



**SWARTLAND MUNICIPALITY**

**WATER SERVICES AUDIT FOR 2010/2011**

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## ABBREVIATIONS AND DEFINITIONS

BDS	Blue Drop System
BWP	Bulk Water Pipeline
CAFES	Conserving, Adequate, Fair, Enforceable, Simple
CES	Community Engineering Services
CPP	CAFES Cost and Pricing Strategy
CRC	Current Replacement Cost
Dia	Diameter
DLG&H	Department of Local Government and Housing
DRC	Depreciated Replacement Cost
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
GDS	Green Drop System
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
JTC	Junior Town Council
KPI	Key Performance Indicator
l/s	Litres per Second
LED	Local Economic Development
LMP	Leakage Management Programme
MAP	Mean Annual Precipitation
MIG	Municipal Infrastructure Grant
MI	Mega litre
MI/a	Mega litre per year
MI/d	Mega litre per day
Mm <sup>3</sup> /a	Million Cubic Meters per Year
PRV	Pressure Reducing Valve
RDP	Reconstruction and Development Programme
RM	Rand Million
RPMS	Regulatory Performance Management System
RSA	Republic of South Africa
RUL	Remaining Useful Life
RWW	Re-use of Waste Water
SANS	South African National Standard
SDBIP	Service Delivery Budget Implementation Plan
SPP	Socio - Political Programme
TMG	Table Mountain Group
VIP	Ventilated Improved Pit
WCP	Water Conservation Products
WC/WDM	Water Conservation Water Demand Management
WDM	Water Demand Management
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSP	Water Services Providers
WSI	Water Services Institution
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works



TERM	INTERPRETATION
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.
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.
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 Services Authority (WSA)	A water services authority is any municipality that has the executive authority to provide water services within its area of jurisdiction in terms of the Municipal Structures Act 118 of 1998 or the ministerial authorisations made in terms of this Act. 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.
Water Services Development Plan (WSDP)	A plan for water and sanitation services in terms of the Water Services Act.
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.
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

### WATER SERVICES AUDIT FOR 2010/2011

#### 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. It allows the water services audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. It also assists local communities and DWA 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 previous years' WSDP of Swartland Municipality 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).

Methodology followed: The Service Delivery Budget Implementation Plan (SDBIP) of Swartland Municipality for 2010/2011 was used to report on the KPIs for water and sewerage services. The 2008/2009 WSDP was further used as basis to compile the report. The latest water usage figures and WWTWs flows up to June 2011 were obtained from Swartland Municipality, analysed and included under the various sections of the Water Services Audit Report.

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 document was also made available to DWA as required by legislation.

The Water Services Audit Report contains the following detail information:

- The KPIs performance for 2010/2011, for water and sewerage services, as included in the SDBIP of Swartland Municipality.
- Swartland Municipality's performance with regard to the KPIs as included in the Strategic Framework for Water Services and DWA's Water Services Regulation Strategy (DWA's Regulatory Performance Management System).
- Swartland Municipality's Performance with regard to DWA'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.
- DWA's Scorecard for assessing the potential for WC/WDM efforts in Swartland 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 Elements in the DWA's new WSDP guidelines (October 2010).



Swartland Municipality got 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.

- Bulk Master Plans were completed for Swartland Municipality with funding support from the DLG&H. The project for the Region was managed by the West Coast District Municipality.
- The water and sewer Master Plans for Riebeek Kasteel, Riebeek West and Malmesbury were updated.
- The non revenue water balance models were updated up to the end of June 2011 for each of the distribution systems as part of the Water Services Audit Report process.
- The current Asset Registers for all the water and sanitation infrastructure are kept up to date. Asset Management Plans still need to be drafted.
- The Municipality continues with the active monitoring of the industrial consumers and the effluent they discharge into the Municipality's sewerage system and their compliance. Electronic samplers were installed at Roelcor and Darling Romery.
- Applications for the upgrading of the Riebeek Kasteel and Riebeek West WWTWs were submitted to the DWA. The Municipality is currently busy with the EIA process for this new WWTW.
- The capacities of the bulk sewer pipelines were investigated.
- Swartland Municipality continue with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Operational and Compliance Monitoring).

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

- Swartland Municipality is performing very well with regard to drinking water quality management, even though the Municipality were not awarded Blue Drop Status, by the DWA, for any of their distribution systems during the 2011 assessment. The overall Blue Drop Score received from the DWA was 92.89%.
- Swartland Municipality was commended for their overall improvement in performance with regard to wastewater quality management, even though the Municipality were not awarded Green Drop Status, by the DWA, for any of their drainage systems during the 2011 assessment. The overall Green Drop Score received from the DWA was 72.7%.
- 100% MIG expenditure in the previous financial year from the DLG&H.

#### Demographics and Socio-Economic

**Youth:** Various youth initiatives were supported by Swartland Municipality during the last financial year, which include Swartland Junior Town Council and the Youth Advisory Centre.

**Housing:** Swartland Municipality's most critical service needs with regard to housing are sustainable integrated human settlements, normalisation of communities and economically viable developments. The challenges with regard hereto are availability of suitable land, acceptance of the draft by developers, adequate funding, collective planning between departments, financial impact and influx of people.



**Economics:** A LED Strategy is in place of which the purpose is to develop the local economy and to meet the national objectives of halving poverty and unemployment by 2014. The LED Strategy focuses on growing key sectors of the economy and this is linked to strategies for education, skills development and training, business development and support, spatial planning and township development as well as poverty reduction.

Service Levels

The current residential water and sanitation service levels in Swartland Municipality's Management Area are as follows (Households):

Area	Malmesbury	Abbotsdale, Riverlands, Chatsworth, Kalbaskraal	Riebeek Kasteel	Riebeek Wes	Darling	Moorreesburg	Koringberg	Yzerfontein	Farms	Total
<b>WATER SERVICE LEVELS</b>										
Basic Need (RDP)	0	0	0	0	0	0	0	0	344	<b>344</b>
Communal Services	0	0	0	0	0	0	0	0	0	<b>0</b>
Adequate	6 041	1 731	1 535	674	2 411	2 741	376	1 118	5 944	<b>22 571</b>
<b>SANITATION SERVICE LEVELS</b>										
Basic Need (RDP)	0	109	0	0	0	0	0	0	431	<b>540</b>
Communal Services	0	0	0	0	0	0	0	0	0	<b>0</b>
Adequate	6 041	1 622	1 535	674	2 411	2 741	376	1 118	5 857	<b>22 375</b>

All the 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. There is however currently no informal areas with shared services in Swartland Municipality's Management Area. Swartland Municipality is committed to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services below RDP standard.

Infrastructure

The current replacement cost of the water infrastructure is summarised in the table below (June 2010):

Asset Type	CRC	DRC	% CRC / DRC		
Water Infrastructure	R275 825 092	R156 333 525	57%		
Sanitation Infrastructure	R117 899 186	R67 637 451	57%		
<b>Remaining useful life and the age distribution by facility type</b>					
Asset Type	0 – 5 yrs	5 – 10 yrs	10 – 15 yrs	15 – 20 yrs	> 20 yrs
Water Infrastructure	R12 480 591	R32 060 552	R28 235 654	R24 780 183	R178 268 111
Sanitation Infrastructure	R742 900	R3 232 970	R1 137 000	R38 800 959	R73 985 357
<b>Age Distribution by Facility Type</b>					
Asset Type	0 – 5 yrs	5 – 10 yrs	10 – 15 yrs	15 – 20 yrs	> 20 yrs
Water Infrastructure	R21 770 148	R20 996 517	R83 863 809	R7 704 428	R141 490 189
Sanitation Infrastructure	R9 968 115	R245 000	R5 807 119	R4 045 151	R97 833 801
<b>Condition grading per water facility type</b>					
Asset Type	Very Good	Good	Fair	Poor	Very Poor
Water Infrastructure	R62 649 319	R97 869 859	R68 312 767	R40 158 126	R6 835 021
Sanitation Infrastructure	R15 866 303	R61 067 665	R40 402 318	R562 900	R0

The above implies that about 43% of the value of the water and sanitation networks has been consumed. In order to determine better assessments of the remaining useful life of hidden assets, the municipality will need to improve its monitoring of asset performance in the future.





The average water asset renewal needs over the next 10 years is R4.5M per year and the reinvestment required is R12.5M in the first 5 years and R32M in the second 5 year period. The asset renewal needs for sanitation assets over the next 10 years is R0.4M per year. The reinvestment required is R0.74M in the first 5 years and R3.2M in the second 5 year period. Most of the water and sanitation assets value has age greater than 20 years.

About 17% (R47M) of the water supply network is in poor and very poor condition. There are no borehole components that are in the poor and very poor state. The bulk of the poor assets are the reticulation pipelines with a value of approximately R30M. About 0.5% of the sanitation supply network is in poor condition. The assets in poor condition are mainly pump station assets with an approximate value of R0.6M.

One of the key challenges of Swartland Municipality is to identify adequate funds for the rehabilitation and maintenance of the existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality.

### Operation and Maintenance

A Compliance Water Quality and Wastewater Quality Monitoring Programme that meets the requirements of DWA as stipulated in the Blue and Green Drop criteria was drawn up by Swartland Municipality and is implemented by the Municipality.

The DWA 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 third year of existence and promises to be the catalyst for sustainable improvement of South African drinking water quality management in its entirety. Swartland Municipality's overall Blue Drop Score for the 2011 Assessment was 92.89%.

The DWA also completed their Second Order Assessment of Municipal Waste Water Treatment Plants, DWA's Green Drop Report for 2011, 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. Swartland Municipality's overall Green Drop Score for the 2011 Assessment was 72.7%.

### Associated Services

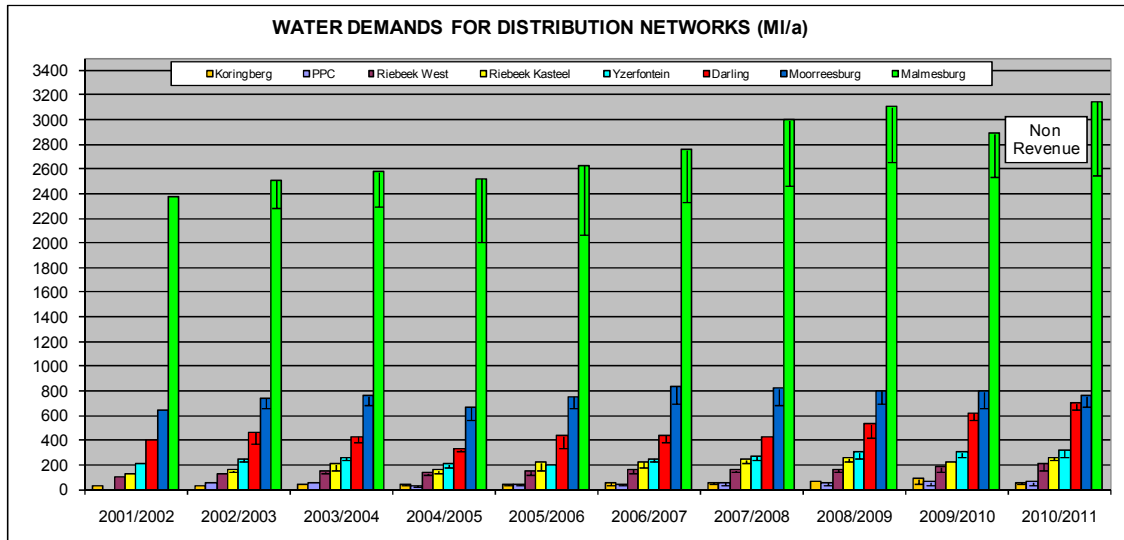
All the schools and medical facilities in Swartland Municipality's Management Area are supplied with adequate water and sanitation services.

### Conservation and Demand Management

The implementation of a Water Demand Management Strategy by Swartland Municipality has been extremely successful and has reduced the water demand of the towns significantly. The overall percentage of non-revenue water was 16.26% for 2010/2011.



The graph below gives a summary of the total bulk water supply and non revenue water for the various distribution systems in Swartland Municipality's Management Area.



