standards	Percentage Compliance
Malmesbury	12	12	100.0%
Darling	12	9	75.0%
Moorreesburg	12	11	91.7%
PPC	11	7	63.6%
Chatsworth	12	12	100.0%
Kalbaskraal	12	12	100.0%
Koringberg	12	12	100.0%
Riebeek Kasteel	11	11	100.0%
Riebeek Wes	12	12	100.0%
Total	106	98	92.5%

Table C4.2.6: Percentage chemical compliance of the compliance samples taken at the various WWTWs														
WWTW	Number of Compliance Samples Taken				Number of Samples Complying with General Standards				Percentage Compliance					
	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Overall	
Malmesbury	12	12	12	12	11	12	12	12	91.7%	100.0%	100.0%	100.0%	97.9%	
Darling	12	12	12	12	12	12	10	12	100.0%	100.0%	83.3%	100.0%	95.8%	
Moorreesburg	12	12	12	11	3	11	9	9	25.0%	91.7%	75.0%	81.8%	68.1%	
PPC	11	11	11	11	7	10	7	11	63.6%	90.9%	63.6%	100.0%	79.5%	
Chatsworth	12	12	12	12	N/A	N/A	10	10	N/A	N/A	83.3%	83.3%	83.3%	
Kalbaskraal	12	12	12	12	N/A	N/A	6	5	N/A	N/A	50.0%	41.7%	45.8%	
Koringberg	12	12	12	12	N/A	N/A	1	4	N/A	N/A	8.3%	33.3%	20.8%	
Riebeek Kasteel	11	11	11	11	N/A	N/A	5	10	N/A	N/A	45.5%	90.9%	68.2%	
Riebeek Wes	12	12	12	12	N/A	N/A	10	10	N/A	N/A	83.3%	83.3%	83.3%	
Total	106	106	106	105	33	45	70	83	70.2%	95.7%	66.0%	79.0%	75.7%	



Table C4.2.7: Percentage physical compliance of the compliance samples taken at the various WWTWs

WWTW	Number of Compliance Samples Taken			Number of Samples Complying with General Standards			Percentage Compliance			
	pH	Electrical Conductivity	Suspended Solids	pH	Electrical Conductivity	Suspended Solids	pH	Electrical Conductivity	Suspended Solids	Overall
Malmesbury	12	12	12	12	12	12	100.0%	100.0%	100.0%	100.0%
Darling	12	12	12	11	12	8	91.7%	100.0%	66.7%	86.1%
Moorreesburg	12	12	12	12	5	10	100.0%	41.7%	83.3%	75.0%
PPC	11	11	11	8	11	7	72.7%	100.0%	63.6%	78.8%
Chatsworth	12	12	12	11	12	N/A	91.7%	100.0%	N/A	95.8%
Kalbaskraal	12	12	12	12	11	N/A	100.0%	91.7%	N/A	95.8%
Koringberg	12	12	12	12	4	N/A	100.0%	33.3%	N/A	66.7%
Riebeek Kasteel	11	11	11	11	11	N/A	100.0%	100.0%	N/A	100.0%
Riebeek Wes	12	12	12	11	12	N/A	91.7%	100.0%	N/A	95.8%
Total	106	106	106	100	90	37	94.3%	84.9%	78.7%	89.6%

C.4.3. Incident Management

Swartland Municipality’s Maintenance Team mainly performs their own repair and preventative maintenance work to the equipment and infrastructure of the Municipality, except when specialised repair work is required, in which case the work is sub-contracted to approved sub-contractors on the municipal database.

A Water Safety Plan was drafted during 2012/2013 for Swartland Municipality. A detailed risk assessment was executed as part of the process and the existing control measures implemented by Swartland Municipality and the West Coast District Municipality were evaluated as part of the process. An Improvement / Upgrade Plan is also in place with relevant Water and Safety Management Procedures for implementation.

A W₂RAP for the various WWTWs is also in place. The W₂RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater, are identified and rated (quantified). The identified risks can then be managed according to its potential impacts on the receiving environment / community / resource.

The Water Safety Plan and W₂RAP Teams of Swartland Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W₂RAP to ensure that they are still accurate and to determine whether the field assessments need updates or modifications and whether the Incident Response Management Protocol is still adequate. In addition to the regular three year review, the Water Safety Plan and W₂RAP will also be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major incident.

An Incident Response Management Protocol is in place and forms part of Swartland Municipality’s Water Safety Plan and W₂RAP. The Incident Response Management Protocol entails that certain reactive procedures are followed when an incident occurs, such as when a malfunction of the treatment processes occurs due to power failures, faulty equipment, adverse weather conditions or human error.

Operational Alert Levels are also in place for the WWTWs in order to ensure that the various unit processes in the plant performs optimally. If these pre-determined Alert Levels are exceeded at any of the control points where samples are taken for operational purposes, specific actions are taken to bring the operational parameters back to within the target ranges.



Table C.4.3.1: Incident Management and Reporting Overview					
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2014/15	FY2013/14	FY2012/13
6.3	Water Supply and Quality				
6.3.1	Incident Management Protocol in place	yes/total schemes in %	Yes	Yes	Yes
6.3.5	Failure Response Management in place	yes/total schemes in %	Yes	Yes	Yes
6.4	Waste Water Supply and Quality				
6.4.1	Incident Management Protocol in place	yes/total schemes in %	Yes	Yes	Yes
6.4.5	Failure Response Management in place	yes/total schemes in %	Yes	Yes	Yes

The water quality incident reporting compliance, as summarised in the table below, were calculated from the compliance sample results included in Annexure C.

Table C.4.3.2: Water Quality Incident Reporting Compliance (Health Oriented)													
Measurable / Enabling Factor	Unit	Year 0				Year-1				Year-2			
		FY2014/15				FY2013/14				FY2012/13			
		Acute Health - 1 Microbiological	Acute Health - 1 Chemical	Acute Health - 2 Microbiological	Chronic Health	Acute Health - 1 Microbiological	Acute Health - 1 Chemical	Acute Health - 2 Microbiological	Chronic Health	Acute Health - 1 Microbiological	Acute Health - 1 Chemical	Acute Health - 2 Microbiological	Chronic Health
Failures in terms of Analysis	Total nr	222	83	50	553	201	8	6	184	-	-	-	-
	Nr of failures	3	0	0	0	0	0	0	0	-	-	-	-
	Failure %	1%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-
	Nr reported	3	0	0	0	0	0	0	0	-	-	-	-
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	-	-	-	-
Failures in terms of Samples	Total	222	83	50	553	201	8	6	184	-	-	-	-
	Nr of failures	3	0	0	0	0	0	0	0	-	-	-	-
	Failure %	1%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-
	Nr reported	3	0	0	0	0	0	0	0	-	-	-	-
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	-	-	-	-
Failures in terms of Sites	Total	222	83	50	553	201	8	6	184	-	-	-	-
	Nr of failures	3	0	0	0	0	0	0	0	-	-	-	-
	Failure %	1%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-
	Nr reported	3	0	0	0	0	0	0	0	-	-	-	-
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	-	-	-	-

C.5. Water Conservation and Water Demand Management

The table below gives an overview of the WC/WDM activities implemented by Swartland Municipality.

Table C.5.1: Overview of WC/WDM Activities														
WSDP Ref. #	Regulations Ref. #	Description	Urban Settlements						Rural Settlements					
			Year 0		Year - 1		Year - 2		Year 0		Year - 1		Year - 2	
			2014/15		2013/14		2012/13		2014/15		2013/14		2012/13	
7.1.1	10.2.g.iii	REDUCING UNACCOUNTED FOR WATER AND WATER INEFFICIENCIES												
		Number of customers where the following activities have been pursued:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.1.1		Night flow metering	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.1.2		Day flow metering	19,112	100%	18,880	100%	18,699	100%	0	0%	0	0%	0	0%
7.1.1.3		Reticulation leaks fixed	303	100%	263	100%	357	100%	0	0%	0	0%	0	0%
7.1.1.4		Illegal connections formalized	0	100%	0	100%	0	100%	0	0%	0	0%	0	0%
7.1.1.5		Un-metered connections, metered	0	100%	0	100%	0	100%	0	0%	0	0%	0	0%
7.1.2	10.2.g.iii	REDUCING HIGH PRESSURES FOR RESIDENTIAL CONSUMERS												
		Number of residential consumers with water supply pressure of:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.2.1		< 300 kPa	4,065	23.0%	3,978	23.0%	3,976	23.0%	0	0%	0	0%	0	0%
7.1.2.2		300 kPa - 600 kPa	5,744	32.5%	5,621	32.5%	5,618	32.5%	0	0%	0	0%	0	0%
7.1.2.3		600 kPa - 900 kPa	7,070	40.0%	6,918	40.0%	6,914	40.0%	0	0%	0	0%	0	0%
7.1.2.4	10.2.b.iii	> 900 kPa	795	4.5%	778	4.5%	778	4.5%	0	0%	0	0%	0	0%
7.1.3	10.2.g.iii	LEAK AND METER REPAIR PROGRAMMES												
		Number of consumer units targeted by:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.3.1		Leak repair assistance programme	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.2	10.2.g.iv	Retro-fitting of water inefficient toilets	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.3		Meter repair programme	582	3%	787	4%	1,350	7%	0	0%	0	0%	0	0%
7.1.4	10.2.g.iii	CONSUMER / END-USE DEMAND MANAGEMENT: PUBLIC INFO AND EDUCATION PROGRAMMES												
			Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.4.1		Number of schools targeted by education programmes	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.4.2		Number of consumers (people) targeted by public information programmes	19,112	100%	18,880	100%	18,699	100%	0	0%	0	0%	0	0%

Quantity of water unaccounted for (MI/year):

The implementation of Swartland Municipality's WDM Strategy has been extremely successful and the Municipality was able to reduce the water requirements of the towns significantly. The average annual growth percentage in water requirements for Swartland Municipality over the period 2008/2009 to 2014/2015 was only 1.93%/a. The table below gives a summary of the non-revenue water for the various distribution systems in Swartland Municipality's Management Area.

Table C.5.2: Non revenue water for the various distribution systems							
Description	Unit	14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Koringberg	Volume	10.221	7.660	16.710	0.802	13.358	40.201
	Percentage	14.77%	13.58%	26.62%	1.67%	22.28%	46.87%
	ILI	0.97	0.75	1.60	0.07	1.24	3.74
PPC	Volume	10.743	4.128	15.737	25.236	23.476	22.318
	Percentage	22.13%	8.49%	26.74%	39.68%	36.43%	35.70%
Riebeeck Wes	Volume	24.966	-8.750	22.376	18.768	52.437	38.774
	Percentage	11.93%	-4.75%	11.98%	9.96%	24.48%	20.80%
	ILI	1.50	-0.46	1.39	1.15	3.38	2.50
Riebeeck Kasteel	Volume	62.43	57.457	52.455	19.488	23.597	5.624
	Percentage	18.95%	19.10%	18.43%	7.68%	8.96%	2.53%
	ILI	2.22	2.09	1.93	0.70	0.65	0.15
Yzerfontein	Volume	34.235	6.907	22.302	43.611	50.227	40.776
	Percentage	9.32%	2.21%	7.12%	13.78%	15.68%	13.44%
	ILI	0.97	0.19	0.66	1.27	1.44	1.16
Darling	Volume	72.554	23.180	20.477	45.687	47.637	55.715
	Percentage	10.37%	3.62%	3.03%	6.33%	6.81%	8.96%
	ILI	1.16	0.21	0.32	0.74	0.82	0.96
Moorreesburg	Volume	113.346	61.799	86.457	131.849	93.032	131.529
	Percentage	13.18%	7.93%	11.01%	15.93%	12.21%	16.49%
	ILI	1.39	0.86	1.09	1.55	1.18	1.67
Malmesbury	Volume	616.42	524.438	741.701	559.375	595.113	359.994
	Percentage	18.40%	16.70%	23.55%	17.97%	18.92%	12.45%
	ILI	3.05	2.71	3.88	2.82	3.35	2.01
TOTAL	Volume	944.915	676.819	978.215	844.816	898.877	694.931
	Percentage	15.93%	12.39%	17.73%	15.27%	16.26%	13.44%
	ILI	2.40	1.77	2.56	2.17	2.56	1.82

Note: Infrastructure Leakage Index (ILI) for Developed Countries = 1 – 2 Excellent (Category A), 2 – 4 Good (Category B), 4 – 8 Poor (Category C) and > 8 – Very Bad (Category D)

Category A = No specific intervention required.