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

Table 9.1: Non revenue water for the various distribution systems							
Description	Unit	10/11	Record : Prior (MI/a)				
			09/10	08/09	07/08	06/07	05/06
Koringberg	Volume	13.358	40.201	7.722	15.575	16.899	9.446
	Percentage	22.28%	46.87%	12.29%	26.93%	29.07%	19.87%
	ILI	1.24	3.74	-	-	-	-
PPC	Volume	23.476	22.318	20.130	20.116	11.172	7.046
	Percentage	36.43%	35.70%	34.90%	36.66%	25.65%	16.30%
	ILI	3.38	2.50	-	-	-	-
Riebeek Wes	Volume	52.437	38.774	19.055	9.959	38.580	30.648
	Percentage	24.48%	20.80%	11.43%	6.33%	23.07%	19.74%
	ILI	3.38	2.50	-	-	-	-
Riebeek Kasteel	Volume	23.597	5.624	29.497	29.056	47.043	58.660
	Percentage	8.96%	2.53%	11.45%	12.01%	20.80%	26.83%
	ILI	0.65	0.15	-	-	-	-
Yzerfontein	Volume	50.227	40.776	53.048	34.650	19.977	0
	Percentage	15.68%	13.44%	17.59%	12.57%	7.93%	0.00%
	ILI	1.44	1.16	-	-	-	-
Darling	Volume	47.637	55.715	108.917	0	55.734	100.722
	Percentage	6.81%	8.96%	20.41%	0.00%	12.59%	23.00%
	ILI	0.82	0.96	-	-	-	-
Moorreesburg	Volume	93.032	131.529	109.572	138.609	148.029	98.363
	Percentage	12.21%	16.49%	13.63%	16.84%	17.61%	13.02%
	ILI	1.18	1.67	-	-	-	-
Malmesbury	Volume	595.113	359.994	449.909	534.757	419.120	566.807
	Percentage	18.92%	12.45%	14.48%	17.85%	15.20%	21.54%
	ILI	3.35	2.01	-	-	-	-
<b>TOTAL</b>	<b>Volume</b>	<b>898.877</b>	<b>694.931</b>	<b>797.850</b>	<b>782.722</b>	<b>756.554</b>	<b>871.692</b>
	<b>Percentage</b>	<b>16.26%</b>	<b>13.44%</b>	<b>15.08%</b>	<b>15.57%</b>	<b>15.81%</b>	<b>19.40%</b>
	<b>ILI</b>	<b>2.56</b>	<b>1.82</b>	-	-	-	-

Note: Infrastructure Leakage Index (ILI) = 1 – Excellent, 2 – Good and > 3 - Poor



## Water Resources

Bulk potable water is supplied to most of the towns in Swartland Municipality's Management Area by the West Coast District Municipality through their two bulk distribution systems. The construction of a desalination plant at Saldanha was identified by the West Coast District Municipality as the most feasible scheme for implementation, in order to meet the growing demand of the West Coast Region. Consultants are currently busy to identify the most suitable site for the construction of the plant. The final treatment capacity of the plant will be 25.5 MI/d, but the treatment capacity for the first phase will be 8.5 MI/d. The capacity of the bulk infrastructure connected to the desalination plant will be 25.5 MI/d, which will be implemented as part of the first phase.

**Water Quality:** Swartland Municipality monitors the water quality in the distribution networks of all the towns within their Municipal Management Area. Compliance samples are taken on a monthly basis by a Lab Service Provider and no serious water quality problems were experienced during the last year.

Swartland Municipality actively implement their Drinking Water Quality Sampling Programme in order to promptly identify water quality failures and to react accordingly. The water quality results are loaded onto DWA's Blue Drop System (BDS) via the internet. Once entered the data is automatically compared to SANS241. This real-time system allows for immediate intervention to rectify any problems.

Up to present it was not necessary to take any steps to inform the consumers of any health risk regarding the potable water supplied by Swartland Municipality. The Municipality however got specific Safety Management Procedures in place, to inform its consumers about any potential health risks regarding the water quality, should it become necessary.

## Financial

Swartland Municipality's Tariff Structures for water and sanitation services are summarised under Section 11 of the Report. The table below gives a summary of the operational budget for water and sanitation services for the last four years.

Service	Expenditure / Income	Actual 10/11	Audited 09/10	Audited 08/09	Audited 07/08	Audited 06/07
Water	Expenditure	R28 128 643	R23 694 891	R20 472 590	R18 610 155	R15 807 739
	Income	-R27 231 393	-R24 820 317	-R21 240 912	-R16 596 859	-R12 163 076
	<b>Surplus / (Deficit)</b>	R897 250	-R1 125 426	-R768 322	R2 013 296	R3 644 663
Sanitation	Expenditure	R9 708 230	R12 771 542	R14 233 945	R12 252 463	R10 053 486
	Income	-R21 796 567	-R22 047 507	-R15 896 551	-R14 622 508	-R17 479 660
	<b>Surplus / (Deficit)</b>	-R12 088 337	-R9 275 965	-R1 662 606	-R2 370 045	-R7 426 174

## Water Services Institutional Arrangements

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

The WSDP was updated for the 2008/2009 financial year and was approved by the Council on the 11<sup>th</sup> of June 2008. The Water Services Audit Report is compiled annually and taken to Council with the Annual Report. The Municipality is currently busy with the finalisation of their draft set of Water Services By-laws, which will be promulgated once finalised.

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.



Swartland Municipality is currently effectively managing its water and sanitation services. Urgent attention is however required to address the backlog in sanitation services, as well as the backlog in infrastructure replacement, and forward planning of other services should be guided by the Water and Sewer Master Plans.

### Social and Customer Service 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.

Access to safe drinking water is essential to health and is human right. Safe drinking water that complies with the SANS:241 Drinking Water specifications 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.
- Protection at points of abstraction such as Paardeberg 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.

### Projects completed

The list of water and sewerage capital projects completed during the 2010/2011 financial year is included under Section 14 of the Report.



## SWARTLAND MUNICIPALITY WATER SERVICES AUDIT FOR 2010/2011

### 1. BACKGROUND

#### 1.1 Appointment

WorleyParsons RSA was appointed by Swartland Municipality to assist them with the putting together of their Water Services Audit Report, which form part of their annual report for the 2010/2011 financial year. The purpose of the Water Services Audit Report is to report on the implementation of Swartland Municipality's previous WSDP.

#### 1.2 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 audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. It 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 previous years' WSDP of Swartland Municipality 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 KPIs performance for 2010/2011, for water and sewerage services, as included in the SDBIP of Swartland Municipality.
- Swartland Municipality's performance with regard to the KPIs as included in the Strategic Framework for Water Services and DWA's Water Services Regulation Strategy (DWA's Regulatory Performance Management System).
- Swartland Municipality's Performance with regard to DWA'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.
- DWA's Scorecard for assessing the potential for WC/WDM efforts in Swartland 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 Elements in the DWA's new WSDP guidelines (October 2010).



### 1.3 Methodology followed

The SDBIP of Swartland Municipality for 2010/2011 was used to report on the KPIs for water and sewerage services.

The latest water usage figures and WWTWs flows up to June 2011 were obtained from Swartland Municipality, analysed and included under the various sections of the Audit Report.

The Water Services Audit Report must contain details for the previous financial year (2010/2011) and, if available, comparative figures for the preceding two financial years (2009/2010 and 2008/2009). This Water Services Audit Report therefore focuses on the implementation of Swartland Municipality's WSDP for the 2010/2011 financial year.

Table 1.3.1: Water Services Audit Process				
Comparative Figures for the Preceding Two Financial Years		Previous Financial Year	Current Financial Year	Next Financial Year
Previous Financial Year (2 <sup>nd</sup> )	Previous Financial Year (1 <sup>st</sup> )	<b>Report on the implementation of the WSDP (Water Services Audit)</b>	Currently busy with the implementation of the WSDP	Currently busy with the planning process for the new WSDP
2008/2009	2009/2010	<b>2010/2011</b>	2011/2012	2012/2013

### 1.4 WSA's area of jurisdiction

The WSA is the Swartland Municipality and the Municipality falls within the West Coast Region of the Western Cape Province, in which the following Local Municipalities are also located:

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

Swartland Municipality consists of 10 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
- The rural farm areas.

### 1.5 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 Municipality. 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 document was also made available to DWA as required by legislation.



## 2. LEGISLATION

### Water Services Act:

Section 18 of the Water Services Act stipulates the following with regard to the water services audit on the implementation of the WSDP.

- (1) A water services authority must report on the implementation of its development plan during each financial year,
- (2) The report-
  - a) must be made available within four months after the end of each financial year; and
  - b) must be given to the Minister, the Minister for Provincial and Local Government, the Member of the Executive Council responsible for local government in the relevant province and all the organisations representing municipalities having jurisdiction in the area of the water services authority.
- (3) The water services authority must publicise a summary of its report.
- (4) A copy of the report and of its summary must be-
  - a) Available for inspection at the offices of the water services authority; and
  - b) Obtainable against payment of a nominal fee.

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 stipulates the following:

- (10) (2) A water services audit must contain details for the previous financial year and, if available, comparative figures for the preceding two financial years of-
  - (a) the quantity of water services provided, including at least –
    - (i) the quantity of water used by each sector;
    - (ii) the quantity of water provided to the water services institution by another water services institution;
    - (iii) the quantity of effluent received at sewage treatment plants; and
    - (iv) the quantity of effluent not discharged to sewage treatment plants and approved for use by the water services institution;
  - (b) the levels of services rendered, including at least –
    - (i) the number of user connections in each user sector;
    - (ii) the number of households provided with water through communal water services works;
    - (iii) the number of consumers connected to a water reticulation system where pressures rise above 900 kPa at the consumer connection;
    - (iv) the number of households provided with sanitation services through consumer installations connected to the sewerage system;
    - (v) the number of households with access to basic sanitation services;
    - (vi) the number of new water supply connections made; and
    - (vii) the number of new sanitation connections made;
  - (c) the numbers provided in compliance with paragraph (b) expressed as a percentage of the total number of connections or households;



- (d) cost recovery, including at least –
  - (i) the tariff structures for each user sector;
  - (ii) the income collected expressed as a percentage of total costs for water services provided; and
  - (iii) un-recovered charges expressed as a percentage of total costs for water services provided;
- (e) meter installation and meter testing, including at least –
  - (i) the number of new meters installed at consumer installations; and
  - (ii) the number of meters tested and the number of meters replaced expressed as a percentage of the total number of meters installed at consumer connections;
- (f) the water quality sampling programme contemplated in regulation 5(1), the results of the comparison set out in regulation 5(3) and any occurrence reported in compliance with regulation 5(4);

*Guidelines for Compulsory National Standards and Norms and Standards for Water Services Tariffs: Sections 5(1), 5(3) and 5(4) stipulates the following:*

- 5 (1) *Within two years of the promulgation of these Regulations, a WSA must include a suitable programme for sampling the quality of potable water provided by it to consumers in its WSDP.*
- 5(2) *The water quality sampling programme contemplated in subregulation (1) must specify the points at which potable water provided to consumers will be sampled, the frequency of sampling and for which substances and determinants the water will be tested.*
- 5 (3) *A water services institution must compare the results obtained from the testing of the samples with SABS241: Specifications for Drinking Water, or the South African Water Quality Guidelines published by the Department of Water Affairs and Forestry.*
- 5 (4) *Should the comparison of the results as contemplated in subregulation (3) indicate that the water supplied poses a health risk, the water services institution must inform the Director-General of the Department of Water Affairs and Forestry and the head of the relevant Provincial Department of Health and it must take steps to inform its consumers-*
  - (a) that the quality of the water that it supplies poses a health risk;*
  - (b) of the reasons for the health risk;*
  - (c) of any precautions to be taken by the consumers; and*
  - (d) of the time frame, if any, within which it may be expected that water of a safe quality will be provided.*

- (g) water conservation and demand management, including at least –
  - (i) the results of the water balance as set out in regulation 11;
  - (ii) the total quantity of water unaccounted for;
  - (iii) the demand management activities undertaken; and
  - (iv) the progress made in the installation of water efficient devices.





Guidelines for Compulsory National Standards and Norms and Standards for Water Services Tariffs: Section 11 stipulates the following:

11 (1) Within two years of the promulgation of these Regulations, a water services institution must every month-

- (a) Measure the quantity of water provided to each supply zone within its supply area;
- (b) Determine the quantity of unaccounted for water by comparing the measured quantity of water provided to each supply zone with the total measured quantity of water provided to all user connections within that supply zone;
- (c) Measure the quantity of effluent received at each sewage treatment plant; and
- (d) Determine the quantity of water supplied but not discharged to sewage treatment plants by comparing the measured quantity of effluent received at all sewage treatment plants with the total measured quantity of water provided to all user connections.

11 (2) A water services institution must-

- (a) Take steps to reduce the quantity of water unaccounted for; and
- (b) Keep record of the quantities of water measured and of the calculations made.

Strategic Framework for Water Services (September 2003):

“A WSA must report annually and in a public way on progress in implementing the plan.” The requirement that WSAs regularly update their plans and report annually on progress against their plans will assist local communities and DWA to assess how well WSAs are performing relative to their stated intentions and their capacity.

### 3. ANNUAL REPORT

#### 3.1 Performance Management System

Swartland Municipality got 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 performance evaluation of the water and sanitation indicators / targets, as included in the SDBIP and completed for the end of June 2011, is as follows:

Table 3.1.1: Performance evaluation of water and sanitation indicators as included in the SDBIP			
Performance Objective	Key Performance Indicator	Quarterly Target (%)	Actual (%)
<b>Water Services</b>			
Ensure that all households have access to water within 200m in the area (general KPI)	% of urban households with access within 200 meters	100	100
		100	100
		100	100
		100	100
Ensure continuous and available water supply	% of new water connections completed within 10 working days	100	100
		100	100
		100	100



**Table 3.1.1: Performance evaluation of water and sanitation indicators as included in the SDBIP**

Performance Objective	Key Performance Indicator	Quarterly Target (%)	Actual (%)
	Number of interruptions in continuous service to consumers, where interruptions for a single incident was greater than 3 hrs.	100	100
		100% 4 pm max	100% 1 pm
		100% 4 pm max	100% 1 pm
		100% 4 pm max	100% 1 pm
		100% 4 pm max	100% 0
	Number of interruptions in continuous service to consumers, where interruptions for a single incident was greater than 48 hrs (KPI 17 – DWA).	100% 0 max	100% 0
		100% 0 max	100% 0
		100% 0 max	100% 0
		100% 0 max	100% 0
		100% 0 max	100% 0
Ensure safety of water supply	% of samples compliant with the microbiological requirements of the SANS 248.	95.0%	98.3% average
		95.0%	100.0%
		95.0%	100.0%
		95.0%	100.0%
Ensure effective operation and maintenance of water supply network	Storage capacity of reservoirs (hours)	100.0% 36 hrs	100.0% 36 hrs
		100.0% 36 hrs	100.0% 36 hrs
		100.0% 36 hrs	100.0% 36 hrs
		100.0% 36 hrs	100.0% 36 hrs
		100.0% 36 hrs	100.0% 36 hrs
	% of unaccounted for water	100.0% 18% max	100.0% 14%
		100.0% 18% max	100.0% 14%
		100.0% 18% max	100.0% 14%
		100.0% 18% max	100.0% 17%
		100.0% 18% max	100.0% 17%
Ensure client orientated water provision	Number of legitimate written complaints received	100.0% 4 pm max	100.0% 0
		100.0% 4 pm max	100.0% 0
		100.0% 4 pm max	100.0% 1
		100.0% 4 pm max	100.0% 0.3 average
	% of written correspondence attended to within 10 working days.	100.0%	100.0%
		100.0%	100.0%
		100.0%	100.0%
		100.0%	100.0%



**Table 3.1.1: Performance evaluation of water and sanitation indicators as included in the SDBIP**

Performance Objective	Key Performance Indicator	Quarterly Target (%)	Actual (%)	
		100.0%	100.0%	
<b>Sewer Services</b>				
Ensure that all urban households have access to sanitation services within 200m (General KPI)	% of urban households with access to sanitation.	100.0%	100.0%	
		100.0%	100.0%	
		100.0%	100.0%	
		100.0%	100.0%	
Ensure continuous and available sewerage service	Number of interruptions in continuous service to consumers where the interruptions for a single incident was greater than 3 hours.	100.0%	100.0%	
		4 pm max	0	
		100.0%	100.0%	
		4 pm max	0	
		100.0%	100.0%	
		4 pm max	0	
		% of new sewer connections completed within 10 working days.	100.0%	100.0%
			100.0%	100.0%
	100.0%		100.0%	
	100.0%		100.0%	
	% of tank pumping service requests completed within 24 hours.	95.0%	100.0%	
		95.0%	100.0%	
		95.0%	100.0%	
		95.0%	100.0%	
	Ensure effective operation and maintenance of wastewater treatment works	% compliance with DWA general limits for the discharge of treated wastewater.	80.0%	83.0% average
			80.0%	80.3% average
80.0%			81.2% average	
80.0%			82.0% average	
Number of legitimate written complaints received.		100.0%	100.0%	
		4 pm max	0	
		100.0%	100.0%	
		4 pm max	0	
		100.0%	100.0%	
		4 pm max	0	
		% of written correspondence attended to within 10 working days.	100.0%	100.0%
			100.0%	100.0%
100.0%			100.0%	
100.0%			100.0%	



### 3.2. Performance highlights

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

- Bulk Master Plans were completed for Swartland Municipality with funding support from the DLG&H. The project for the Region was managed by the West Coast District Municipality.
- The water and sewer Master Plans for Riebeek Kasteel, Riebeek West and Malmesbury were updated.
- The non revenue water balance models were updated up to the end of June 2011 for each of the distribution systems as part of the Water Services Audit Report process.
- The current Asset Registers for all the water and sanitation infrastructure are kept up to date. Asset Management Plans still need to be drafted.
- The Municipality continues with the active monitoring of the industrial consumers and the effluent they discharge into the Municipality's sewerage system and their compliance. Electronic samplers were installed at Roelcor and Darling Romery.
- Applications for the upgrading of the Riebeek Kasteel and Riebeek West WWTWs were submitted to the DWA. The Municipality is currently busy with the EIA process for this new WWTW.
- The capacities of the bulk sewer pipelines were investigated.
- Swartland Municipality continue with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Operational and Compliance Monitoring).

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

- Swartland Municipality is performing very well with regard to drinking water quality management, even though the Municipality were not awarded Blue Drop Status, by the DWA, for any of their distribution systems during the 2011 assessment. The overall Blue Drop Score received from the DWA was 92.89%.
- Swartland Municipality was commended for their overall improvement in performance with regard to wastewater quality management, even though the Municipality were not awarded Green Drop Status, by the DWA, for any of their drainage systems during the 2011 assessment. The overall Green Drop Score received from the DWA was 72.7%.
- 100% MIG expenditure in the previous financial year from the DLG&H.

The successes of Swartland Municipality, as included in the 2011/2012 IDP, are as follows:

- Four consecutive unqualified audits.
- A performance management system for councillors that is in operation since June 2010.
- Section 53 role clarification that has been finalised and approved by all parties.
- Excellent discipline in the organisation
- Personnel empowerment
- Accessing of outside funding



- The Client Service Charter that was launched in March 2010
- An up to date Asset Register
- Extensive use of electronic systems to streamline processes and increase customer satisfaction
- Income generating projects
- A good record of completing projects
- Housing delivery (Irrespective of the problem with unfunded mandates)
- Communication – Client services model.

### 3.3 National Water Services Regulation Strategy

The KPIs on which Swartland Municipality needs to report annually to the DWA, in terms of the Strategic Framework for Water Services and DWA's National Water Services Regulation Strategy, are included in Annexure E (DWA's Regulatory Performance Management System).

The RPMS is a DWA initiative which is currently being rolled-out nationally. The system measures WSAs on eleven KPIs derived from the Strategic Framework for Water Services and from the National Water Services Regulatory Strategy. Swartland Municipality's Strategic Overview, as included in DWA's Municipal Water Services Compliance Assessment 2009-2010 Report, is as follows:

"The Municipality is currently complying on 7 out of the 8 measured KPIs. The remaining KPI is access to sanitation, which was complying in the previous assessment. The Municipality should verify their backlog data submitted to DWA to ensure the correct figures are being utilised. With such exemplary scores, the Municipality is now encouraged to move beyond compliance to best practice, finding ways to continually improve their water services business.

## 4. DEMOGRAPHICS AND SOCIO-ECONOMIC

The 2001 Census recorded the population in the Swartland Municipality's Management Area at 72 109 (18 675 Households) and the 2007 Community Survey recorded the 2007 population at 77 520 (19 939 Households).

### Social:

Some of the Youth Development initiatives with which Swartland Municipality is busy is summarised below:

The Swartland **Junior Town Council** (JTC) completed its third term of office in March 2010. The JTC's "Mad about Me!" campaign against teenage abuse was successfully run for the second consecutive year. Other projects included an outreach campaign to Huis van Heerde in Moorreesburg, a Youth Symposium, their "Week of Giving" and "Learning Rocket", "Going Green" and "Healing Bonds" projects.

The **Youth Advisory Centre** was established in 2006 and has been delivering services to youth to enable them to access the economy. Many youths have been placed in informal and formal education. Life skills training and career guidance were offered. 17 Youths were placed in learnerships, 25 were placed in informal work related training, 8 were assisted to go to technikons / colleges and 3 were assisted to go to universities since July 2010 to March 2011.

The 7<sup>th</sup> Sondeza Afri-Youth Camp was held at the Ganzekraal holiday resort from 3 to 12 December 2010 under the theme "Leaping into the future". Eighty learners from schools stretching from Malmesbury to as far as Nuwerus, including eleven representatives from Germany and ten from England attended the camp. Swartland Municipality presented the camp in conjunction with ABSA Bank, the West Coast District Municipality, the Western Cape Government and the Sondeza Initiative. The program was based on



leadership skills and topics discussed were emotional intelligence, global warming, democracy and cultural differences.

### Housing:

Swartland Municipality's **most critical service** needs with regard to housing are sustainable integrated human settlements, normalisation of communities and economically viable developments. The **challenges** with regard hereto are availability of suitable land, acceptance of the draft by developers, adequate funding, collective planning between departments, financial impact and influx of people.

### Economic:

A LED Strategy is in place of which the purpose is to develop the local economy and to meet the national objectives of halving poverty and unemployment by 2014. The LED Strategy focuses on growing key sectors of the economy and this is linked to strategies for education, skills development and training, business development and support, spatial planning and township development as well as poverty reduction.

The West Coast Regional Economic Development Strategy (REDS) is also in place, which has the following four main aims:

- Get the basics right and retain existing jobs.
- Grow competitive businesses
- Attract new investments and funding
- Share the benefits of growth

The following specific objectives have been identified:

- To reduce by 48% the number of households living below the poverty line by 2014.
- To achieve an economic growth to an annual average of 4.5% - 6 % per annum by 2014.
- For 40% of all visitors to the Western Cape to visit the West Coast by 2014.

## 5. SERVICE LEVELS

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 5.1: 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.



The number of user connections in each user sector, for the consumers provided with water services by Swartland Municipality, is as follows (June 2011):

Table 5.2: Number of user connections in each user sector									
Description	10/11			09/10			08/09		
	Res	Bus	Other	Res	Bus	Other	Res	Bus	Other
Koringberg	376	15	3	355	11	0	371	11	0
PPC	78	2	14	89	1	5	90	1	5
Riebeeck Wes	674	64	8	688	49	5	683	49	5
Riebeeck Kasteel	1 535	42	46	1 571	36	6	1 028	36	6
Yzerfontein	1 118	23	20	1 280	24	16	1 087	24	16
Darling	2 411	119	30	2 307	97	14	1 926	97	14
Moorreesburg	2 741	228	39	2 784	186	33	2 767	186	33
Malmesbury	6 041	452	69	6 384	329	55	6 869	329	55
Abbotsdale	582	10	3	577	6	2	621	6	2
Kalbaskraal	441	10	4	445	5	2	399	5	2
Riverlands	312	3	7	267	4	0	315	4	0
Chatsworth	396	11	25	352	4	19	282	4	19
<b>TOTALS</b>	<b>16 705</b>	<b>979</b>	<b>268</b>	<b>17 099</b>	<b>752</b>	<b>157</b>	<b>16 438</b>	<b>752</b>	<b>157</b>

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. There is however currently no informal areas with shared services in Swartland Municipality's Management Area. The only areas where communal water services are currently in use is on some of the farms in the rural areas.

Number of households connected to water system and number of households with access to basic water services:

The West Coast District Municipality completed a detailed survey of the existing service levels on the farms in the rural areas of Swartland Municipality's Management Area, which was completed during November 2008. All the farms, smallholdings and rural settlements were visited to verify the existing service levels. The table below gives a summary of the water and sanitation services levels in the eight Wards.