Category B = No urgent action required although should be monitored carefully.

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

The Infrastructure Leakage Index (ILI) is also included in the above table, which is the most recent and preferred performance indicator for comparing leakage from one system to another. It is a non-dimensional index representing the ratio of the current real leakage and the "Unavoidable Annual Real Losses". A high ILI value indicates a poor performance with large potential for improvement while a small ILI value indicates a well-managed system with less scope for improvement. The parameters used to calculate the ILIs for the various distribution systems are included in the Models in Annexure B. Attaining and ILI = 1 is a theoretical limit which is the minimum water loss in an operational water reticulation system. A value of less than 1 should not occur since this implies that the actual leakage is less than the theoretical minimum level of leakage.



Number of consumers connected to a water reticulation system where pressures rise above 900 kPa at the consumer connection are as follows:

The table below indicate the potential savings on bulk water supply for each town within the Swartland Management Area, through the implementation of pressure management. The towns that should consider pressure management as a measure of water demand management (where the % potential saving > 3% of the total water demand), as identified in the Swartland Municipality WDM Strategy developed by CES, are also indicated in the table below.

Table C.5.3: Potential savings on bulk water supply through the implementation of pressure management				
Distribution System	Saving Potential	Pressure Management Priority (WDM Strategy)	Number of consumer connections where pressure rise above 900 kPa	
			Static Pressure	Residual Pressure
Koringberg	13%	High	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions
PPC	-	Medium	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions, except for the higher lying areas where the pressures are as low as 20m.
Riebeeck Wes	6%	Medium	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions.
Riebeeck Kasteel	6%	Medium	No areas where pressures exceed 90m. Three PRVs in the system.	In the 24m to 90m range under peak hour demand conditions.
Yzerfontein	11%	High	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions.
Darling	7%	Medium	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions, except for the higher lying areas close to the reservoir and in the low cost housing development
Moorreesburg	7%	Medium	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions, except for the low cost residential area where the pressures are as low as 20m, which is marginally less than the adopted design criteria.
Malmesbury	-	Medium	No areas where pressures exceed 90m. One PRV in the system.	The following areas could experience low residual pressures <ul style="list-style-type: none"> • Higher lying areas in Wesbank which is currently fed from the Wesbank reservoirs and not the tower. • Small area in the central part of Malmesbury, which is fed from the Kleindam reservoir.
Abbotsdale, Chatsworth, Kalbaskraal and Riverlands	9%	Medium	No areas where pressures exceed 90m. Four PRVs in the system (3 in Chatsworth and 1 in Riverlands)	In the 24m to 90m range under peak hour demand conditions

The updated Water Master Plans will be consulted in conjunction with the WDM Strategy to identify future areas where pressure reduction can be implemented.

Demand management activities undertaken:

The main water demand management interventions undertaken by Swartland Municipality over the last few years were as follows:

- Increasing Block Tariff Structure. The Municipality's tariff structure discourages excessive use of water. All consumer water meters are read on a monthly basis and consumers are also billed monthly;
- Pipe replacement and maintenance programme for the priority areas with old reticulation networks and frequent pipe failures. All pipe bursts are logged and repaired within three hours;
- Customer services and complaints system (Burst pipes, complaints, etc.). Standby teams are also in place for immediate repairs of burst pipes;
- Pressure control at high pressure zones in Malmesbury and Riebeeck Kasteel;
- Leak repairs at indigent households;
- Promote the use of water efficient fittings (Building regulations);
- Bulk metering and telemetry system, which act as an early warning system for e.g. pipe failures and reservoir overflows;
- Accurate records of water usage and water losses. Water balance models for each of the distribution systems are kept up to date;
- Zone metering for accurate calculation of water losses and non-revenue water for specific zones;
- Annual fire hydrant inspection for leaks and functioning;
- Strict municipal services standards for the installation of new water reticulation for own and private developments;
- Watering of municipal parks during cooler early morning hours;
- Annual audit of all meters larger than 50mm and replacement of the meters where necessary;
- Monthly monitoring of all wet industries and large volume water users for deviations together with appropriate actions in the event of a deviation;
- Monthly monitoring and inspection of zero usage consumers. Inspection of illegal connections on an ongoing basis;
- Re-use of treated effluent for the irrigation of sport fields in Moorreesburg, Darling and Malmesbury;
- Leak repairs at indigent households; and
- Metering of all water usage at households, standpipes, municipal parks, industrial, commercial and institutional consumers.

The newly developed WDM Strategy of Swartland Municipality, February 20014, include the following future WDM measures that will be implemented by Swartland Municipality.

- Pressure Management
- Leak Repair and Assistance Programme
- Residential Measures
- Re-use of treated effluent
- Night Flow Analyses
- Leakage Detection
- Zone Metering
- Reduction of Municipal Water Demand

A pipeline replacement study was performed for Swartland Municipality’s entire water distribution system. The project entailed the verification of system data, establishment of a computer model for the pipe replacement network, performing an analysis and reporting. The pipe replacement potential was determined for each of the pipelines in the water distribution systems by assessing the likelihood of failure (LF) and the consequence of failure (CF). The independent factors and their weight factors used are summarised in the tables below:

Table C.5.4: The independent factors and the weight factors used to determine the pipe replacement potential

Likelihood of Failure Property	Weight	Weight (%)	Consequence of Failure Property	Weight	Weight (%)
Nominal diameter (mm)	20	19.0	High cost to consumer due to high water pressure (m)	2	3.0
Reserve water pressure ratio	10	9.5	High cost to consumer due to flow (l/s)	15	19.0
Catalogue remaining useful life (yr)	15	14.3	High repair cost due to pipe location	10	13.0
Master Plan Item	5	4.8	Flooding due to geography	5	6.0
Leakage volume (l/min/km)	10	9.5	Strategic location	20	26.0
Undesired material	20	19.0	Network redundancy (l/s)	10	13.0
Failure frequency (breaks/km/yr)	25	23.8	Pavement management system	15	19.0
		100.0			100.0

The total pipe replacement potential was calculated for each pipeline as an index

$$PRP = LF \times CF \text{ (In the range of 1 to 25)}$$

The total length of the water supply network is approximately 418 km with an estimated replacement value of R543 400 000. The average condition of the water network can be rated as fair to poor. The pipe replacement requirement amounts to R59 434 766 over the next three (3) years and 30.84 km. This new calibrated and tested pipe failure model identifies with a single geographical view where pipe failures are most likely to occur. It is foreseen that this model will greatly assist the pipe replacement prioritization process as it is completely based on a new scientific approach. By allocating funds to replacing those pipes most likely to fail in future, a limited budget can be spent effectively.

Progress made with the installation of water efficient devices:

Swartland Municipality has investigated the possibility to replace all existing star pillar taps in all public ablution facilities throughout its whole jurisdiction and is considering committing to this proposal by including the replacement costs in its budget for the coming financial year. It should be noted that the replacement of taps will be done over a five year period to allow Municipal staff capacity to execute the task themselves

C.6. Water Services Infrastructure Management

The current water and sewerage challenges highlighted by the Municipality in their latest IDP for the various towns are as follows:

Table C.6.1: Water and Sewerage infrastructure challenges highlighted by the Municipality in their latest IDP		
Town	Water	Sewerage
Koringberg	<ul style="list-style-type: none"> Poorly developed network, small diameter pipes, low pressure and flow condition and open ring mains. Sections of the water reticulation network are obsolete and must be upgraded. Secondary Chlorination at reservoirs must be implemented. 	<ul style="list-style-type: none"> Sewer reticulation network poorly developed and must be extended. WWTW is overloaded and must be upgraded.
Riebeek West, Riebeek Kasteel and Ongegund	<ul style="list-style-type: none"> Poorly developed network, small diameter pipes, low pressure and flow condition and open ring mains. Sections of the water reticulation network are obsolete and must be upgraded. Secondary Chlorination at reservoirs must be implemented. Poor condition of Ongegund reservoir and pump station – must be upgraded. 	<ul style="list-style-type: none"> Waterborne sewer system must be extended in Riebeek Wes.
Yzerfontein	<ul style="list-style-type: none"> Secondary Chlorination at reservoirs must be implemented. 	<ul style="list-style-type: none"> Yzerfontein has no formal WWTW, with no waterborne sewer system.
Darling	<ul style="list-style-type: none"> Poorly developed network, small diameter pipes, low pressure and flow condition and open ring mains. Sections of the water reticulation network are obsolete and must be upgraded. Reservoir capacity must be increased for further developments. Water supply to the industrial area must be increased to supply future demand. 	<ul style="list-style-type: none"> Regular blockages in Darling North. WWTW is overloaded and must be upgraded to supply future demand. Waterborne sewer system must be extended to the industrial area.
Moorreesburg	<ul style="list-style-type: none"> Obsolete infrastructure pipe breakages, leaking valves and leaking hydrants. Poorly developed network, shortage in cut-off valves. Secondary Chlorination at reservoirs must be implemented. 	<ul style="list-style-type: none"> WWTW must be upgraded, not sufficient treatment capacity and the infrastructure is obsolete resulting in high maintenance costs and poor performance.
Malmesbury	<ul style="list-style-type: none"> Sections of the water reticulation network are obsolete and must be upgraded. Storage capacity must be increased for further developments. Secondary Chlorination at reservoirs must be implemented. 	<ul style="list-style-type: none"> Sewerage connector in Wesbank in the area of Wistaria Street is under pressure and must be upgraded for further developments. Obsolete infrastructure causing regular blockages. Upgrading of the distribution network is needed. Upgrading of the main connectors in Voortrekker Street from swimming pool to Bokomo Road.
Kalbaskraal and Abbotsdale	<ul style="list-style-type: none"> Reservoir capacity must be increased for new developments. Secondary Chlorination at reservoirs must be implemented. 	<ul style="list-style-type: none"> Waterborne sewer system must be extended in Kalbaskraal.
Riverlands and Chatsworth	<ul style="list-style-type: none"> Secondary Chlorination at reservoirs must be implemented. Shortfall in reservoir storage capacity, new reservoir must be constructed. Bulk supply system cannot supply in the demand during peak months. Water supply is under pressure due to illegal connections and wasteful use of water. 	<ul style="list-style-type: none"> Waterborne sewer system must be extended in Chatsworth. WWTW must be upgraded.