Table 5.3: Service levels on the farms in the rural areas			
Service	Type of Service	Number of Households	Percentage
Toilet inside or outside house	Inside House	2 080	80.3%
	Outside House	509	19.7%
	<b>Total</b>	<b>2 589</b>	<b>100%</b>
Type of toilet facility	Flush	2 317	84.3%
	<b>VIPs (Pit)</b>	<b>379</b>	<b>13.8%</b>
	<b>Bucket</b>	<b>11</b>	<b>0.4%</b>
	<b>None / Other</b>	<b>41</b>	<b>1.5%</b>
	<b>Total</b>	<b>2 748</b>	<b>100%</b>
Water supply	Inside House	2 177	82.7%
	Outside House	436	16.6%
	Further than 200m	18	0.7%
	<b>Total</b>	<b>2 631</b>	<b>100.0%</b>
Type of water supply	Borehole	1 113	44.8%
	<b>Dam</b>	<b>67</b>	<b>2.7%</b>
	<b>River / stream</b>	<b>167</b>	<b>6.7%</b>
	Scheme water	1 026	41.3%
	Canal	0	0.0%
	<b>None/Other</b>	<b>110</b>	<b>4.4%</b>
	<b>Total</b>	<b>2 483</b>	<b>100.0%</b>



The existing residential water service levels in Swartland Municipality's Management Area are estimated as follows (Average Residential CUs for the period July 2010 to June 2011):

Table 5.4: Residential water service levels (Consumers)													
Service Level	Malmesbury	Abbotsdale	Riverlands	Chatsworth	Kalbakraal	Riebeeck Kasteel	Riebeeck Wes	Darling	Moorreesburg	Koringberg	Yzerfontein	Farms	Total
No Water Services	0	0	0	0	0	0	0	0	0	0	0	344	344
Inadequate RDP Infrastructure Need: Extension	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate RDP Infrastructure Need: Upgrade	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate RDP Resource Need	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate RDP Management Need: O&M	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate RDP Management Need: Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Basic Need (RDP)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>344</b>	<b>344</b>
Inadequate Housing Interim	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate Housing Permanent	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Housing Need</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Standpipes	0	0	0	0	0	0	0	0	0	0	0	773	773
Yard Connections	0	0	0	0	0	0	0	0	0	0	0	1 189	1 189
House Connections	6 041	582	312	396	441	1 535	674	2 411	2 741	376	1 118	3 982	20 609
<b>Total Adequate</b>	<b>6 041</b>	<b>582</b>	<b>312</b>	<b>396</b>	<b>441</b>	<b>1 535</b>	<b>674</b>	<b>2 411</b>	<b>2 741</b>	<b>376</b>	<b>1 118</b>	<b>5 944</b>	<b>22 571</b>





Number of households connected to sewerage system and number of households with access to basic sanitation services:

The existing sanitation service levels in Swartland Municipality's Management Area are estimated as follows (Average Residential CUs for the period July 2010 to June 2011):

Table 5.5: Residential sanitation service levels (Consumers)													
Service Levels	Malmes-bury	Abbots-dale	River-lands	Chats-worth	Kalbas-kraal	Riebeeek Kasteel	Riebeeek Wes	Darling	Moorrees-burg	Koring-berg	Yzerfon-tein	Farms	Total
No Sanitation Services	0	0	5	104	0	0	0	0	0	0	0	41	150
Inadequate Infrastructure Need: Upgrade to RDP level; Bucket Programme Extension	0	0	0	0	0	0	0	0	0	0	0	11	11
Inadequate Infrastructure Need: Upgrade	0	0	0	0	0	0	0	0	0	0	0	379	379
Inadequate Resource Need	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate Management Need: O&M	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate Basic Management Need: Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Basic Need (RDP)</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>104</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>431</b>	<b>540</b>
Inadequate Housing Interim	0	0	0	0	0	0	0	0	0	0	0	0	0
Inadequate Housing Permanent	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Housing Need</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
None Waterborne	0	0	0	0	0	0	0	0	0	0	0	453	453
Waterborne Low Flush	0	0	0	0	0	0	0	0	0	0	0	0	0
Septic Tanks / Conservancy	0	0	0	119	135	30	122	0	0	77	1 118	5 404	7 005
Waterborne WWTWs	6 041	582	307	173	306	1 505	552	2 411	2 741	299	0	0	14 917
<b>Total Adequate</b>	<b>6 041</b>	<b>582</b>	<b>307</b>	<b>292</b>	<b>441</b>	<b>1 535</b>	<b>674</b>	<b>2 411</b>	<b>2 741</b>	<b>376</b>	<b>1 118</b>	<b>5 857</b>	<b>22 375</b>



Number of new water and sanitation connections made:

91 New water connections (1 – 80mm dia., 1 – 50mm dia., 1 – 40mm dia, 1 – 25mm dia., 50 – 22mm dia. And 37 – 15mm dia) and 23 new sewer connections (3 – 150mm dia. And 20 – 100mm dia) were provided during the 2010/2011 financial year.

All the 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 ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services below RDP standard.

## 6. INFRASTRUCTURE

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

Table 6.1: Summary of existing infrastructure	
Component	Description of the main functional tasks
Boreholes (7)	Bulk supply
Water Reticulation (465 km)	Distribution
Water Pump Stations (6)	Ensure adequate pressure and supply to certain areas
Reservoirs (26)	Balancing peak demands and providing some emergency storage.
Sewer Reticulation (230 km)	Collecting sewerage
Sewer Pump Stations (7)	Pumping sewerage to WWTWs
Waste Water Treatment Works (9)	WWTWs (Activated Sludge) and WWTWs (Oxidation dams).

The current and depreciated replacement costs of the water and sanitation assets are as follows (June 2010):

Table 6.2: Current and depreciated replacement costs of the water and sanitation assets				
Water / Sanitation	Assets	CRC	DRC	% DRC / CRC
Water	Borehole	R2 186 024	R1 526 065	70%
	Pump Station	R4 852 869	R3 005 819	62%
	Reservoir	R106 467 983	R66 390 229	62%
	Reticulation Pipeline	R162 318 215	R85 411 412	53%
	<b>Totals</b>	<b>R275 825 092</b>	<b>R156 333 525</b>	<b>57%</b>
Sanitation	Pump Station	R2 804 050	R1 893 133	68%
	Sewage Treatment Works	R6 978 418	R3 763 196	54%
	Sewer Reticulation Pipeline	R108 116 718	R61 981 122	57%
	<b>Totals</b>	<b>R117 899 186</b>	<b>R67 637 451</b>	<b>57%</b>

The above implies that about 43% of the value of the water and sanitation networks has been consumed. In order to determine better assessments of the remaining useful life of hidden assets, the municipality will need to improve its monitoring of asset performance in the future.



The RUL and asset age per facility for water and sanitation assets are as follows (June 2010):

Table 6.3: RUL and asset age per facility for water and sanitation assets (CRC)						
RUL / Asset Age	Asset	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
RUL per facility for Water	Borehole	R0	R876 224	R1 031 240	R100 000	R178 560
	Pump Station	R933 442	R1 039 861	R2 083 066	R96 000	R700 500
	Reservoir	R8 847 856	R3 206 509	R19 229 485	R6 668 001	R68 516 132
	Reticulation Pipeline	R2 699 293	R26 937 958	R5 891 863	R17 916 182	R108 872 919
	<b>TOTALS</b>	<b>R12 480 591</b>	<b>R32 060 552</b>	<b>R28 235 654</b>	<b>R24 780 183</b>	<b>R178 268 111</b>
RUL per facility for Sanitation	Pump Station	R562 900	R733 150	R920 000	R0	R588 000
	Sewage Treatment Works	R180 000	R2 499 820	R217 000	R8 361	R4 073 237
	Sewer Reticulation Pipeline	R0	R0	R0	R38 792 598	R69 324 120
	<b>TOTALS</b>	<b>R742 900</b>	<b>R3 232 970</b>	<b>R1 137 000</b>	<b>R38 800 959</b>	<b>R73 985 357</b>
Asset Age per facility for Water	Borehole	R3 000	R751 740	R472 620	R654 044	R304 620
	Pump Station	R1 533 200	R1 390 294	R962 822	R156 000	R810 553
	Reservoir	R15 902 997	R8 871 165	R14 593 865	R4 068 228	R63 031 728
	Reticulation Pipeline	R4 330 951	R9 983 318	R67 834 501	R2 826 156	R77 343 288
	<b>TOTALS</b>	<b>R21 770 148</b>	<b>R20 996 517</b>	<b>R83 863 809</b>	<b>R7 704 428</b>	<b>R141 490 189</b>
Asset Age per facility for Sanitation	Borehole	R1 647 900	R0	R916 900	R0	R239 250
	Pump Station	R10 500	R245 000	R1 136 820	R699 500	R4 886 598
	Reservoir	R8 309 715	R0	R3 753 399	R3 345 651	R92 707 953
	<b>TOTALS</b>	<b>R9 968 115</b>	<b>R245 000</b>	<b>R5 807 119</b>	<b>R4 045 151</b>	<b>R97 833 801</b>

The average water asset renewal needs over the next 10 years is R4.5M per year and the reinvestment required is R12.5M in the first 5 years and R32M in the second 5 year period. The asset renewal needs for sanitation assets over the next 10 years is R0.4M per year. The reinvestment required is R0.74M in the first 5 years and R3.2M in the second 5 year period. Most of the water and sanitation assets value has age greater than 20 years.

The condition grading per water and sanitation facility is summarized in the table below (June 2010):

Table 6.4: Condition grading per water and sanitation facility (CRC)						
Water / Sanitation	Asset	Very Good	Good	Fair	Poor	Very Poor
Water	Borehole	R21 000	R1 567 980	R597 044	R0	R0
	Pump Station	R1 256 366	R2 517 061	R774 822	R304 620	R0
	Reservoir	R44 025 878	R26 724 684	R21 977 731	R9 603 962	R4 135 728
	Reticulation Pipeline	R17 346 075	R67 060 134	R44 963 169	R30 249 544	R2 699 293
	<b>TOTALS</b>	<b>R62 649 319</b>	<b>R97 869 859</b>	<b>R68 312 767</b>	<b>R40 158 126</b>	<b>R6 835 021</b>
Sanitation	Pump Station	R1 444 250	R796 900	R0	R562 900	R0
	Sewage Treatment Works	R1 372 951	R5 428 745	R176 722	R0	R0
	Sewer Reticulation Pipeline	R13 049 102	R54 842 020	R40 225 596	R0	R0
	<b>TOTALS</b>	<b>R15 866 303</b>	<b>R61 067 665</b>	<b>R40 402 318</b>	<b>R562 900</b>	<b>R0</b>

About 17% (R47M) of the water supply network is in poor and very poor condition. There are no borehole components that are in the poor and very poor state. The bulk of the poor assets are the reticulation pipelines with a value of approximately R30M. About 0.5% of the sanitation supply network is in poor condition. The assets in poor condition are mainly pump station assets with an approximate value of R0.6M.



The following key capital projects were completed or started during the 2010/2011 financial year:

- Continued with the upgrading of the Malmesbury WWTW (Three Phases). The treatment capacity will be upgraded to 10 MI/d utilising membrane technologies. The new WWTW was designed to handle a peak flow of 30 MI/d over a short period of time.
- The Municipality is busy with the EIA process for a single new Activated Sludge WWTW at Riebeek Kasteel with biological nutrient removal. The new WWTW will replace the existing Riebeek Wes, Riebeek Kasteel and Ongegund WWTW, which will be decommissioned.
- The Municipality plans to upgrade the oxidation dams so that it complies with DWA's new standards. Most of the capital work for the upgrading is planned for 2012/2013, but the first planning was started during the 2010/2011 financial year. The quantity of treated effluent expected from the Koringberg treatment works is so little that it does not justify constructing an activated sludge works. It was recommended that the wastewater be treated in a pond system and the effluent be irrigated.
- Additional sewer drainage networks were installed in Malmesbury (Waterborne).
- Additional sampling equipment for the monitoring of the industrial effluent discharged into the Municipality's sewer system was purchased.
- The water pump station in Moorreesburg was upgraded.
- A new bulk water supply pipeline was constructed from Malmesbury to Kalbaskraal (R10.3M).
- Various sections of the water distribution network in Malmesbury were upgraded.

One of the key challenges of Swartland Municipality is to identify adequate funds for the rehabilitation and maintenance of the existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality.

## 7. OPERATION AND MAINTENANCE

A Compliance Water Quality and Wastewater Quality Monitoring Programme that meets the requirements of DWA as stipulated in the Blue and Green Drop criteria was drawn up by Swartland Municipality and is implemented by the Municipality.

The 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.

Swartland Municipality still needs to draft a Water Safety Plan for their water distribution systems. A qualified, dedicated team needs to be established by Swartland Municipality to compile and update the Water Safety Plan. A detailed risk assessment needs to be executed and the existing control measures implemented by Swartland Municipality needs to be summarised. An improvement / upgrade plan also needs to be developed with relevant Water and Safety Management Procedures.

All aspects of the Water Safety Plan needs to be reviewed regularly in order to ensure that they are still accurate. In addition to the regular three year review, the Water Safety Plan also needs to be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major water quality incident.