The current and depreciated replacement costs of the water and sewerage infrastructure is summarised in the table below (June 2015):

Table C.6.2: Current and depreciated replacement costs of the water and sewerage infrastructure				
Asset Type	GIS ID	CRC ⁽¹⁾	DRC ⁽²⁾	% DRC / CRC
WATER				
Borehole	BH	R355 643	R246 238	69%
Pump Station	WPS	R12 635 372	R5 669 776	45%
Reservoir	RES	R86 039 596	R35 288 011	41%
Reticulation Pipeline	WRP	R225 737 963	R111 254 868	49%
Bulk Water Pipeline	BWP	R127 317 688	R63 866 727	50%
Dam	DAM	R30 419 766	R3 092 129	10%
Water Consumer Connections	WCC	R148 476 673	R46 287 586	31%
Other Assets	OTH	R12 723 788	R7 849 797	62%
Totals		R643 706 489	R273 555 132	42%
SEWERAGE				
Sewer Pump Station	SPS	R14 161 046	R8 063 268	57%
Sewage Treatment Works	STW	R246 502 036	R220 617 281	89%
Sewer Reticulation Pipeline	SRP	R250 598 223	R112 580 792	45%
Bulk Sewer Pipeline	BSP	R44 444 553	R24 347 720	55%
Sewer Consumer Connections	SCC	R106 390 949	R32 306 424	30%
Other Assets	OTH	R8 030 778	R5 306 486	66%
Totals		R670 127 585	R403 221 971	60%

Notes: 1) CRC, as included in the June 2015 Asset Register
 2) 2015 Book Value, as included in the June 2015 Asset Register

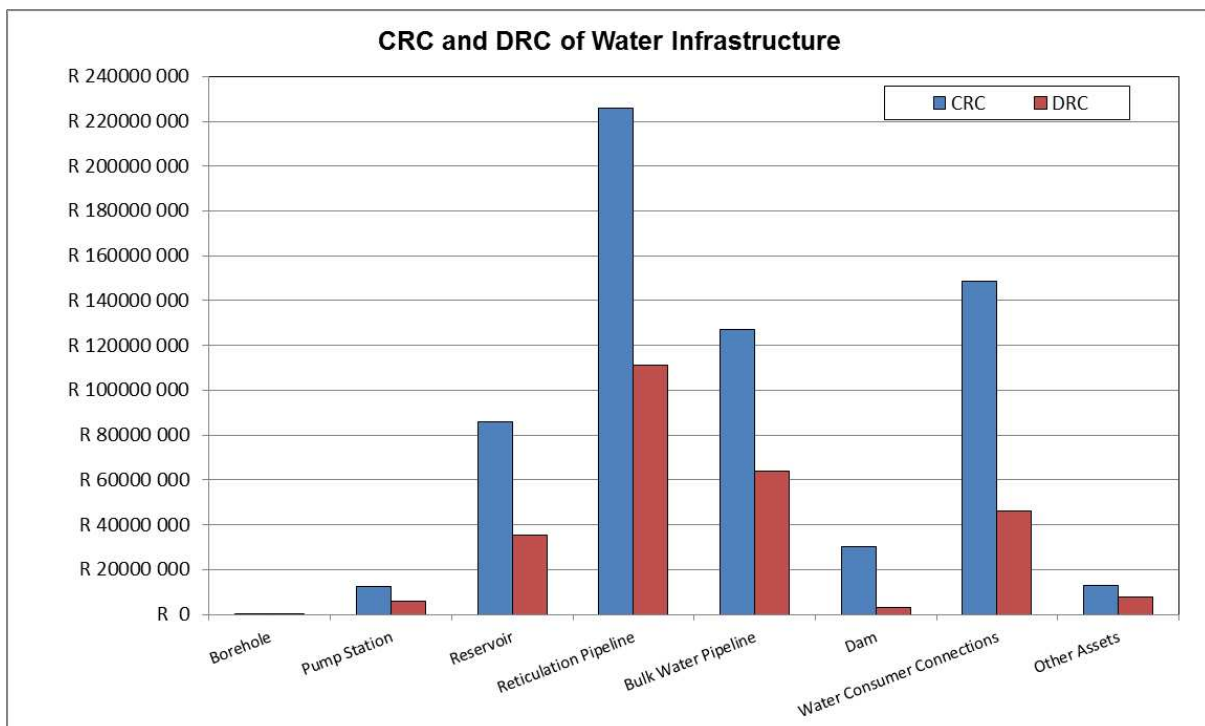


Figure C.6.1: CRC and DRC of the water infrastructure

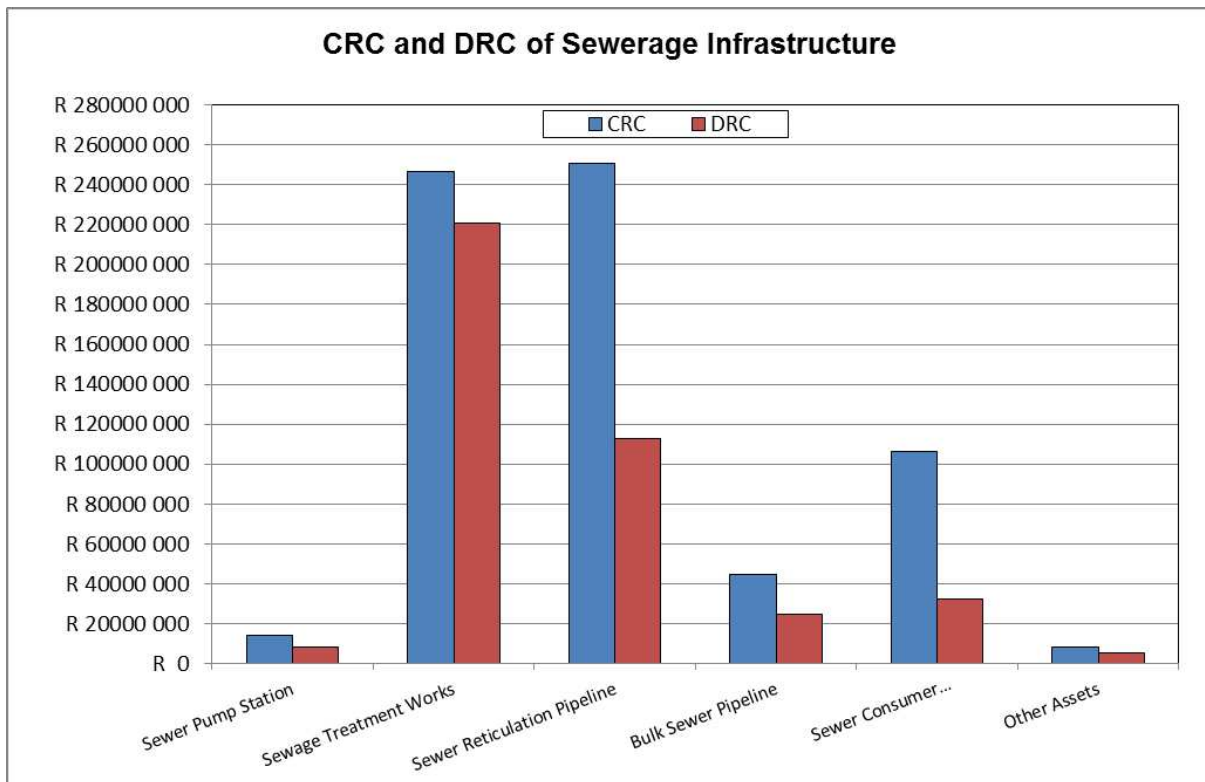


Figure C.6.2: CRC and DRC of the sewerage infrastructure

The above implies that about 58% and 40% of the value of the water and sewerage infrastructure has been consumed.

The table below give's an overview of the RUL per facility type for the water and sewerage infrastructure (June 2015):

Table C.6.3: Overview of the remaining useful life by facility type for water and sewerage infrastructure (CRC)						
Asset Type	GIS ID	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
WATER						
Borehole	BH	R10 000	R0	R205 643	R0	R140 000
Pump Station	WPS	R2 220 675	R1 802 003	R3 987 881	R1 315 805	R3 309 009
Reservoir	RES	R1 844 851	R1 899 325	R13 608 823	R5 154 930	R63 531 667
Reticulation Pipeline	WRP	R4 834 090	R8 873 218	R20 855 993	R12 663 423	R178 511 239
Bulk Water Pipeline	BWP	R563 639	R3 250 047	R6 923 531	R19 438 289	R97 142 182
Dam	DAM	R0	R0	R30 000 000	R0	R419 766
Water Consumer Connections	WCC	R0	R0	R34 356 000	R27 811 000	R86 309 673
Other Assets	OTH	R4 162 845	R1 176 440	R4 054 521	R255 008	R3 074 974
TOTALS		R13 636 100	R17 001 033	R113 992 392	R66 638 455	R432 438 510
SEWERAGE						
Sewer Pump Station	SPS	R1 605 743	R2 327 714	R1 235 036	R7 275 941	R1 716 612
Sewage Treatment Works	STW	R47 775 415	R775 000	R72 643 333	R14 447 577	R110 860 711
Sewer Reticulation Pipeline	SRP	R2 160 791	R27 987 469	R33 688 492	R8 850 351	R177 911 119
Bulk Sewer Pipeline	BSP	R0	R882 817	R2 033 715	R2 553 578	R38 974 442
Sewer Consumer Connections	SCC	R6 845 000	R0	R24 962 949	R32 140 000	R42 443 000
Other Assets	OTH	R3 242 078	R4 287 522	R0	R14 812	R486 367
TOTALS		R61 629 026	R36 260 522	R134 563 525	R65 282 260	R372 392 252