The DWA 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 third 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 DWA's 2011 Blue Drop Report (May 2011):

Municipal Blue Drop Score		92.89%
<p><b>Regulatory Impression:</b> Due to the commitment of Swartland- and West Coast Municipalities, a massive improvement was recorded since the last Blue Drop assessment. The two (2) systems are on the verge of being certified with the coveted Blue Drop status. Another commendable issue would be the Municipality's approach to asset management.</p> <p>The Water Services Audit Report together with a detail asset register impressed since it contained all technical information as required by the Blue Drop requirements.</p> <p>The Malmesbury system's score was weighed down by the result of at least one failure not being submitted onto the BDS.</p> <ol style="list-style-type: none"> <li>1. Swartland Municipality is encouraged to expand its monitoring of chemical determinants at critical points within the reticulation system as there are currently no chemical monitoring recorded. The results reported stems from the West Coast District Municipality's monitoring programme.</li> <li>2. After discussions regarding the finding of data, it is reiterate that all compliance analyses results should be submitted to the Department.</li> </ol>		

Performance Area	Malmesbury	Moorreesburg / Koringberg
Water Safety Planning Process and Incident Response Management	76	64
Process Control, Maintenance and Management Skills	89	89
Monitoring Programme	94	94
Credibility of Sample Analyses	93	93
Submission of results	100	100
Drinking Water Quality Compliance	85	93
Performance Publication	100	100
Asset Management	100	97
Bonus Scores	3.1	3.0
Penalties	3.1	1.2
<b>Blue Drop Score (2011)</b>	<b>92.88%</b>	<b>92.90%</b>
Blue Drop Score (2010)	71.94%	71.94%
System Design Supply Capacity (M/d)	72	72
System Operational Capacity	72%	72%
Population served by System	23 650	4 950
Average daily consumption per capita (l)	-	-
Microbiological Compliance (12 months)	100.00%; WSP: 97.78%	100.00% (11 months); WSP: 97.78%
Chemical Compliance (12 months)	98.21%	97.21%

Swartland Municipality also implements an incident response protocol for their WWTWs, in which certain reactive procedures are followed when an incident occurs (normally when a malfunction of the treatment processes occur due to power failures, faulty equipment, adverse weather conditions or human error).



There are two levels of incident management, firstly when final effluent is discharged that does not meet the requirements of the Water Act, and secondly when an event takes place causing a major pollution event for which emergency response is required. For serious incidents or emergency situations the West Coast District Municipality's Disaster Management Plan is implemented, which include additional actions and notifications as required, including notification of DWA and the media / public.

Swartland Municipality is committed to improve their Green Drop score and put various processes in place over the last two years, which include the following key aspects:

- **Process Control, Maintenance and Management Skills:** All the WWTWs were classified with the DWA. The Process Controllers and Supervisors for the various WWTWs were also registered and classified. The Municipality is currently busy compiling Wastewater Risk Abatement Plans for all the WWTWs.
- **Waste Water Quality Monitoring Programme:** The Municipality does operational and compliance control of their WWTWs according to a comprehensive operational and compliance monitoring program, which meets the minimum requirement of DWA as stipulated in the Green Drop certification criteria.
- **Waste Water Sample Analysis:** The Compliance Sampling of the final effluent at the various WWTWs is done by an Accredited Laboratory. Operational Alert Levels were also proposed as part of the new Operation and Maintenance Manuals that are being developed, which will assist in taking early action when the measured control parameters exceeds the alert levels and thereby preventing further downstream effects on the wastewater quality, and in particular, compliance of the final effluent.
- **Submission of Waste Water Quality Results:** Results of chemical and microbiological analysis of the final effluent samples are loaded onto the GDS, which indicate the compliance performance for the month for each of the WWTWs, with specific indication of samples that does not comply.
- **Waste Water Quality Results and Waste Water Quality Compliance:** The compliance results are also summarised in Annexure C for each of the WWTWs.
- **Waste Water Failures Response Management:** An incident response protocol is implemented, in which certain reactive procedures are followed when an incident occurs. A set of Compliance Alert Levels, corresponding to the requirements of the General Standard (at present) has been drawn up as part of the new Operation and Maintenance Manuals and the Wastewater Risk Abatement Plans. For continuously improving the performance of the various WWTWs, a set of operational alert levels has also been drawn up and followed by the operating personnel.
- **Stormwater and Water Demand Management:** Stormwater Master Plans are in place for some of the towns in Swartland Municipality's Management Area. Various WC/WDM initiatives were also implemented by Swartland Municipality during the last financial year in order to keep the percentage of non revenue water of the Municipality as low as possible.
- **By-laws:** A comprehensive set of water services by-laws is currently being drafted for Swartland Municipality. The By-laws cover the provision of services for water supply, sanitation and industrial effluent.



- **Waste Water Treatment Works Capacity:** The upgrading of the WWTWs is summarised in the table below:

Table 7.2: Status Quo with regard to the upgrading of the various WWTWs.	
WWTWs	Upgradings required
Malmesbury	The Municipality is in the process of upgrading the WWTW in three phases. The treatment capacity will be upgraded to 10 Ml/d utilising membrane technologies. The works was designed to handle a peak flow of 30 Ml/d over a short period of time.
Darling	The current works was upgraded in 2008, but further upgrading is planned for 2013/2014. Most of the capital work to address the current high organic load of the WWTW is planned for 2014/2015.
Moorreesburg	No upgrading is planned at present
Riebeek Kasteel	The Municipality is busy with the EIA process for a single new Activated Sludge WWTW with biological nutrient removal. The new WWTW will replace the existing Riebeek Wes, Riebeek Kasteel and Ongegund WWTW, which will be decommissioned.
Koringberg	The Municipality plans to upgrade the oxidation dams so that it complies with DWA's new standards. Most of the capital work for the upgrading is planned for 2012/2013. The quantity of treated effluent expected from the Koringberg treatment works is so little that it does not justify constructing an activated sludge works. It was recommended that the wastewater be treated in a pond system and the effluent be irrigated.
Kalbaskraal	No upgrading is planned at present
Chatsworth	The Municipality will start in 2011/2012 with the upgrading of the Chatsworth oxidation dams. Most of the capital work will be done during 2012/2013.

- **Publication of Waste Water Quality Performance:** Wastewater management and wastewater quality results are included in Swartland Municipality's Water Services Audit Report and regular publications with regard to wastewater management are also sent out by the Municipality.
- **Waste Water Asset Management:** An updated Asset Register is in place for all the water and sanitation infrastructure.

The DWA also follows a risk-based regulatory approach that provides early warning signs of WWTWs that contain a certain measure of risk, and in directing the type of intervention required to manage and mitigate the identified risk and move to a more favourable position of compliance and ultimately, excellence. Swartland Municipality previously compiled a Risk Reduction Action Plan for each of their WWTWs, in order to reduce the risks for the various WWTWs even further. This process was taken further in the Wastewater Risk Abatement Plan process with which the Municipality is currently busy.

The DWA also completed their Second Order Assessment of Municipal Waste Water Treatment Plants, DWA's Green Drop Report for 2011, 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 DWA's 2011 Green Drop Report:

Table 7.3: Green Drop Performance of the Municipality (DWA's 2011 Green Drop Report)	
Average Green Drop Score	72.7%
<p><b>Regulatory Impression:</b> Even though the performance of Malmesbury, Darling and Moorreesburg remained more or less the same, the overall performance of the Swartland Municipality portrayed a huge improvement. There still remains much to do to improve the compliance of the majority of wastewater systems but great encouragement can be taken out of the performance of the Ongegund and Moorreesburg works where compliance levels came close to the Green Drop expectations.</p> <p>Swartland Municipality is also participating in the pioneering Berg River Wastewater Risk Reduction project where great advance is evident to meet with the targets set and the pre-directive" that was issued by the Western Cape Regional Office. The municipal team's dedication is much appreciated since that is the fundamental requirement for sustainable improvement.</p> <p><b>Green Drop Findings:</b></p> <p>1. There is reasonable concern over the high loading rates all of the works are subjected to. Riebeeck Kasteel and Koringberg wastewater treatment works are being operated at double that of its design capacity. The planning of upgrades is under way with commissioning expected by 2013. In the Interim, special attention must be given to the process control.</p>	

Criteria	Malmesbury	Darling	Moorreesburg	Ongegund	Koringberg	Riebeeck Wes	Riebeeck Kasteel	Kalbaskraal	Chatsworth
Process Control, Maintenance and Management Skill	72.5	67.5	52.5	37.5	37.5	37.5	52.5	52.5	52.5
Monitoring Programme	100	100	100	100	30	60	60	60	60
Credibility of Sample Analysis	100	100	100	100	100	100	100	100	100
Submission of results	0	0	0	0	0	0	0	0	0
Wastewater Quality Compliance	20	20	20	48	20	20	20	48	20
Failure Response Management	88.75	88.5	88.75	88.75	88.75	88.75	88.75	88.75	88.75
Bylaws	80	80	80	80	80	80	80	80	80
Treatment and Collector Capacity	85	85	85	85	70	70	70	30	70
Asset Management	75	75	75	75	75	75	75	65	65
Bonus Scores	10	10	10	10	10	10	10	10	10
Penalties	0	0	0	0	0	0	0	0	0
<b>Green Drop Score (2011)</b>	<b>73.9%</b>	<b>72.9%</b>	<b>71.4%</b>	<b>78.3%</b>	<b>66.4%</b>	<b>64.4%</b>	<b>65.9%</b>	<b>68.8%</b>	<b>61.9%</b>
Green Drop Score (2009)	77%	75%	73%	NA-0%	NA-0%	NA-0%	NA-0%	NA-0%	10%
Treatment Capacity (Ml/d)	5.5	1.5	1.5	0.15	0.03	0.3	0.2	0.157	0.12
Operational % i.t.o. Capacity	90.9%	83.3%	83.3%	100%	243%	120%	206%	89.1%	65%
Cumulative Risk Rating (CRR)	15	14	11	8	10	12	13	13	13
% i.t.o. Maximum Risk Rating	83.3%	77.8%	61.1%	44.4%	55.6%	66.7%	72.2%	72.2%	72.2%





**8. 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.

Table 8.1: Service Levels at Schools							
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	48	48	0	0	48	0	0

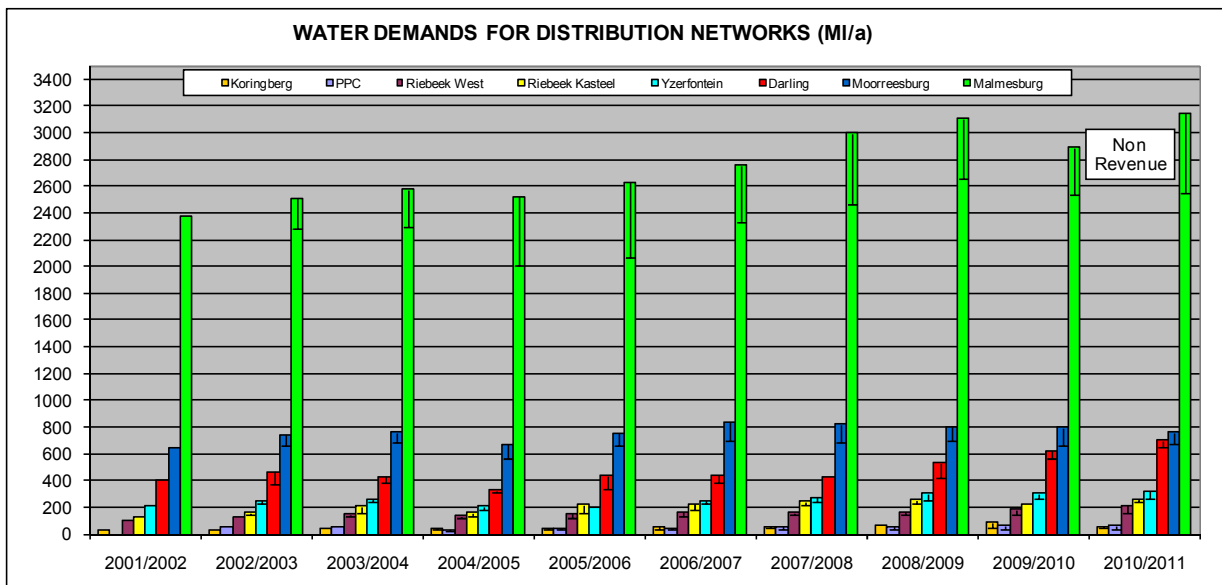
The existing water and sanitation service levels for all the Medical Facilities in Swartland Municipality's Management Area are summarised in the table below.

Table 8.2: Service Levels at Medical Facilities							
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	3	3	0	0	3	0	0
Health Centres	0	0	0	0	0	0	0
Clinics	12	12	0	0	12	0	0
Mobile Clinics	2	2	0	0	2	0	0

**9. WATER CONSERVATION AND DEMAND MANAGEMENT**

The implementation of a Water Demand Management Strategy by Swartland Municipality has been extremely successful and has reduced the water demand of the towns significantly. The overall percentage of non revenue water was 16.26% for 2010/2011.

The graph below gives a summary of the total bulk water supply and non revenue water for the various distribution systems in Swartland Municipality's Management Area.