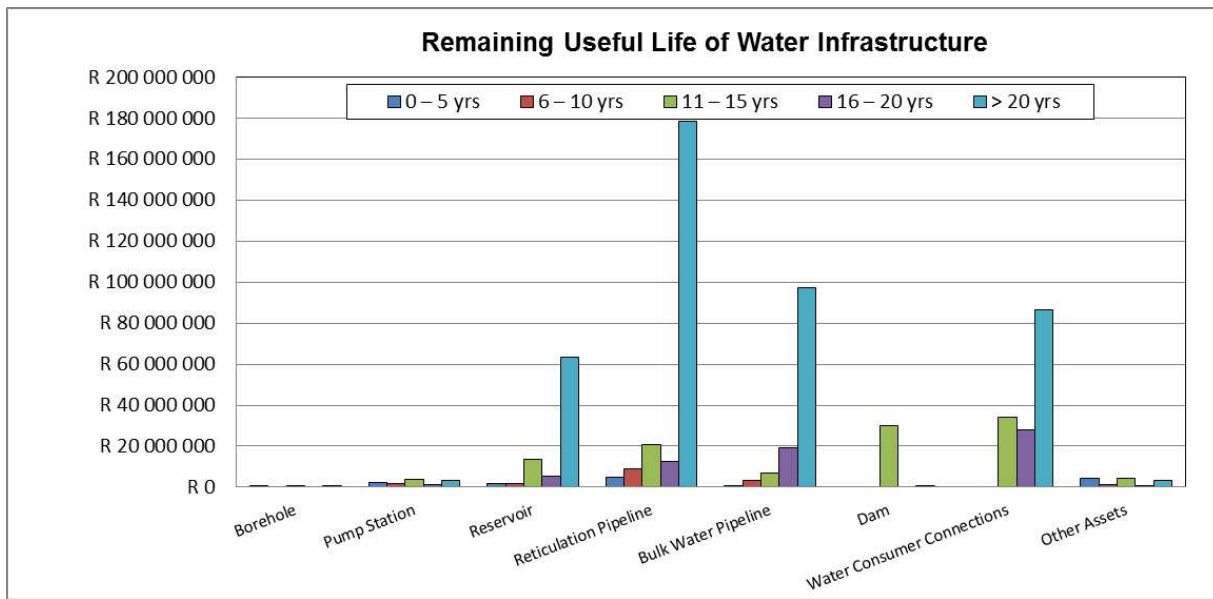


Figure C.6.3: Remaining Useful Life of the water infrastructure

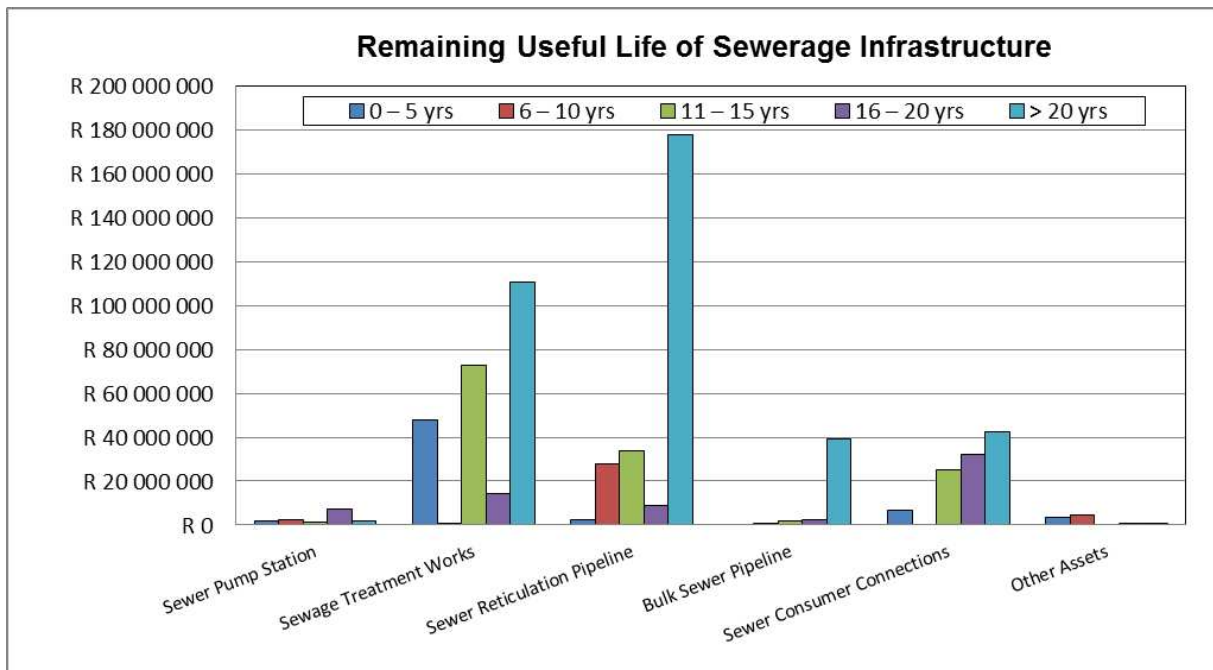


Figure C.6.4: Remaining Useful Life of the sewerage infrastructure



The table below give's an overview of the age distribution per facility for the water and sewerage infrastructure (June 2015):

Table C.6.4: Overview of the age distribution by facility type for water and sewerage infrastructure (CRC)						
Asset Type	GIS ID	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
WATER						
Borehole	BH	R91 536	R114 107	R0	R140 000	R10 000
Pump Station	WPS	R2 090 156	R1 696 665	R4 518 308	R2 280 356	R2 049 887
Reservoir	RES	R3 750 820	R5 093 487	R12 937 568	R10 877 102	R53 380 619
Reticulation Pipeline	WRP	R16 283 542	R20 446 383	R12 881 264	R31 693 879	R144 432 895
Bulk Water Pipeline	BWP	R7 693 711	R10 859 471	R12 825 053	R21 927 021	R74 012 432
Dam	DAM	R419 766	R0	R0	R0	R30 000 000
Water Consumer Connections	WCC	R27 842	R888 831	R0	R18 550 000	R129 010 000
Other Assets	OTH	R7 746 642	R1 030 721	R1 874 190	R933 239	R1 138 996
TOTALS		R38 104 015	R40 129 665	R45 036 383	R86 401 597	R434 034 829
SEWERAGE						
Sewer Pump Station	SPS	R2 646 897	R6 210 247	R1 308 360	R3 740 321	R255 221
Sewage Treatment Works	STW	R192 893 461	R34 319 001	R1 747 966	R3 665 938	R13 875 669
Sewer Reticulation Pipeline	SRP	R10 948 438	R36 077 701	R20 370 100	R21 817 339	R161 384 646
Bulk Sewer Pipeline	BSP	R0	R8 925 392	R2 797 025	R10 402 113	R22 320 023
Sewer Consumer Connections	SCC	R158 000	R832 949	R0	R13 250 000	R92 150 000
Other Assets	OTH	R5 378 195	R1 082 989	R83 511	R299 582	R1 186 500
TOTALS		R212 024 992	R87 448 280	R26 306 962	R53 175 293	R291 172 058

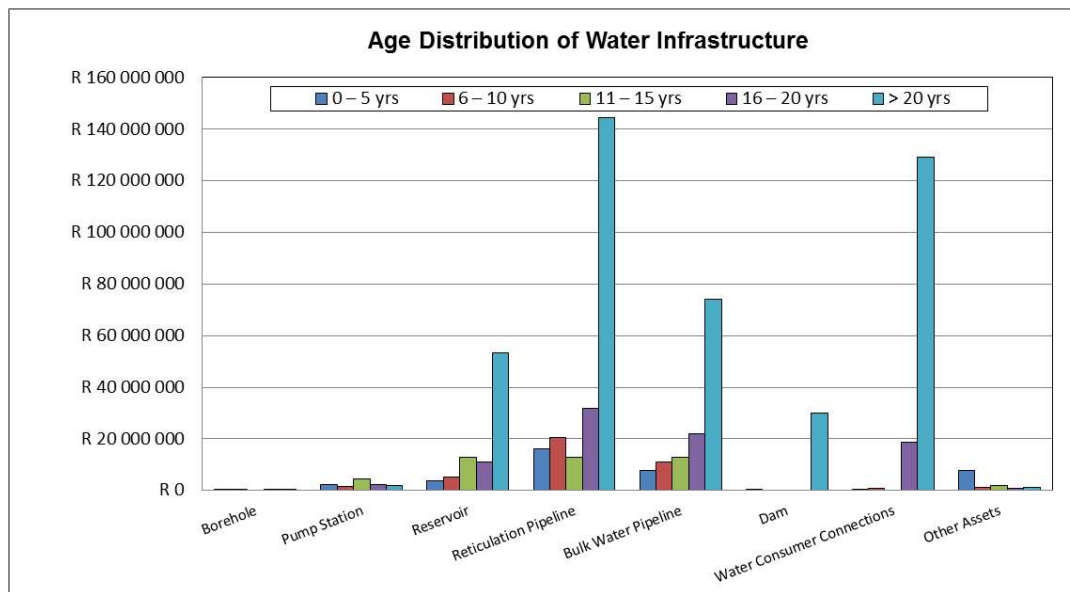


Figure C.6.5: Age distribution of the water infrastructure

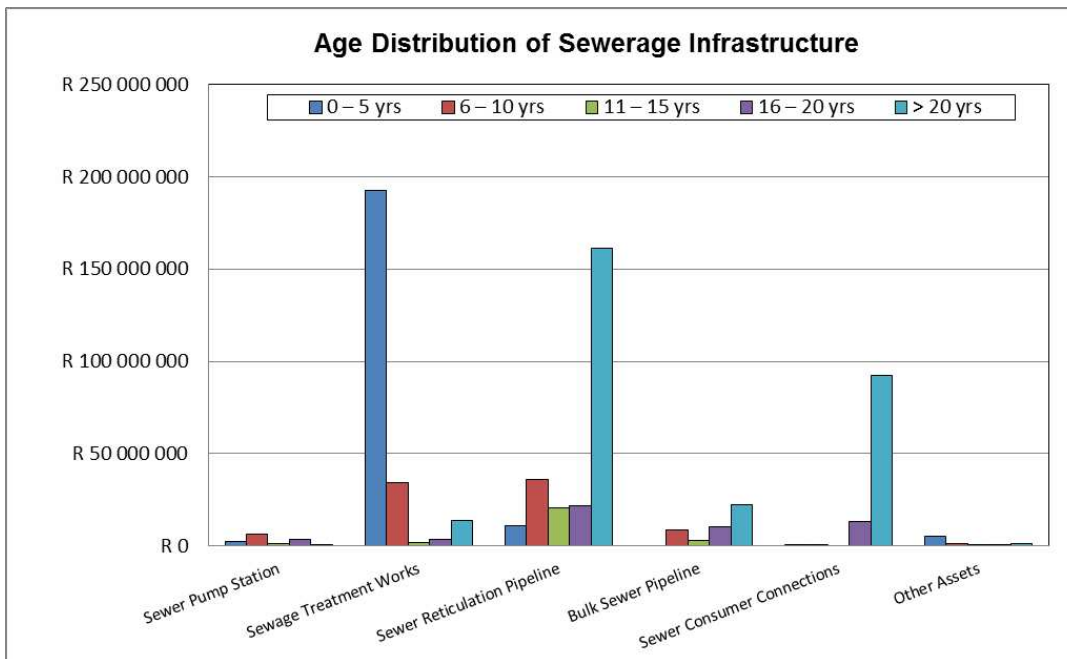


Figure C.6.6: Age distribution of the sewerage infrastructure

It is important for Swartland Municipality to allocate adequate funds for the rehabilitation and maintenance of their existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality. All possible external sources of funding to assist with the development of the bulk infrastructure and additional sources need to be identified.

C.7. Associated Services

The existing water and sanitation service levels for all the schools in the Swartland Municipality Management Area is summarised in the table below.

Associated Services Facility	Number of Facilities	Water			Sanitation		
		Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services	Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services
Schools	31	31	0	0	31	0	0

The existing water and sanitation service levels for all the Medical Facilities in Swartland Municipality’s Management Area are summarised in the table below.

Associated Services Facility	Number of Facilities	Water			Sanitation		
		Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services	Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services
Hospitals	1	1	0	0	1	0	0
Health Centres	1	1	0	0	1	0	0
Clinics and Satellite Clinics	8	8	0	0	8	0	0
Mobile Clinics	6	6	0	0	6	0	0

C.8. Water Resources

Water balance models were developed for each of the towns within Swartland Municipality's Management Area and are included in Annexure A. Graphs of the total water requirements (System Input Volume and billed metered consumption), peak month factors, annual non-revenue water per town and water usage per sector are included in Annexure A.

In order to ensure sustainable economic development in the West Coast region the West Coast District Municipality started with a comprehensive study in 2007 to identify a sustainable long term alternative water source for the region. Various alternative sources and combinations thereof were evaluated and eventually a 25.5 MI/day sea water desalination plant in the Saldanha Bay area was identified as the most cost beneficial alternative and partial funding for the project was obtained from the Regional Bulk infrastructure Grant (RBIG) programme from the DWS.

The West Coast District Municipality is therefore proposing to construct and operate a sea water desalination plant in the Saldanha Bay area using sea water reverse osmosis (SWRO) technology. The intake capacity of the plant will be approximately 60 MI/d (21.9 million MI/a) producing 25.5MI/d (9.3 million MI/a) at final capacity. Approximately 36 MI/d (13 million MI/a) brine will be discharged into the sea. It will have a lifespan of 25 years with the potential of an extended lifespan.

The plant will be constructed in three phases of 8.5 MI/d to reach the full capacity by 2026. All infrastructure however will be constructed for the full capacity in the first construction phase. The proposed project consists of the following components:

- Sea water abstraction infrastructure consisting of an intake structure and pipe connected to either an intake sump and pump station at the coast with a pump line to the SWRO plant or connected directly to the sump and pump station situated at the plant.
- The SWRO desalination plant located on land at the sites selected for the study. The size of the site needed is approximately 4-5 Ha and the plant will consist of pre-treatment, RO treatment, electrical and mechanical equipment in a building, reservoir, and other site related infrastructure.
- Treated water reservoir and pump station at the SWRO plant pumping the potable water to the existing Besaansklip reservoirs of the West Coast District Municipality.
- Brine disposal infrastructure from the plant to the sea.
- Access roads to the plant.
- Site works at the plant.
- Electrical substation and connections

The environmental screening and technical evaluation reduced the ten possible sites, which were originally identified, to two proposed sites to be evaluated, i.e. the site at Arcelor Mittal in the Industrial Development Zone (IDZ) of Saldanha Bay and a site in Danger Bay. The Danger Bay site was identified as the most suitable site and the EIA approval was obtained during August 2013 for this site and the concomitant bulk infrastructure.

The West Coast District Municipality has already exceeded their current allocation of 22.99 million MI/a from the Berg River System for the last eight years. The West Coast District Municipality therefore also applied to the DWS in December 2013 to increase the allocation from the System to initially 18.087 million m³/a for the Wittoogte supply area, which is to be increased to 30.3 million m³/a by 2033, and to 6.39 million m³/a for the Swartland supply area (to be increased to 11.1 million m³/a by 2033).



The levels of salinity in the Berg River have increased dramatically to the point where the level of assurance of 98% cannot be reached without major engineering effort. Urgent measuring devices must be put in place to monitor the Berg River, to find the reason for the high salinity readings and to mitigate these circumstances. Additional factors will have to be addressed through further investigations to determine the sources of contamination and to include these in the management options at Misverstand.

Although the modelling results from the ‘Analysis of Management Options at Misverstand Weir to mitigate the potential impact on salinity of the Berg Water Project and Voëlvlei Augmentation Scheme (DWS, 2006) Study indicated that the incremental impact of the Berg Water Project and the Voëlvlei Augmentation Scheme could be mitigated through the provision of an additional 250 000 m³ of off-channel storage capacity, this re-analysis shows that the desired 98% level of assurance would not be achievable. To obtain a 98% level of assurance an additional 0.7 million m³ of storage would be required over and above the readily available 0.5 million m³ at Withoogte.

The DWS also completed their Reconciliation Strategy during 2010/2011 and the table below gives an overview of the recommended potential future water resources as included in the Strategies. The DWS is currently however busy with the updating of these Reconciliation Strategies, but the information was not yet available for updating of the table below.

Table C.8.1: Potential future water resources for the various towns (DWS’s Reconciliation Strategy)		
Distribution System	Option	Potential
Koringberg	Re-use of water	<ul style="list-style-type: none"> Re-use of treated effluent is not a feasible option for Koringberg, as the current treatment process at the Koringberg WWTW is not considered adequate to deliver treated effluent of an acceptable quality.
	Groundwater	<ul style="list-style-type: none"> The viability of groundwater abstraction in the Malmesbury Group of the direct surrounding area to Koringberg is very low. Groundwater potential for the quaternary catchment G10K is highest for the TMG that is present in the Piketberg Mountains to the north. The fractured sandstone rocks of the Peninsula Formation in many cases have shown to be a successful option for groundwater abstraction. Another option is the area of faulting of the Malmesbury Group about 4 km south of the town. Faults intersecting the usually little permeable Malmesbury rocks are likely to cause increased fracturing giving space for enhanced groundwater occurrence. Prior to any groundwater development further hydrogeological investigation is required.
	Surface Water	<ul style="list-style-type: none"> There is no surface water resources located in close proximity to Koringberg. The most likely potential sources are augmented supply from the Misverstand Dam and groundwater development.
	Other Sources	<ul style="list-style-type: none"> Rainwater harvesting is not a feasible alternative for Koringberg considering the low Mean Annual Precipitation.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> WC/WDM measures to reduce water losses. Increase the allocation from the Withoogte Regional Scheme. Groundwater development
Riebeek Wes	Re-use of water	<ul style="list-style-type: none"> The re-use of treated effluent is not a feasible option for Riebeek Wes, as the current treatment process at the Riebeek Wes WWTW is not considered to be adequate to deliver effluent of an acceptable quality for re-use.
	Groundwater	<ul style="list-style-type: none"> Groundwater potential is the highest for the TMG. Groundwater development along the outcrop of the Peninsula sandstone, favourable along the fault, might be a future option, though the recharge area in the Kasteelberg Mountains is very limited. This unit in general presents a good aquifer system with typical yields of 10 l/s – 20 l/s and a good water quality. Another viable option is the intergranular deposits. In general there is very little hydrogeological information available and further exploration is recommended.
	Surface Water	<ul style="list-style-type: none"> There is no surface water resources located in close proximity to Riebeek Wes. The most likely potential sources are thus an augmented supply from the Voëlvlei Dam and groundwater development.
	Other Sources	<ul style="list-style-type: none"> Rainwater harvesting is not a feasible option for Riebeek Wes considering the big storage needed to carry over winter rain to summer use.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and</p>



Table C.8.1: Potential future water resources for the various towns (DWS's Reconciliation Strategy)		
Distribution System	Option	Potential
		<p>longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> • WC/WDM measures to reduce water losses. • Increase the allocation from the Swartland Regional Water Supply Scheme. • Groundwater development
Riebeek Kasteel	Re-use of water	<ul style="list-style-type: none"> • The re-use of treated effluent is not a feasible option for Riebeek Kasteel, as the current treatment process at the Riebeek Kasteel WWTW is not considered adequate to deliver treated effluent of an acceptable quality for re-use.
	Groundwater	<ul style="list-style-type: none"> • Groundwater potential is the highest for the TMG. Groundwater development along the outcrop of the Peninsula sandstone might be a future option although the recharge area in the Kasteelberg Mountains is very limited. This unit, in general, presents a good aquifer system with typical yields of 10 l/s – 20 l/s and a good water quality. A drilling exploration along the western foot of the Kasteelberg is recommended to find the best access. • Another viable option in the near surrounding is the intergranular deposits. In general there is very little hydrogeological information available and further exploration is recommended.
	Surface Water	<ul style="list-style-type: none"> • There is no surface water resources located in close proximity to Riebeek Kasteel. The most likely potential sources are thus an augmented supply from the Voëlvlei Dam and groundwater development.
	Other Sources	<ul style="list-style-type: none"> • Rainwater harvesting is not a feasible alternative for Riebeek Kasteel considering the low MAP which occurs mainly in winter.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> • Augment inflow to Voëlvlei Dam and increase allocation to Riebeek Kasteel. • Groundwater development
Yzerfontein	Re-use of water	<ul style="list-style-type: none"> • The re-use of treated effluent is not a feasible option for Yzerfontein as there is currently no waterborne sanitation system in place.
	Groundwater	<ul style="list-style-type: none"> • Yzerfontein is situated on quaternary limestone, calcrete and sand of the Bredasdorp Group, which presents the only target option. These units are part of the Grootwater Aquifer System with available yields of 2 – 5 l/s, but sensitive to abstraction and periods of low rainfall and susceptible to contamination. The advantages of use of this system are ease of access and development. Due to the danger of saltwater intrusion a 2.5 km “buffer zone” was declared along the coastline where no abstraction of groundwater is permitted, in order to protect the water quality of the aquifer further inland.
	Surface Water	<ul style="list-style-type: none"> • There is no surface water resources located in close proximity to Yzerfontein.
	Other Sources	<ul style="list-style-type: none"> • Rainwater harvesting is not a feasible alternative for Yzerfontein considering the low Mean Annual Precipitation. • Yzerfontein is situated on the coast and therefore desalination may be a potential source of water. This option should be investigated further. Due to the integrated nature of the water supply operated by the WCDM, it is possible to build a single desalination plant at Saldanha, which will result in more water becoming available in Voëlvlei Dam for increasing the supply to Yzerfontein.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> • WC/WDM measures to reduce water losses. • Augment the inflow to the Voëlvlei Dam. • Desalination for Saldanha and environs to make more water available for Yzerfontein from Voëlvlei Dam.
Darling	Re-use of water	<p>The re-use of treated effluent is a feasible option for Darling, considering that re-use of treated effluent for irrigation is currently taking place. The Municipality must be able to provide 95% assurance of supply in terms of quality requirements. If such an assurance of supply in terms of quality can be supplied, various re-use options could be considered in addition to those already in use. These include the following:</p> <ul style="list-style-type: none"> • Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes. • The direct use for non-potable consumption, namely for irrigation and industrial end-users specifically. • The option of indirect use. • The option of direct use (potable consumption) should be seen as a long-term intervention.



Table C.8.1: Potential future water resources for the various towns (DWS's Reconciliation Strategy)		
Distribution System	Option	Potential
	Groundwater	<ul style="list-style-type: none"> The first target option is zones of fracturing and faulting of the granite. Although these units are usually classified as minor aquifer systems with typical yields of 0.5 – 2 l/s and a moderate water quality, in contacts to other fractured zones they can present better aquifers. The second target option is the quaternary units. This primary aquifer has available yields of 2 – 5 l/s, but is sensitive to abstraction and periods of low rainfall and susceptible to contamination. The advantages of use of this system are ease of access and development.
	Surface Water	<ul style="list-style-type: none"> There is no surface water resources located in close proximity to Darling.
	Other Sources	<ul style="list-style-type: none"> Rainwater harvesting is not a feasible alternative for Darling considering the low rain which mainly falls during winter.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> Increased allocation from the Swartland Regional Water Supply Scheme. Consider re-use of water. Groundwater development.
Moorreesburg	Re-use of water	<p>The existing WWTW is currently utilising 0.042 Mm³/a of treated effluent for irrigation which has an 82.2% compliance with the general requirements. Further re-use of water from the WWTW can only be allowed if the existing works can provide a 95% assurance of supply in terms of quality requirements. Some of the following interventions can be considered.</p> <ul style="list-style-type: none"> The direct use for non-potable consumption, namely for irrigation end-users specifically. Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes. The option of indirect use. The option of direct use (potable consumption) should be seen as a long-term intervention.
	Groundwater	<ul style="list-style-type: none"> Moorreesburg is located in surface water catchment G10J, but near the boundary to G10L. The potential for the quaternary aquifers in high for both catchments. The quaternary in this area on average shows yields of 2 – 5 l/s, but is sensitive to abstraction and periods of low rainfall and susceptible to contamination. The advantages of using this source are ease of access and development. However, near Moorreesburg the presence of this Berg River Formation is limited and further hydrogeological exploration is recommended to assess the viability of groundwater development for municipal supply from this source. Another potential option might be the area of faulting in the Malmesbury rocks. Faulting of sedimentary rocks frequently supports groundwater occurrence but there is no detailed information on the fault system in the area so far. Although these units are usually classified as minor aquifer systems with typical yields of 0.5 – 2 l/s and a moderate water quality, in contacts or other fractured zones they can present better aquifers.
	Surface Water	<ul style="list-style-type: none"> Future supply will come from Misverstand Dam, when the West District Municipality augment their bulk water resources.
	Other Sources	<ul style="list-style-type: none"> Rainwater harvesting is not a feasible alternative for Moorreesburg considering the low Mean Annual Precipitation which occur in winter.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> WC/WDM measures to reduce water losses. An increased allocation from the Western Cape Water Supply Scheme. Groundwater development.
Malmesbury and Abbotsdale	Re-use of water	<p>The existing WWTW is currently supplying 1.229 Mm³/a of treated effluent for irrigation, which has a 48.4% compliance with the general requirements. Further re-use of water from the WWTW can be considered as the works is being upgraded to a Membrane Biological Plant, which can provide a 95% assurance of supply in terms of quality requirements. The following interventions can be considered:</p> <ul style="list-style-type: none"> The direct use for non-potable consumption, namely for irrigation end-users specifically. Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes. The option of indirect use. Recharging of the aquifers. The option of direct use (potable consumption) should be seen as a long-term intervention.
	Groundwater	<ul style="list-style-type: none"> The first target option is the contact between the Malmesbury Group and the Cape Granite