Quantity of water unaccounted for (MI/Year):

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

Table 9.1: Non revenue water for the various distribution systems							
Description	Unit	10/11	Record : Prior (MI/a)				
			09/10	08/09	07/08	06/07	05/06
Koringberg	Volume	13.358	40.201	7.722	15.575	16.899	9.446
	Percentage	22.28%	46.87%	12.29%	26.93%	29.07%	19.87%
	ILI	1.24	3.74	-	-	-	-
PPC	Volume	23.476	22.318	20.130	20.116	11.172	7.046
	Percentage	36.43%	35.70%	34.90%	36.66%	25.65%	16.30%
Riebeeck Wes	Volume	52.437	38.774	19.055	9.959	38.580	30.648
	Percentage	24.48%	20.80%	11.43%	6.33%	23.07%	19.74%
	ILI	3.38	2.50	-	-	-	-
Riebeeck Kasteel	Volume	23.597	5.624	29.497	29.056	47.043	58.660
	Percentage	8.96%	2.53%	11.45%	12.01%	20.80%	26.83%
	ILI	0.65	0.15	-	-	-	-
Yzerfontein	Volume	50.227	40.776	53.048	34.650	19.977	0
	Percentage	15.68%	13.44%	17.59%	12.57%	7.93%	0.00%
	ILI	1.44	1.16	-	-	-	-
Darling	Volume	47.637	55.715	108.917	0	55.734	100.722
	Percentage	6.81%	8.96%	20.41%	0.00%	12.59%	23.00%
	ILI	0.82	0.96	-	-	-	-
Moorreesburg	Volume	93.032	131.529	109.572	138.609	148.029	98.363
	Percentage	12.21%	16.49%	13.63%	16.84%	17.61%	13.02%
	ILI	1.18	1.67	-	-	-	-
Malmesbury	Volume	595.113	359.994	449.909	534.757	419.120	566.807
	Percentage	18.92%	12.45%	14.48%	17.85%	15.20%	21.54%
	ILI	3.35	2.01	-	-	-	-
<b>TOTAL</b>	<b>Volume</b>	<b>898.877</b>	<b>694.931</b>	<b>797.850</b>	<b>782.722</b>	<b>756.554</b>	<b>871.692</b>
	<b>Percentage</b>	<b>16.26%</b>	<b>13.44%</b>	<b>15.08%</b>	<b>15.57%</b>	<b>15.81%</b>	<b>19.40%</b>
	<b>ILI</b>	<b>2.56</b>	<b>1.82</b>	-	-	-	-

Note: Infrastructure Leakage Index (ILI) = 1 – Excellent, 2 – Good and > 3 - Poor

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.



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. Towns within the Swartland Municipality's Management Area 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.

Table 9.2 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.
Riebeek Wes	6%	Medium	No areas where pressures exceed 90m.	In the 24m to 90m range under peak hour demand conditions.
Riebeek 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.	<p>The following areas could experience low residual pressures</p> <ul style="list-style-type: none"> <li>• Higher lying areas in Wesbank which is currently fed from the Wesbank reservoirs and not the tower.</li> <li>• Small area in the central part of Malmesbury, which is fed from the Kleindam reservoir.</li> </ul>
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 further 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 are as follows:

- Water Master Plans are updated on an ongoing basis.
- Block Tariff Structure. The Municipality's tariff structure discourages excessive use of water.
- Pipe replacement and maintenance programme for the priority areas with old reticulation networks and frequent pipe failures.
- Customer services and complaints system (Burst pipes, etc).
- Standby teams for immediate repairs of burst pipes. The average repair time for the 93 pipe bursts from October 2010 to June 2011 was 3 hours 18 minutes.
- Pressure Management.
- 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 use and water losses. Water balance models for each of the distribution systems are kept up to date.
- Water restrictions (5%, 10%, 15%, 20%, 25%, 30% and 35% increase).
- Strict municipal services standards for the installation of new water reticulation for own and private developments
- Reticulation material and quality standards – Facilitate maintenance

A WDM Strategy was also drafted for Swartland Municipality in January 2008. The purpose of the Strategy is to further conserve and protect available resources and to ensure the effective utilization of the available water resources. The WDM Strategy includes the following main components:

- Leakage management programme
- CAFES-pricing policy programme
- Socio-political programme
- Water conservation products
- Re-use of wastewater



The table below gives an overview of the WDM Strategy

Table9.3: Proposed WDM Strategy as developed by CES	
COMPONENT	CHRONOLOGICAL STEPWISE APPROACH
CAFES cost and pricing strategy (CPP)	<ol style="list-style-type: none"> <li>1) Clean billing data, update SWIFT, verify / address metering and non-payment</li> <li>2) Introduce IBR structure to all residential consumers, but limit price change</li> <li>3) Set IBR structure = 6 blocks, min / max steps for 6 kl / month / 100 kl / month</li> <li>4) Set price of water in max block (above 100 kl/month) to at least R15 / kl</li> <li>5) Introduce informative billing</li> </ol>
Leakage management programme (LMP)	<ol style="list-style-type: none"> <li>1) Measure water volume that is lost               <ol style="list-style-type: none"> <li>1a) Raw water supply and treatment</li> <li>1b) Distribution system</li> <li>1c) End user meter problems</li> </ol> </li> <li>2) Identify and quantify losses               <ol style="list-style-type: none"> <li>2a) Raw water supply and treatment</li> <li>2b) Distribution system</li> <li>2c) End user meter problems</li> </ol> </li> <li>3) Conduct operational and network audit               <ol style="list-style-type: none"> <li>3a) Raw water supply and treatment</li> <li>3b) Distribution system</li> <li>3c) End user meter problems</li> </ol> </li> <li>4) Improve performance: upgrade network, design action plans</li> <li>5) Sustain performance with good staffing / organisation structures</li> </ol>
Socio-political programme (SPP)	<ol style="list-style-type: none"> <li>1) Schools WDM programme</li> <li>2) Public awareness programme</li> <li>3) Non-payment issues</li> <li>4) Encourage users to implement WCP at their own expense</li> </ol>
Water conservation products (WCP)	<ol style="list-style-type: none"> <li>1) Repair on-site (plumbing) leaks</li> <li>2) Reduced toilet flush volume</li> <li>3) Xeriscaping garden areas (water wise gardening)</li> <li>4) Other methods to reduce consumption by changing human habits</li> </ol>
Reuse of waste water (RWW)	<ol style="list-style-type: none"> <li>1) Identify large water consumers</li> <li>2) Communicate advantages / incentives of reuse practice to large consumers</li> <li>3) Information gathering on current status of reuse measures</li> <li>4) Installation of reuse practice</li> <li>5) Monitor future water consumption</li> </ol>

The following implementation procedure for WC/WDM measures was proposed. The list is based on the lowest unit cost of each WC/WDM measure obtained in previous studies, but with consideration to the time and effort required for implementation:

1. Address water use and waste at municipal properties and record savings achieved.
2. Initiate a WC/WDM communication campaign.
3. Conduct a detail financial analysis and implement proposed tariffs
4. Design and implement a water loss management programme.
5. Focus on relations with large water users to encourage re-use of wastewater practices.



6. Residential water users could be encouraged to implement water saving techniques by setting an example at Municipal properties (e.g. gardens and ablution facilities that are visible to the public or used by the public) and by focusing on the following WC/WDM measures in a communication campaign:
  - a. Xeriscape gardens (water wise gardening techniques).
  - b. Dual flush and/or low flow toilets.

The following implementation phases of the WDM Strategy were recommended:

Table 9.4: Implementation phases of the proposed CES WDM Strategy			
IN PLACE	FIRST PHASE	SECOND PHASE	LATER
LMP1, LMP2	LMP3	LMP4, LMP5	
CPP1, CPP2	CPP3	CPP4	CPP5
-	SPP1	SPP2	SPP3-4
-	-	WCP1	WCP2-4
RWW1	RWW2, RWW3	RWW4	RWW5

Progress made with the installation of water efficient devices:

All municipal buildings are provided with water efficient devices. Budget and personnel constraints limit the Municipality's capacity to roll-out the installations of water efficient devices to other areas for example schools. Schools often form the groundwork of WDM programmes and should therefore receive high priority.

Quantity of water used by each user sector for the last five years:

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.

Table 9.5: Quantity of water used by each user sector (MI)						
Town	Year	Residential	Business & Industrial	Other	Farms	Total
Koringberg	06/07	37.115	3.995	0.127	0	41.237
	07/08	38.500	3.519	0.235	0	42.254
	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
PPC	06/07	28.073	3.167	1.143	0	32.383
	07/08	28.133	2.294	4.332	0	34.759
	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
Riebeeck Wes	06/07	98.936	28.481	1.238	0	128.655
	07/08	107.030	39.476	0.970	0	147.476
	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
Riebeeck Kasteel	06/07	139.781	36.735	0.895	1.704	179.115
	07/08	163.059	47.706	0.627	1.392	212.784
	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
Yzerfontein	06/07	209.995	10.308	11.634	0	231.937
	07/08	209.912	14.760	16.380	0	241.052



**Table 9.5: Quantity of water used by each user sector (MI)**

Town	Year	Residential	Business & Industrial	Other	Farms	Total
	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
Darling	06/07	259.037	122.406	5.377	0	386.820
	07/08	274.477	148.743	4.852	0	428.072
	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
Moorreesburg	06/07	479.782	172.231	30.534	10.004	692.551
	07/08	450.861	191.329	31.558	10.583	684.331
	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
Malmesbury	06/07	1 461.498	723.120	73.391	79.341	2 337.350
	07/08	1 522.793	757.856	117.220	63.953	2 461.823
	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
<b>TOTAL</b>	<b>06/07</b>	<b>2 714.217</b>	<b>1 100.443</b>	<b>124.339</b>	<b>91.049</b>	<b>4 030.048</b>
	<b>07/08</b>	<b>2 794.765</b>	<b>1 205.683</b>	<b>176.174</b>	<b>75.928</b>	<b>4 252.551</b>
	<b>08/09</b>	<b>2 952.741</b>	<b>1 272.819</b>	<b>186.894</b>	<b>81.270</b>	<b>4 493.725</b>
	<b>09/10</b>	<b>2 943.563</b>	<b>1 272.832</b>	<b>182.411</b>	<b>77.493</b>	<b>4 476.298</b>
	<b>10/11</b>	<b>3 048.474</b>	<b>1 318.902</b>	<b>185.193</b>	<b>78.184</b>	<b>4630.755</b>

Quantity of effluent received at 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 water sales data. The monthly flows and rainfall at the various WWTWs are also summarised in Annexure A.

**Table 9.6: Quantity of effluent received at the various WWTWs**

WWTWs	% of Historic Water Demands	10/11	Record : Prior (MI/a)				
			09/10	08/09	07/08	06/07	05/06
Malmesbury	N/A (Metered)	1 613.910	1 575.871	1 665.596	1 556.877	1 428.997	1 323.050
Moorreesburg	N/A (Metered)	358.339	317.050	322.443	292.230	258.350	242.503
Darling	66%	417.091	373.405	280.364	282.527	255.301	222.552
Riebeek Wes	69%	111.304	101.556	101.611	101.463	88.514	85.751
Riebeek Kasteel	48%	114.418	103.236	108.821	101.498	85.438	76.316
Koringberg	70%	32.616	31.896	38.561	29.578	28.866	26.668
PPC	60%	24.578	24.116	22.528	20.855	19.430	21.708
Kalbaskraal	40%	21.791	25.344	25.913	-	-	-
Chatsworth / Riverlands	40%	35.696	34.141	31.687	-	-	-



Quantity of effluent not discharged to WWTWs and approved for use by the WSI:

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 9.7: 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

**10. 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 Voëlvlei 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 Paardeberg Dam is to supplement the supply to Malmesbury, Abbotsdale, Kalbaskraal, Riverlands and Chatsworth from the Municipality’s own local sources. A borehole at Kalbaskraal and three boreholes at Riverlands are also used as supplementary sources. Supply to Abbotsdale, Kalbaskraal, Riverlands and Chatsworth is via the Kleindam reservoir and supply from the Paardeberg Dam is through the Klipkop reservoir.

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 demand (bulk water supply and water sold), peak month factors, annual non revenue water per town and water usage per sector are included in Annexure A.

The construction of a desalination plant at Saldanha was identified by the West Coast District Municipality as the most feasible scheme for implementation, in order to meet the growing demand of the West Coast Region. Consultants are currently busy to identify the most suitable site for the construction of the plant. The final treatment capacity of the plant will be 25.5 Ml/d, but the treatment capacity for the first phase will be 8.5 Ml/d. The capacity of the bulk infrastructure connected to the desalination plant will be 25.5 Ml/d, which will be implemented as part of the first phase.