Table C.8.1: Potential future water resources for the various towns (DWS's Reconciliation Strategy)		
Distribution System	Option	Potential
		<p>Suite or other fractured zones. Although these units usually are classified as minor aquifer systems with typical yields of 0.5 – 2 l/s and a moderate water quality, in contacts to other fractured zones they can present better aquifers.</p> <ul style="list-style-type: none"> The second target option is the Alluvium. Boreholes in this primary aquifer can yield 2 – 5 l/s, but is sensitive to abstraction and periods of low rainfall and susceptible to contamination. The advantages of use of this system are ease of access and development. The chance of high yielding boreholes in the Malmesbury shale and Cape Suite Granite seems to be low. The quaternary deposits exhibit an even higher groundwater potential and high yielding boreholes in the intergranular aquifer are a lot more likely. This source is however much further away and groundwater is most likely already being used to a high degree by farmers in the area.
	Surface Water	<ul style="list-style-type: none"> There are no surface water resources located in close proximity to Malmesbury and Abbotdale.
	Other Sources	<ul style="list-style-type: none"> Rainwater harvesting is not a feasible alternative for Malmesbury considering the low MAP occurring mainly in winter.
	Summary	<p>The current water sources do not have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply:</p> <ul style="list-style-type: none"> Augment the inflow into the Voëlvelei Dam and increase the allocation to WCDM. Water re-use Groundwater development for smaller communities.

C.9. Institutional Arrangement Profile

Swartland Municipality is the WSA for the entire Municipal Management Area. A Service Level Agreement is in place with the West Coast District Municipality for the provision of bulk water to most of the towns in Swartland Municipality's Management Area.

The previous 2008/2009 WSDP was updated for the 2014/2015 financial year and the Executive Summary document was approved by the Council on the 27th of March 2014. The Water Services Audit Report is compiled annually and taken to Council with the Annual Report. The new set of Water Services By-laws was promulgated.

The education of users where sanitation facilities are upgraded to waterborne systems is on-going. This is primarily focussed at informing users of the appropriate use of and routine maintenance of such facilities.

Municipal Strategic Self-Assessment (MuSSA): Overseen by the DWS the MuSSA conveys an overall business health of municipal water business and serves as a key source of information around municipal performance. The MuSSA also identifies key municipal vulnerabilities that are strategically important to DWS, the Department of Cooperative Government (DCoG), National Treasury, the planning Commission/Office of the Presidency, the South African Local Government Association (SALGA) and the municipalities themselves. The MuSSA team continues to engage (1) DWS directorates and their associated programmes (e.g. Water Services Development Plan, Water Services Regulation), and (2) other sector departments and their associated programmes (e.g. LGTAS, MISA) to minimize duplication and ensure alignment. Through the tracking of current and likely future performance, the key areas of vulnerability identified, allow municipalities to effectively plan and direct appropriate resources that will also enable DWS and the sector to provide more effective support.



The Spider Diagram below effectively indicates the vulnerability levels of Swartland Municipality across the sixteen key service areas, as identified through the Municipal Strategic Self-Assessment of Water Services process.

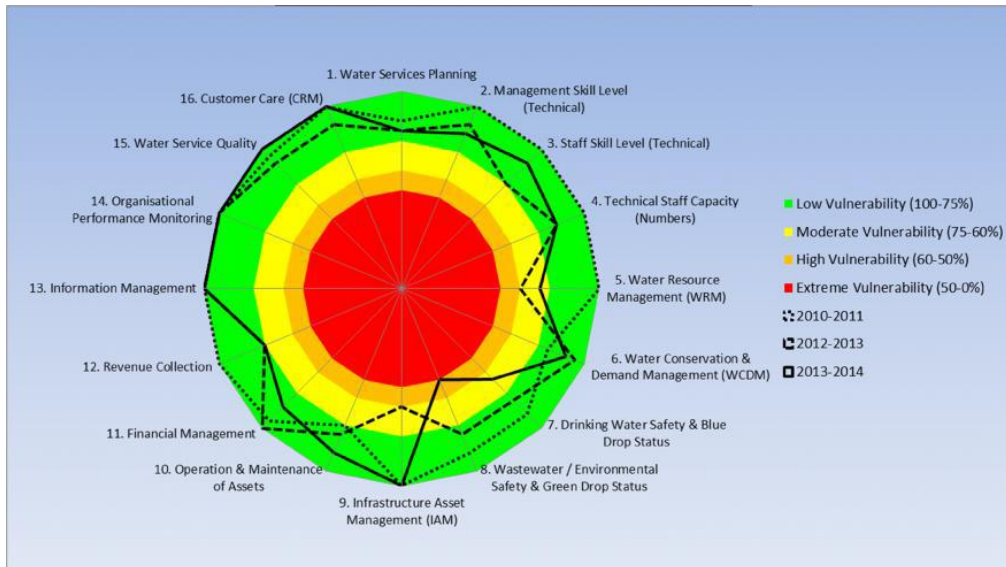


Figure C.9.1: Spider Diagram of the vulnerability levels of Swartland Municipality

Swartland Municipality’s Vulnerability Index for 2013 was indicated as 0.23 “Low Vulnerability” in the “2013 Municipal Services Strategic Assessment (MuSSA) for Western Cape Province” Report.

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	Vulnerability
<p>Water Services Planning</p> <ul style="list-style-type: none"> Your Water Services Development Plan (WSDP) includes appropriate Water, Sewage and Stormwater Master Plans, a Water Safety Plan and a Wastewater Risk Abatement Plan (W₂RAP). You are implementing an up-to-date, adopted WSDP with the necessary annual reports in your business plan. Please indicate your WSDP Status Quo Knowledge Interpretation Score. Your current project list addresses existing needs/shortcomings identified through the WSDP process. Projects identified through your various planning processes have been implemented in the last 3 years. 	Low
<p>Management Skill Level (Technical)</p> <ul style="list-style-type: none"> Key posts within your (council approved) technical management organisational organogram are filled (e.g. Technical Director, Water Services Manager, Superintendent of Water Works). You have sufficient technical management staff (appropriate number of staff - e.g. at least 5 posts per 100,000 persons served). Technical management staff have the correct skills/qualifications and experience (e.g. Pr Eng, Pr Tech, CPM). Managers regularly attend appropriate water services skills development / training. Key technical managers have signed Performance Agreements. 	Low
<p>Staff Skill Levels (Technical)</p> <ul style="list-style-type: none"> WTWs are operated by staff with the correct skills/qualifications and experience (as per Regulation 2834). WWTWs are operated by staff with the correct skills/qualifications and experience (as per Regulation 2834). Water system plumbers, mechanics and electricians have the correct skills/qualifications and experience. Sewage system plumbers, mechanics and electricians have the correct skills/qualifications and experience. Staff regularly attends appropriate water services skills development/training (including safety) (e.g. ESETA 	Low



Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	Vulnerability
courses).	
<p>Technical Staff Capacity (Numbers)</p> <ul style="list-style-type: none"> The posts within your technical staff organisational organogram are filled. WTWs are operated by the appropriate number of staff (as per Regulation 2834). WWTWs are operated by the appropriate number of staff (as per Regulation 2834). You have sufficient water and sewerage/sanitation network operations and repair staff/plumbers (i.e. you have the appropriate number of staff). An active mentoring/shadowing programme is in place where experienced staff train younger, inexperienced staff. 	Low
<p>Water Resource Management (WRM)</p> <ul style="list-style-type: none"> The results from the Reconciliation Strategies (Large Systems/All Towns) have been incorporated into your WSDP. The quantity of water available from the resources is sufficient for your current WSA needs. The quantity of water available from the resources is sufficient for your future WSA needs (i.e. no shortage in 10 years). The source water quality is currently acceptable for its purpose. The trend indicates a deteriorating source water quality. 	Moderate
<p>WC/WDM</p> <ul style="list-style-type: none"> Your WSA has developed a Water Loss Management Plan which includes a recognized acceptable standard water balance (e.g. IWA). Please indicate your percentage Non-Revenue Water (NRW) by volume. NOTE: Although the limitations of this indicator are known, the indicator still provides valuable insight regarding current status. Bulk water inputs to the WSA are accurately monitored using bulk meters (e.g. check metering). Please indicate what percentage of all connections are metered and billed (residential and non-residential (commercial, industrial, etc.)). Your WSA has implemented appropriate intervention programmes to reduce NRW (e.g. minimisation of night flows through pressure management, removal of unlawful connections, leak detection and repairs). 	Low
<p>Drinking Water Safety and Blue Drop</p> <ul style="list-style-type: none"> Please indicate the average Blue Drop score for your WSA. ALL your supply schemes, monitoring programmes, sample points, laboratories and users are registered on the BDS. Council have been made aware of all water safety related issues (including those identified via the Blue Drop Certification programme) and issues have been actioned (where applicable). Sufficient funds have been made available to address all these identified water safety related issues. Required corrective actions/remedial measures to address all these identified water safety related issues have been successfully implemented. 	Moderate
<p>Wastewater / Environmental Safety and Green Drop</p> <ul style="list-style-type: none"> Please indicate the average Green Drop score for your WSA. ALL your wastewater works, monitoring programmes, sample points, laboratories and users are registered on the GDS? Council have been made aware of all wastewater and environmental safety related issues (e.g. pollution incidents, Green Drop deficiencies) and issues have been actioned (where applicable). Sufficient funds have been made available to address all identified wastewater and environmental safety related issues. Required corrective actions/remedial measures to address all identified wastewater and environmental safety related issues have been successfully implemented. 	High
<p>Infrastructure Asset Management</p>	Low



Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	Vulnerability
<ul style="list-style-type: none"> You have an appropriate and up-to-date water services Asset Register (includes asset name, location, condition, useful life, risk analysis, etc.). You have an appropriate Infrastructure Asset Management (IAM) Plan for your WSA (including replacement values). You have implemented an IAM Programme in your WSA (including allocation of appropriate budget and staff). Budget allocated for the IAM Programme is effectively spent. You conduct annual technical assessments of your water and wastewater related systems (including sources, WTWs, WWTWs, pump stations, pipes, valves, etc.) and implement required follow-up actions. 	
<p>Operation and Maintenance of Assets</p> <ul style="list-style-type: none"> An effective infrastructure operations and maintenance team is available (i.e. sufficient artisans, mechanical, electrical support with correct skills/qualifications and experience). A maintenance facility/workshop that is secure and stocked with critical spare equipment (tools, etc.) is available. Appropriate planned/preventative maintenance is performed at all WTWs and associated reservoirs, pump stations and in distribution network. Appropriate planned/preventative maintenance is performed at all WWTWs and associated collection system, pump stations. Please indicate your infrastructure maintenance costs as a function of total operating costs (%). 	Low
<p>Financial Management</p> <ul style="list-style-type: none"> Financial controls - With regard to your last audit report on the financial statements, please state the audit opinion. Cash flow status - Your municipality currently has a positive bank balance (no overdraft) for covering expenditure Financial compliance - Appropriate financial policies and procedures are in place to comply with the Municipal Finance Management Act (MFMA) and Generally Recognized Accounting Practice (GRAP). Financial performance - Please state your mid-term (end December) Capex spend versus allocation (i.e. Service Delivery Budget Implementation Plan (SDBIP) actual costs, and excluding commitments). Liabilities (Creditors) - Money is owed by your municipality to major service providers (e.g. ESKOM, Water Board, largest contractors, etc.) for more than 30 days from receipt of invoice 	Low
<p>Revenue Collection</p> <ul style="list-style-type: none"> Tariff setting - Current water tariffs are set to be fully cost reflective (and take into account cost of maintenance and renewal of purification plants and water networks, and the cost of new infrastructure). Billing & accounts - Accurate water bills are sent out on time. Revenue collections - Please state the revenue collection rate in respect to water services. Outstanding debtors - Please indicate the trend in the outstanding debtors older than 90 days in respect to water services. Development contributions - With regard to new developments, by-laws in your municipality require developers to adequately contribute towards construction of new bulk infrastructure (i.e. developer's charges). 	Low
<p>Information Management</p> <ul style="list-style-type: none"> Security management & user access control - IT systems policies and procedures are in place and adhered to (e.g. users are registered, access is controlled, IT systems have firewalls, active protection from viruses, etc.). Financial software programs - Appropriate controls for program changes and data centre management exist for financial and billing systems (either "in-house" systems or "external" systems with an appropriate Service Level Agreement). Hardware and IT infrastructure - Adequate computers and networks are available for water and sanitation staff to perform their tasks and record their activities. Communication - E-mail (intranet) and internet functionality is secure, acceptable and accessible by all required personnel (e.g. superintendent and above). ICT service continuity - Adequate back-ups/archiving of operation critical applications, databases, data, etc. is routinely performed in terms of a Disaster Recovery Plan. 	Low



Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	Vulnerability
<p>Organisational Performance Monitoring</p> <ul style="list-style-type: none"> • Appropriate plans, policies and procedures to address Disaster Management/emergencies and other issues (safety, public participation, communication, etc.) are developed and implemented. • An organisational performance management system is developed and implemented (i.e. effectively measure, monitor and track water services performance indicators). • Council is stable with functional committees. • Effective administration support is available to technical staff to assist with processing work orders, providing order numbers, handling correspondence, etc. • "Access to Basic Water and Sanitation Services" reports are frequently produced and presented to council for discussion, action and follow-up. 	Low
<p>Water Services Quality</p> <ul style="list-style-type: none"> • Critical business databases (e.g. personnel details) and documents (e.g. as-built drawings, records, manuals, agreements, billing/revenue collection, etc.) are maintained and stored in secure locations (both paper and electronic). • Customers have adequate access to water (at least basic services and no backlogs, sufficient quantity and flow, good quality, minimal interruptions). • Customers have adequate access to sanitation (at least basic services and no backlogs, no blockages, minimal impact on environment). • All consumers served experience interruptions of less than 48 hours (at any given time) and a cumulative interruption time during the year of less than 15 days. • Households in your WSA experience water pressure problems (no flow/partial flow less than 10 litres / minute) (not to be confused with interruption to supply). 	Low
<p>Customer Care</p> <ul style="list-style-type: none"> • A customer services representative and associated complaints register is in place and linked to the Technical Department to investigate and resolve. • A functional customer service system is in place to immediately inform customers of service interruption, contamination of water, boil water alert, etc. • Please indicate what percentage of the reported water related complaints/callouts are responded to within 24 hours. • Please indicate what percentage of the reported wastewater/sanitation related complaints/callouts are responded to within 24 hours. • Regular awareness campaigns informing customers of water system O&M activities, water quality, resource protection/pollution, reporting incidents/security concerns, etc. are conducted. 	Low
MuSSA Vulnerability Index (2013)	0.23

The Municipal staff is continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled annually and the specific training needs of the personnel, with regard to water and wastewater management are determined annually.

The table below gives an overview of the training provided during the 2014/2015 financial year, as taken from the Workplace Skills Plan.

Table C.9.2: Training provided during the 2014/2015 financial year (Workplace Skills Plan)			
Name of learning intervention	NQF Training level	Actual Amount	Number of personnel that attended
OH Act and Responsibility of Management	4	R6 360-00	4
Basic Fire Fighting	2	R28 500-00	35
Air Brakes	3	R410-00	8
Chainsaw	2	R25 271-52	33
Environmental Management Inspector	5	R2 000-00	1
Adult Education and Training	1	R111 078-00	27
Truck Mounted crane and Cherry Picker	2	R3 716-40	7
Health and Safety Representative Training	4	R17 407-80	25
Front end Loader	2	R5 574-60	4
IRP5 Training	3	R13 500-00	3
Learners and Licences	2	R275 250-00	57
MTCNA Network Associate	5	R7 410-00	1
MTCRE Routing Engineer	5	R11 286-00	2
MTCWE Wireless Engineering Training	5	R5 643-00	1
Law Enforcement Training	5	R60 276-00	20
Payday Seminar	4	R11 700-00	2
Strategic Thinking in the public Sector	6	R5 600-00	1
Streetlighting Training	2	R1 026-00	1
Disciplinary Skills	4	R29 640-00	10
Roads to Registration of candidates	5	R3 080-00	1
New Construction Regulation	5	R900-00	1
Truck Mounted Crane and Cherry Picker	2	R9 291-00	6
Examiner of Driving Licenses	4	R10 055-08	1
Total Training for 2014/2015		R644 975-40	251

The table below gives an overview of the specific water and waste water training provided during the 2014/2015 financial year.

Table C.9.3: Water and Sewerage training provided during the 2014/2015 financial year			
Name of training intervention		Section	Number of personnel that attended
Process Controller	(NQF Level 4)	Water / Waste Water Personnel	2
	(NQF Level 2)	Water / Waste Water Personnel	4
Dangerous Goods		Civil Engineering Services Personnel (excluding Water / Waste Water)	19
Operators Training		Water / Waste Water Personnel	5
		Civil Engineering Services Personnel (excluding Water/Waste Water)	26
Code EC		Water/Waste Water Personnel	2
Number of personnel that received training			58

The WWTWs in Swartland Municipality's Management Area and the Process Controllers working at these plants are registered with the DWS.



The Occupational Health and Safety Act contain provisions directing employers to maintain a safe workplace and to minimize the exposure of employees and the public to workplace hazards. It is therefore important for Swartland Municipality to compile a Legal Compliance Audit of all their WWTWs, which will provide the management of Swartland Municipality with the necessary information to establish whether the Municipality is in compliance with the legislation or not.

Swartland Municipality's Organogram, which include water and sanitation services, is included in Annexure F. Swartland Municipality is currently effectively managing its water and sanitation services. Urgent attention is however required to address the backlog in infrastructure replacement and refurbishment. All forward planning for water and sanitation services is guided by the Water and Sewer Master Plans.

C.10. Social and Customer Services Requirements

A comprehensive Customer Services and Complaints system is in place at Swartland Municipality and the Municipality has maintained a high and a very consistent level of service to its urban water consumers. After hour emergency requests are being dealt with by the control room on a twenty four hour basis. All water and sanitation related complaints are logged through the system in order to ensure quick response to complaints. The Object ref, Date time reported, Reported by, Contact telephone, Location description, Incident type, Capture by, Allocated to, Date and time attended and Status is recorded.



Table C.10.1: Water indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	Indicator	Abbotsdale	Chatsworth	Darling	Kalbaskraal	Koringberg	Malmesbury	Morreensburg	Farms	Ongegund (PPC)	Riebeeck Kasteel	Riebeeck Wes	Riverlands	Yzerfontein	Total
Repair pipe bursts	Repair of burst water pipelines	3	17	25	6	8	122	29	3	4	39	13	29	5	303
Dams	Inspect / Repair faults at dams	-	-	4	-	-	1	1	-	-	-	-	-	-	6
Fire Hydrant Leak	Inspect / repair leaking hydrants	-	-	3	-	1	11	5	-	-	-	2	-	-	22
Other	Other water complaints (Not specified)	14	16	74	10	10	257	124	3	1	11	10	5	2	537
Pipelines water	Inspect / repair of faulty water pipelines	11	40	62	15	4	403	90	-	2	18	5	37	9	696
Reservoirs	Inspection of reservoirs and work carried out	1	-	6	1	-	3	-	-	-	1	-	1	-	13
Stop-cock	Inspect / Repair leaking stop-cocks	-	-	8	-	2	-	34	-	-	1	-	-	-	45
Tap Leak	Inspect / Repair leaking taps	-	-	1	-	-	4	12	-	-	-	-	-	-	17
Water Connections	New / Inspections and work carried out at water connections	8	17	6	14	3	36	8	2	-	14	6	5	46	165
Water Pump Stations	Inspections and work carried out at water PS	-	6	-	6	-	3	-	-	-	-	-	4	-	19
Water Supply	Faulty water supply	10	16	5	8	2	87	11	2	1	3	2	5	-	152
Watermeters	Inspect / Test / Repair / Install	49	46	154	12	19	418	140	4	1	38	29	33	33	976
Total for 2014/2015		96	158	348	72	49	1 345	454	14	9	125	67	119	95	2 951
Repair pipe bursts	Repair of burst water pipelines	6	9	13	4	3	107	28	1	7	31	25	22	7	263
Dams	Inspect / Repair faults at dams	-	-	1	-	-	3	3	-	-	-	-	2	-	9
Fire Hydrant Leak	Inspect / repair leaking hydrants	-	-	1	-	-	9	11	-	-	-	-	1	-	22
Other	Other water complaints (Not specified)	13	7	54	9	8	280	163	4	-	7	8	2	4	559
Pipelines water	Inspect / repair of faulty water pipelines	30	25	32	22	8	389	88	2	3	14	13	39	12	677
Reservoirs	Inspection of reservoirs and work carried out	-	-	3	-	-	2	-	-	-	-	-	-	-	5
Stop-cock	Inspect / Repair leaking stop-cocks	-	-	-	-	-	2	31	-	-	-	-	-	-	33
Tap Leak	Inspect / Repair leaking taps	-	-	1	-	-	10	8	-	-	1	-	-	-	20
Water Connections	New / Inspections and work carried out at water connections	9	21	3	8	5	29	7	-	1	4	5	1	35	128
Water Pump Stations	Inspections and work carried out at water PS	-	-	-	1	-	5	1	-	-	-	-	1	-	8
Water Supply	Faulty water supply	7	2	1	4	3	77	13	4	2	4	6	1	6	130
Watermeters	Inspect / Test / Repair / Install	30	42	175	5	16	268	146	2	4	25	18	16	40	787
Total for 2013/2014		95	106	284	53	43	1 181	499	13	17	86	75	85	104	2 641
Repair pipe bursts	Repair of burst water pipelines	7	6	28	11	5	149	46	1	14	20	30	30	10	357
Dams	Inspect / Repair faults at dams	-	-	1	-	-	3	5	-	-	-	-	-	-	9

Table C.10.1: Water indicators monitored by Swartland Municipality with regard to customer services and maintenance work

Service	Indicator	Abbotsdale	Chatsworth	Darling	Kalbaskraal	Koringberg	Malmesbury	Morreensburg	Farms	Ongegend (PPC)	Riebeek Kasteel	Riebeek Wes	Riverlands	Yzerfontein	Total
Fire Hydrant Leak	Inspect / repair leaking hydrants	-	-	4	1	1	10	5	-	1	-	-	-	1	23
Other	Other water complaints (Not specified)	7	10	136	10	39	243	422	7	-	4	9	12	6	905
Pipelines water	Inspect / repair of faulty water pipelines	21	23	63	23	16	414	118	1	-	12	6	29	15	741
Reservoirs	Inspection of reservoirs and work carried out	1	-	2	-	-	3	1	-	1	-	1	-	-	9
Stop-cock	Inspect / Repair leaking stop-cocks	-	-	1	-	4	3	12	-	-	-	-	-	1	21
Tap Leak	Inspect / Repair leaking taps	-	1	1	-	-	11	4	-	-	-	1	-	1	19
Water Connections	New / Inspections and work carried out at water connections	8	10	5	6	1	28	7	1	-	8	6	4	26	110
Water Pump Stations	Inspections and work carried out at water PS	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Water Supply	Faulty water supply	8	1	3	4	5	76	11	3	5	9	9	3	1	138
Watermeters	Inspect / Test / Repair / Install	36	24	258	43	31	445	252	5	6	94	66	33	57	1 350
Total for 2012/2013		88	75	502	98	102	1 385	883	18	27	147	128	112	118	3 683

C.10.2: Sanitation indicators monitored by Swartland Municipality with regard to customer services and maintenance work

Service	Indicator	Abbotsdale	Chatsworth	Darling	Kalbaskraal	Koringberg	Malmesbury	Morreensburg	Farms	Ongegend (PPC)	Riebeek Kasteel	Riebeek Wes	Riverlands	Yzerfontein	Total
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	53	10	536	18	18	479	434	2	29	76	52	19	5	1 731
Septic tanks	Empty septic tanks	25	326	248	316	319	78	257	378	-	134	615	8	2 491	5 195
Investigate sewer reticulation network	Investigate and clear blockages in network	18	8	111	17	6	368	173	20	3	48	18	10	26	826
Other	Other sewer complaints (Not specified)	7	1	4	1	2	21	30	-	-	5	-	-	2	73
Sewer spillage	Investigate and clean sewer spillages	-	-	2	-	-	3	2	-	-	-	-	-	-	7
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	4	-	2	1	-	8	4	-	-	12	3	2	-	36
Sewer effluent	Investigate effluent distribution for irrigation purposes	-	-	-	-	-	1	-	-	-	-	-	-	-	1



C.10.2: Sanitation indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	Indicator	Abbotsdale	Chatsworth	Darling	Kalbaskraal	Koringberg	Malmesbury	Morreensburg	Farms	Ongegund (PPC)	Riebeek Kasteel	Riebeek Wes	Riverlands	Yzerfontein	Total
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	2	-	-	-	-	3	-	-	-	-	-	2	-	7
Total 2014/2015		109	345	903	353	345	961	900	400	32	275	688	41	2 524	7 876
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	38	7	456	31	9	536	536	4	17	47	48	7	6	1 742
Septic tanks	Empty septic tanks	4	311	180	300	307	82	296	285	-	110	624	-	2 133	4 632
Investigate sewer reticulation network	Investigate and clear blockages in network	8	6	114	6	5	372	168	12	11	31	31	6	12	782
Other	Other sewer complaints (Not specified)	4	2	5	1	-	26	4	-	-	4	-	-	5	51
Sewer spillage	Investigate and clean sewer spillages	-	-	2	-	-	-	2	-	-	2	-	-	-	6
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	4	-	1	1	-	7	7	-	-	1	2	1	-	24
Sewer effluent	Investigate effluent distribution for irrigation purposes	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	8	-	1	1	-	6	1	-	1	5	1	-	-	24
Total 2013/2014		66	326	759	340	321	1 029	1 14	301	29	200	706	14	2 156	7 261
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	32	11	425	19	24	469	554	4	29	69	57	19	3	1 715
Septic tanks	Empty septic tanks	10	246	160	328	279	100	219	390	-	150	550	-	1 834	4 266
Investigate sewer reticulation network	Investigate and clear blockages in network	14	11	117	10	2	391	94	9	7	30	30	5	11	731
Other	Other sewer complaints (Not specified)	4	2	4	9	-	23	5	1	1	4	2	1	1	57
Sewer spillage	Investigate and clean sewer spillages	-	-	4	-	1	3	2	-	-	2	1	-	-	13
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	4	-	3	-	-	8	4	-	-	4	1	1	-	25
Sewer effluent	Investigate effluent distribution for irrigation purposes	-	-	1	-	-	-	1	-	-	-	-	-	-	2
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	4	-	-	3	-	6	2	-	-	3	1	-	-	19
Total 2012/2013		68	270	714	369	306	1 000	881	404	37	262	642	26	1 849	6 828

The table below gives an overview of the number of tanks pumped during the last two financial years for the various towns.

Table C.10.3: Number of tanks pumped						
Town	2014/2015					2013/2014
	Pump 1	Pump 2	Pump 3	After Hours	Total	Total
Abbotsdale	14	8	3	-	25	4
Chatsworth	263	47	13	3	326	309
Darling	118	55	49	26	248	178
Kalbaskraal	234	69	11	-	314	300
Koringberg	203	113	-	-	316	305
Malmesbury	29	17	4	-	50	75
Moorreesburg	187	59	4	-	250	296
Farms / Other	306	59	46	-	411	289
Riebeek Kasteel	87	43	3	-	133	110
Riebeek Wes	405	186	13	2	606	619
Riverlands	5	1	-	-	6	0
Yzerfontein	1617	525	266	72	2480	2 132
Villa Fontana Yzerfontein	120	-	-	-	120	120
Total	3588	1182	412	103	5285	4 737

Access to safe drinking water is essential to health and is human right. Safe drinking water that complies with the SANS:241 Drinking Water specification does not pose a significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages. Swartland Municipality is therefore committed to ensure that their water quality always complies with national safety standards.

Barriers implemented by Swartland Municipality against contamination and deteriorating water quality include the following:

- Service Delivery Agreement between the West Coast District Municipality and Swartland Municipality. A Monitoring Committee with the following powers and functions are in place:
 - To co-ordinate integrated development planning in respect of the services;
 - To monitor the performance of the District Municipality in respect of service levels;
 - To monitor the implementation of this agreement;
 - To provide a forum for the local municipalities to interact with the District Municipality;
 - To accept delivery, on behalf of the Local Municipalities, of reports which the District Municipality is required to produce in terms of this agreement;
 - To consider and make recommendations to the District Municipality on the District Municipality's high level budget and key performance indicators and targets;
 - In consultation with the District Municipality, to handle, manage and make recommendations to the parties in respect of any matter related to the services which is not dealt with by this agreement;
 - To ensure that the expenses incurred by the District Municipality in respect of the services do not exceed the amount allocated therefore in the District Municipality's annual budget;
 - To formulate a written document that records the rules and procedures, which will be binding on itself, regulating the manner and legislative obligations, powers and functions to the Monitoring Committee.

- Protection at points of abstraction such as Paardenberg Dam and the boreholes (Abstraction Management).
- Protection and maintenance of the distribution systems. This includes ensuring an adequate disinfectant residual at all times, rapid response to pipe bursts and other leaks, regular cleaning of reservoirs, keeping all delivery points tidy and clean, etc.

Three other important barriers implemented by Swartland Municipality against poor quality drinking water that are a prerequisite to those listed above are as follows:

- A well informed Council and municipal managers that understand the extreme importance of and are committed to providing adequate resources for continuous professional operation and maintenance of the water supply system.
- Competent managers and supervisors in the technical department who are responsible for water supply services lead by example and are passionate about monitoring and safeguarding drinking water quality.
- Well informed community members and other consumers of water supply services that know how to protect the water from becoming contaminated once it has been delivered, that have respect for water as a precious resource and that adhere to safe hygiene and sanitation practices.



D. APPROVAL AND PUBLICATION RECORD

This Annual WSDP Performance- and Water Services Audit Report is for the 2014/2015 Financial Year and is hereby approved for submission to the Minister of the Department of Water and Sanitation, the Minister for the Department of Cooperative Governance, the Province and to SALGA, as required by the Water Services Act, 1997.

The Municipality will endeavour to publicise a summary of the report.

This report will be available for inspection at the offices of the municipality and is available on the Municipality's website. A Copy of the report is obtainable at a fee as determined by the Municipality

RECOMMENDED:

Signature
Name: E Steenkamp
Title: Manager Trade Services

Date

Signature
Name: A Botha
Title: Director Civil Engineering Services

Date

APPROVED:

Signature
Name: Joggie Scholtz
Title: Municipal Manager

Date

REFERENCES

- SA Census Data (2011), Community Profiles.
- Water Services Act, Act 108 of 1997. Regulations under Section 9 of the Water Services Act, which include the water services audit as Section 10 of the Guidelines for Compulsory National Standards.
- DWS's Annual Water Services Development Plan Performance- and Water Services Audit Report Template, August 2014.
- DWS's 2012 Blue Drop Progress Report.
- DWS's 2013 Green Drop Report.
- DWS's Municipal Water Services Performance Assessment 2012 Report.
- DWS's Reconciliation Strategy Documents for each of the towns in Swartland Municipality's Management Area, 2011.
- 2013/2014 Municipal Services Strategic Assessment (MuSSA) for Western Cape Province, DWS.
- Swartland Municipality's Water Services Audit Report for 2013/2014, Final Document, WorleyParsons RSA.
- Swartland Municipality's Operational Budgets and Tariffs.
- Asset Register for Water and Sanitation Infrastructure Assets, June 2015.
- SDBIP of Swartland Municipality for 2014/2015.

ANNEXURE A

Monthly number of consumers per category and per town for the last four years

Monthly volume of billed metered consumption per category and per town for the last four years

Water balance models for the various distribution systems

Rainfall and WWTWs flows and capacities

ANNEXURE B

ILI for the various distribution systems



ANNEXURE C

Water Quality Compliance Sample Results

Final Effluent Quality Compliance Sample Results



ANNEXURE D

DWS's scorecard for assessing the potential for WC/WDM efforts



ANNEXURE E

Water and Sanitation Operational and Maintenance Budget

ANNEXURE F

Organogram (Water and Wastewater)