The DWA 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:

Table 10.1: Potential future water resources for the various towns (DWA's Reconciliation Strategy)		
Distribution System	Option	Potential
Koringberg	Re-use of water	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>The viability of groundwater abstraction in the Malmesbury Group of the direct surrounding area to Koringberg is very low.</li> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Koringberg considering the low Mean Annual Precipitation.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>WC/WDM measures to reduce water losses.</li> <li>Increase the allocation from the Withoogte Regional Scheme.</li> <li>Groundwater development</li> </ul>
Riebeeck West	Re-use of water	<ul style="list-style-type: none"> <li>The re-use of treated effluent is not a feasible option for Riebeeck West, as the current treatment process at the Riebeeck West WWTW is not considered to be adequate to deliver effluent of an acceptable quality for re-use.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> <li>Another viable option is the intergranular deposits. In general there is very little hydrogeological information available and further exploration is recommended.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There is no surface water resources located in close proximity to Riebeeck West. The most likely potential sources are thus an augmented supply from the Voëlvelei Dam and groundwater development.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible option for Riebeeck West considering the big storage needed to carry over winter rain to summer use.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>WC/WDM measures to reduce water losses.</li> <li>Increase the allocation from the Swartland Regional Water Supply Scheme.</li> <li>Groundwater development</li> </ul>
Riebeeck Kasteel	Re-use of water	<ul style="list-style-type: none"> <li>The re-use of treated effluent is not a feasible option for Riebeeck Kasteel, as the current treatment process at the Riebeeck Kasteel WWTW is not considered adequate to deliver treated effluent of an acceptable quality for re-use.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There is no surface water resources located in close proximity to Riebeeck Kasteel. The</li> </ul>



Table 10.1: Potential future water resources for the various towns (DWA's Reconciliation Strategy)		
Distribution System	Option	Potential
		most likely potential sources are thus an augmented supply from the Voëlvlei Dam and groundwater development.
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Riebeeck Kasteel considering the low MAP which occurs mainly in winter.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>Augment inflow to Voëlvlei Dam and increase allocation to Riebeeck Kasteel.</li> <li>Groundwater development</li> </ul>
Yzerfontein	Re-use of water	<ul style="list-style-type: none"> <li>The re-use of treated effluent is not a feasible option for Yzerfontein as there is currently no waterborne sanitation system in place.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There is no surface water resources located in close proximity to Yzerfontein.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Yzerfontein considering the low Mean Annual Precipitation.</li> <li>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.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>WC/WDM measures to reduce water losses.</li> <li>Augment the inflow to the Voëlvlei Dam.</li> <li>Desalination for Saldanha and environs to make more water available for Yzerfontein from Voëlvlei Dam.</li> </ul>
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"> <li>Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes.</li> <li>The direct use for non-potable consumption, namely for irrigation and industrial end-users specifically.</li> <li>The option of indirect use.</li> <li>The option of direct use (potable consumption) should be seen as a long-term intervention.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There is no surface water resources located in close proximity to Darling.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Darling considering the low rain which mainly falls during winter.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>Increased allocation from the Swartland Regional Water Supply Scheme.</li> <li>Consider re-use of water.</li> </ul>



**Table 10.1: Potential future water resources for the various towns (DWA's Reconciliation Strategy)**

Distribution System	Option	Potential
		<ul style="list-style-type: none"> <li>Groundwater development.</li> </ul>
Moorreesburg	Re-use of water	<p>The existing WWTW is currently utilising 0.042 Mm<sup>3</sup>/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"> <li>The direct use for non-potable consumption, namely for irrigation end-users specifically.</li> <li>Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes.</li> <li>The option of indirect use.</li> <li>The option of direct use (potable consumption) should be seen as a long-term intervention.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>Future supply will come from Misverstand Dam, when the West District Municipality augment their bulk water resources.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Moorreesburg considering the low Mean Annual Precipitation which occur in winter.</li> </ul>
	Summary	<p><b>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:</b></p> <ul style="list-style-type: none"> <li>WC/WDM measures to reduce water losses.</li> <li>An increased allocation from the Western Cape Water Supply Scheme.</li> <li>Groundwater development.</li> </ul>
Malmesbury and Abbotsdale	Re-use of water	<p>The existing WWTW is currently supplying 1.229 Mm<sup>3</sup>/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"> <li>The direct use for non-potable consumption, namely for irrigation end-users specifically.</li> <li>Dual reticulation systems for new developments, where re-use of water could be considered for irrigation purposes.</li> <li>The option of indirect use.</li> <li>Recharging of the aquifers.</li> <li>The option of direct use (potable consumption) should be seen as a long-term intervention.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>The first target option is the contact between the Malmesbury Group and the Cape Granite 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.</li> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There are no surface water resources located in close proximity to Malmesbury and Abbotsdale.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible alternative for Malmesbury considering the low MAP occurring mainly in winter.</li> </ul>



Table 10.1: Potential future water resources for the various towns (DWA's Reconciliation Strategy)		
Distribution System	Option	Potential
	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"> <li>• Augment the inflow into the Voëlvelei Dam and increase the allocation to WCDM.</li> <li>• Water re-use</li> <li>• Groundwater development for smaller communities.</li> </ul>

Quantity of water provided to the WSA by another WSI:

The graph and table below gives a summary of the total bulk water supply to the various towns within Swartland Municipality's Management Area (MI/Year).

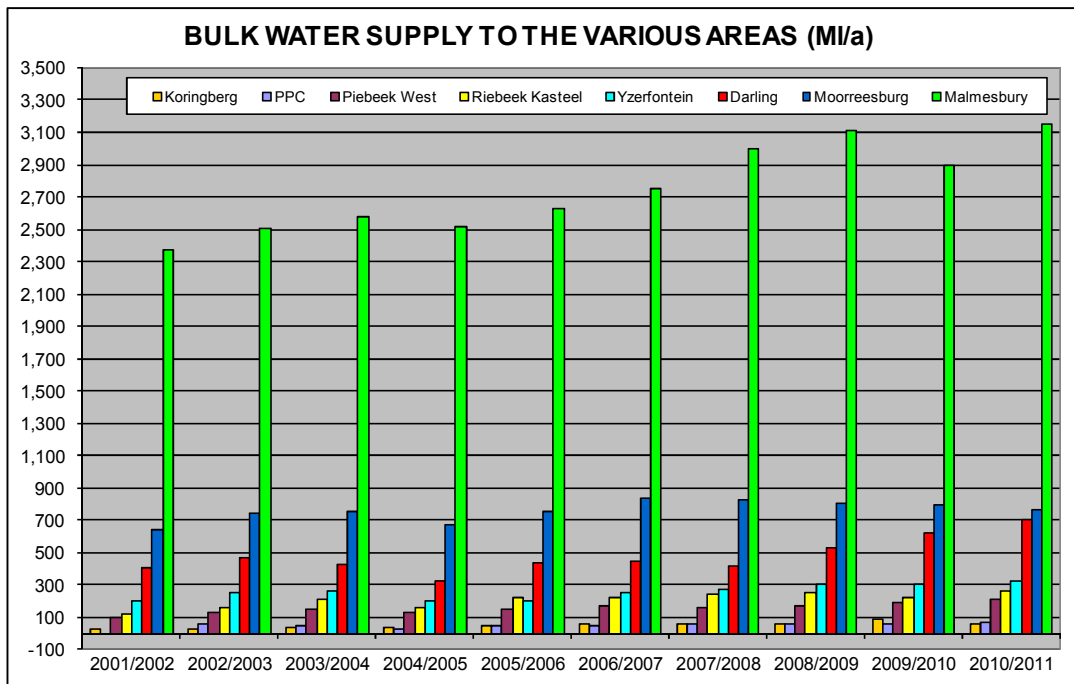


Table 10.2: Bulk water supply to the various towns							
Distribution System	Source	10/11	Record : Prior (MI/a)				
			09/10	08/09	07/08	06/07	05/06
Koringberg	Misverstand Scheme	59.952	85.766	62.809	57.829	58.136	47.543
PPC	Voëlvelei Scheme	64.439	62.512	57.676	54.875	43.555	43.225
Riebeek Wes	Voëlvelei Scheme	214.216	186.384	166.745	157.435	167.235	155.286
Riebeek Kasteel	Voëlvelei Scheme	263.467	222.052	257.634	241.840	226.158	218.651
Yzerfontein	Voëlvelei Scheme	320.386	303.482	301.621	275.702	251.914	203.959
Darling	Voëlvelei Scheme	699.043	621.480	533.710	421.210	442.554	437.922
Moorreesburg	Misverstand Scheme	762.024	797.450	803.680	822.940	840.580	755.340
Malmesbury	Voëlvelei Scheme, Paardeberg dam, Boreholes	3146.105	2 892.103	3 107.700	2 996.580	2 756.470	2 631.087
<b>Total</b>		<b>5 529.632</b>	<b>5 171.229</b>	<b>5 291.575</b>	<b>5 028.411</b>	<b>4 786.602</b>	<b>4 493.013</b>



**Water Quality:** Swartland Municipality monitors the water quality in the distribution networks of all the towns within their Municipal Management Area. Compliance samples are taken on a monthly basis by a Lab Service Provider and no serious water quality problems were experienced during the last year.

Swartland Municipality actively implement their Drinking Water Quality Sampling Programme in order to promptly identify water quality failures and to react accordingly. The water quality results are loaded onto DWA's Blue Drop System (BDS) via the internet. Once entered the data is automatically compared to SANS241. This real-time system allows for immediate intervention to rectify any problems.

Up to present it was not necessary to take any steps to inform the consumers of any health risk regarding the potable water supplied by Swartland Municipality. The Municipality however got specific Safety Management Procedures in place, to inform its consumers about any potential health risks regarding the water quality, should it become necessary.

## 11. FINANCIAL

Tariff structures for each user sector:

The water tariff structures for Swartland Municipality for the 2010/2011 financial year and the previous three financial years are summarised in the table below (Subject to 14% VAT):

Table 11.1: Water tariffs					
Consumer/Description	Category	10/11	09/10	08/09	07/08
Residential Consumers No fix minimum (Basic)	Free Water 0 – 6 Kl	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R6-56	R5-92	R5-38	R4-90
	31 – 60 Kl	R9-03	R8-15	R7-41	R6-75
	61 kl and more	R13-97	R12-61	R11-46	R10-43
Indigent Households No fix minimum (Basic)	Free Water 10 Kl	R0-00	R0-00	R0-00	R0-00
	11 – 30 Kl	R6-56	R5-92	R5-38	R4-90
	31 – 60 Kl	R9-03	R8-15	R7-41	R6-75
	61 kl and more	R13-97	R12-61	R11-46	R10-43
Any other Institution No fix minimum (Basic)	From 1 kl and more	R7-87	R7-10	R6-45	R5-87
Yzerfontein (None permanent residents)	Fix minimum fees for 0 to 6 Kl	N/A	R35-52	R32-30	R29-40
Yzerfontein (Permanent Residents)	Free Water 0 – 6 Kl	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R6-56	R5-92	R5-38	R4-90
	31 – 60 Kl	R9-03	R8-15	R7-41	R6-75
	61 kl and more	R13-97	R12-61	R11-46	R10-43
Farms (Residential) No fix minimum (Basic)	Free Water 0 – 6 Kl	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R6-56	R5-92	R5-38	R4-90
	31 – 60 Kl	R9-03	R8-15	R7-41	R6-75
	61 kl and more	R13-97	R12-61	R11-46	R10-43
Farms (Businesses)	From first Kl	R7-87	R7-10	R6-45	R5-87
Municipality (Departmental)	Per Kl	R6-56	R5-92	R5-38	R4-90
Agricultural Water	Per Kl	R7-87	R7-10	R6-45	R5-87
Sport Clubs	Per Kl	R7-87	R7-10	R6-45	R5-87
Prepaid Water Meters	0 – 6 Kl	R0-00	R0-00	R0-00	R0-00
	7 – 30 Kl	R6-56	R5-92	R5-38	R4-90
	31 – 60 Kl	R9-03	R8-15	R7-41	R6-75
	61 kl and more	R13-97	R12-61	R11-46	R10-43
Spice Route	From first Kl	R7-87	R7-10	R6-45	R5-87



Table 11.1: Water tariffs					
Consumer/Description	Category	10/11	09/10	08/09	07/08
Country Fair	From first KI	R7-87	R7-10	R6-45	R5-87
5% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R6-89	R6-22	R5-38	R4-90
	31 – 60 KI	R9-48	R8-56	R7-41	R6-75
	Above 60 KI	R14-67	R13-24	R11-46	R10-43
5% Increase in Tariffs Businesses	From first KI	R8-26	R7-46	R6-45	R5-87
10% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R7-22	R6-51	R5-38	R4-90
	31 – 60 KI	R9-93	R8-97	R7-41	R6-75
	Above 60 KI	R15-37	R13-87	R11-46	R10-43
10% Increase in Tariffs Businesses	From first KI	R8-66	R7-81	R6-45	R5-87
15% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R7-54	R6-81	R5-38	R4-90
	31 – 60 KI	R10-38	R9-37	R7-41	R6-75
	Above 60 KI	R16-07	R14-50	R11-46	R10-43
15% Increase in Tariffs Businesses	From first KI	R9-05	R8-17	R6-45	R5-87
20% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R7-87	R7-10	R5-38	R4-90
	31 – 60 KI	R10-84	R9-78	R7-41	R6-75
	Above 60 KI	R16-76	R15-13	R11-46	R10-43
20% Increase in Tariffs Businesses	From first KI	R9-44	R8-52	R6-45	R5-87
25% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R8-20	R7-40	R5-38	R4-90
	31 – 60 KI	R11-29	R10-19	R7-41	R6-75
	Above 60 KI	R17-46	R15-76	R11-46	R10-43
25% Increase in Tariffs Businesses	From first KI	R9-84	R8-88	R6-45	R5-87
30% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R8-53	R7-70	R5-38	R4-90
	31 – 60 KI	R11-74	R10-60	R7-41	R6-75
	Above 60 KI	R18-16	R16-39	R11-46	R10-43
30% Increase in Tariffs Businesses	From first KI	R10-23	R9-23	R6-45	R5-87
35% Increase in Tariffs Residential	0 – 6 KI	R0-00	R0-00	R0-00	R0-00
	7 – 30 KI	R8-86	R7-99	R5-38	R4-90
	31 – 60 KI	R12-19	R11-00	R7-41	R6-75
	Above 60 KI	R18-86	R17-02	R11-46	R10-43
35% Increase in Tariffs Businesses	From first KI	R10-62	R9-59	R6-45	R5-87
Connection Low Cost		Contract	Contract	Contract	Contract
Connection (15mm) Low Cost		-	-	-	-
Connection (15mm)		R3 520-00	R2 665-00	R2 202-00	R1 630-00
Connection (22mm)		R3 832-00	R2 950-00	R2 435-00	R2 320-00
Connection (Prepaid Low Cost)		N/A	N/A	N/A	R1 980-00
Connection (Prepaid)		N/A	N/A	N/A	R2 300-00
Connection 22mm Private Developments		R2 446-00	R2 034-00	R1 692-00	-
Deposit Payable: Renting of Municipal Standpipe		R3 000-00	R2 750-00	R2 500-00	R2 000-00
Test of water meter		R250-00	R225-00	R200-00	R180-00



The sewerage tariff structures for Swartland Municipality for the 2010/2011 financial year and the previous three financial years are summarised in the table below (Subject to 14% VAT):

Table 11.2: Sewerage tariffs					
Consumer/Description	Category	10/11	09/10	08/09	07/08
All	Availability (Per Year)	R1150-20	R1000-56	R870-48	R806-04
Every additional provision	Businesses (Per Year)	R172-56	R150-12	R130-56	R120-84
Sewer connections	100mm	R3420-00	R2720-00	R2145-00	R1730-00
Sewer connections	150mm	R3890-00	R3148-00	R2405-00	R2070-00
Sewer blockages	Office hours	R424-00	R280-00	R240-00	R175-00
Sewer blockages	After hours	R603-00	R380-00	R340-00	R330-00
Emptying of tanks	For two times per month	R109-27	R95-05	R83-00	R0-00 Pan Fee
	Every additional emptying	R594-00	R477-00	R380-00	
Emptying of tanks (Riebeeck Kasteel and Abbotsdale)	Once per month	R594-00	-	-	-
	Fixed Monthly Fee	R109-27	-	-	-
Ad-hoc emptying of tanks	After hours	R717-00	R530-00	R449-00	R380-00
Treated effluent	Per KI	R1-11	R0-78	R0-60	R0-60
Partially connection (Emptying)		R54-64	R47-55	R41-50	R0-00 Pan Fee
Industrial discharge per KI (COD)		R5-89	R5-47	R5-02	R3-91
Grotto Baai, Jakkelsfontein status quo		R1187-00	R870-00	R758-00	R650-00
Farms = Outside areas status quo		R1187-00	R870-00	R758-00	R650-00

Swartland Municipality's Operational Budget for water services for the last five years are summarised in the table below. A more detail breakdown of the water operational budgets for the 2009/2010 and 2010/2011 financial years are also included in Annexure F.

Table 11.3: Operational budget for water services					
Description	Actual 10/11	Record : Prior			
		Audit 09/10	Audit 08/09	Audit 07/08	Audit 06/07
<b>EXPENDITURE</b>					
Wages and Salaries	R5 869 480	R4 688 529	R3 979 790	R3 571 760	R3 076 460
Social Contributions	R939 834	R818 402	R720 460	R667 210	R644 972
Depreciation: Property, plant and equipment	R0	R0	R1 102 442	R1 751 930	R1 534 151
Repairs and Maintenance	R922 783	R700 958	R459 022	R424 392	R356 381
Interest Expense: External Borrowings	R278 089	R282 534	R328 003	R236 873	R258 765
General Expenses: Bulk Purchases	R17 760 693	R14 648 798	R11 542 345	R9 637 940	R8 250 000
General Expenses: Departmental	R1 077 490	R1 383 157	R1 131 218	R1 106 588	R1 046 212
General Expenses: Other	R1 280 275	R1 172 513	R1 209 310	R1 213 462	R640 798
<b>Expenditure Total</b>	<b>R28 128 643</b>	<b>R23 694 891</b>	<b>R20 472 590</b>	<b>R18 610 155</b>	<b>R15 807 739</b>
<b>INCOME</b>					
Service Charges	-R27 918 747	-R23 820 217	-R20 356 822	-R15 367 761	-R11 757 097
Other Revenue	-R1 484 837	-R1 000 100	-R884 090	-R1 229 098	-R405 979
Less Revenue Foregone	R2 172 191	R0-00	R0-00	R0-00	R0-00
<b>Income Total</b>	<b>-R27 231 393</b>	<b>-R24 820 317</b>	<b>-R21 240 912</b>	<b>-R16 596 859</b>	<b>-R12 163 076</b>
<b>Nett (Surplus) / Deficit</b>	<b>R897 250</b>	<b>-R1 125 426</b>	<b>-R768 322</b>	<b>R2 013 296</b>	<b>R3 644 663</b>





Swartland Municipality's Operational Budget for sanitation services for the last five years are summarised in the table below. A more detail breakdown of the sanitation operational budgets for the 2009/2010 and 2010/2011 financial years are also included in Annexure F.

Table 11.4: Operational budget for sanitation services					
Description	Actual 10/11	Record : Prior			
		Audit 09/10	Audit 08/09	Audit 07/08	Audit 06/07
<b>EXPENDITURE</b>					
Wages and Salaries	R3 524 577	R3 352 582	R3 114 840	R3 050 500	R2 582 126
Social Contributions	R524 708	R525 112	R515 620	R597 800	R478 300
Depreciation: Property, plant and equipment	R0	R0	R3 353 306	R3 014 653	R2 578 438
Repairs and Maintenance	R1 459 466	R1 391 369	R1 446 140	R981 070	R606 879
Interest Expense: External Borrowings	R1 273 666	R2 785 266	R2 464 905	R1 839 095	R1 927 915
General Expenses: Bulk Purchases Electricity	R115 690	R0-00	R0-00	R0-00	R0-00
General Expenses: Departmental	R512 930	R2 803 449	R1 121 260	R1 099 260	R967 782
General Expenses: Other	R2 297 193	R1 913 764	R2 217 874	R1 670 085	R912 046
<b>Nett Expenditure</b>	<b>R9 708 230</b>	<b>R12 771 542</b>	<b>R14 233 945</b>	<b>R12 252 463</b>	<b>R10 053 486</b>
<b>INCOME</b>					
Service Charges	-R21 914 976	-R18 579 846	-R15 355 451	-R13 948 008	-R11 928 817
Other Revenue	-R5 003 694	-R3 467 661	-R541 100	-R674 500	-R5 550 843
Less Revenue Foregone	R5 122 102	R0-00	R0-00	R0-00	R0-00
<b>Income Total</b>	<b>-R21 796 567</b>	<b>-R22 047 507</b>	<b>-R15 896 551</b>	<b>-R14 622 508</b>	<b>-R17 479 660</b>
<b>Nett (Surplus) / Deficit</b>	<b>-R12 088 337</b>	<b>-R9 275 965</b>	<b>-R1 662 606</b>	<b>-R2 370 045</b>	<b>-R7 426 174</b>

Income collected for water and sanitation services expressed as a % of total costs for water and sanitation services are as follows (Water and Sanitation Operational Budgets):

Table 11.5: Income collected for water and sanitation services expressed as a % of total costs for water and sanitation services					
Service	Actual 10/11	Audit 09/10	Audit 08/09	Audit 07/08	Audit 06/07
Water	96.81%	104.75%	103.75%	89.18%	76.94%
Sanitation	224.52%	172.63%	111.68%	119.34%	173.87%

Un-recovered charges expressed as a % of total costs for water services provided:

Information on the consumer debtors age in days on the 30<sup>th</sup> of June 2011 was not made available in order to include it in the Water Services Audit Report. The following is however a summary of the financial viability of Swartland Municipality as included in their 2011/2012 IDP of 5 May 2011.

The financial viability assessment results for 2008, 2009 and 2010 are reflected in the table below:

Table 11.6: Financial viability assessment for 2008, 2009 and 2010				
Ratio	Standard	Results % 2010	Results % 2009	Results % 2008
Cash available for operating purposes	> 100%	Yes	Yes	Yes
Short term debt	< 16%	Yes	Yes	Yes
Debtor's movement	< 7.5%	Yes	Yes	Yes
Debtor's turnover	< 45 days	No	No	No
Creditor's turnover	< 30 days	No	Yes	Yes
Capital costs	< 15%	Yes	Yes	No
Long-term debt	< 40%	Yes	Yes	Yes
Staff costs	< 30%	Yes	Yes	Yes
Cash funded	> 100%	Yes	Yes	No
Maintenance	> 10%	No	No	No
Grant dependency	< 25%	Yes	Yes	Yes
Funding options employed	> 100%	Yes	Yes	Yes





The **areas of concern** are as follows:

- Debtor's turnover: Outstanding debtors are still increasing. The trend over the last three years was 46 days for 2007, 55 days for 2008 and 57 days for 2009. During 2009 and 2010 debtors increased by R6.1M and R5.2M respectively, which is indicative of the economic decline and inability to pay for rates and service charges. Although the collection period remained the same, outstanding debtors contain uncollectible amounts that should be written off.
- Staff costs: Staff cost has never been an issue for the Swartland Municipality. The introduction of TASK and the creation of new post have distorted costs. Staff cost still requires the biggest portion of income and needs to be managed conservatively.
- Maintenance as a percentage of expenditure has increased from 5.8% to 5.9% during 2008/2009 but has decreased to 3.7% during 2009/2010. It appears that it was one of the areas where the municipality effected saving. Although it only reflects the material cost, Head of Departments must indicate whether it is sufficient and in line with the Municipality's maintenance plan.
- Capital cost as a percentage of revenue: The Municipality has exceeded the norm of 15% for the first time in 2009/2010. The anticipated borrowing of R105M to finance the sewerage works is going to result in further deterioration in the ratio. It is anticipated that for 2010/2011 the Municipality is also going to default in the ratio, long-term debt as a percentage of revenue. This means that the Municipality will not be able to borrow further and be limited to internal funds. Not making any contribution to the capital replacement fund other than the odd land sales are going to limit the Municipality's ability to finance infrastructure.

The following **conclusions** can be made:

- The overall cash situation has deteriorated by R9.4M.
- The retirement benefits and non-current provisions do not need to be cash funded.
- The cash available for operating purposes has deteriorated by R22.6M from R52.1M to 29.5M. The current cash holding for operating purposes is equal to twice the monthly salary bill and bulk purchases account. This is the maximum standard.

All the statutory requirements for cash holding are met by the Municipality. Unfortunately the Municipality will have to rely on its Internal Finance Reserve, donations and grants for future capital funding. Further borrowing is not possible. An annual contribution to the capital replacement reserve from revenue is essential to replace assets. If this is not going to happen service delivery will deteriorate.

The cash balance of the capital replacement reserve amounts to R111.9M, which is sufficient to cover the anticipated spending to 2013. The Municipality will have to make annual contribution from revenue to strengthen the reserve. The odd land sales will not be enough to ensure future infrastructural spending. Contribution from the accumulated surplus is no longer possible. The cash holding for operating purposes are at its minimum standard.

**In summary** it can be stated that:

- The Municipality has exhausted its borrowing capacity.
- Regular contribution from the revenue to the capital replacement reserve is essential.
- The operating reserve (cash available in the accumulated surplus) is at the minimum level.
- Savings can only be affected by scaling down on non-core functions.



Number of new meters installed at consumer installations:

91 New water meters were installed during the last financial year at the new water connections that were provided.

Number of meters tested and the number of meters replaced expressed as a percentage of the total number of meters installed at consumer connections:

- Number of meters tested: 0, 0% of total number of meters installed at consumer connections.
- Number of meters replaced: ....., .....% of total number of meters installed at consumer connections (..... / 17 952 x 100).

## 12. WATER SERVICES INSTITUTIONAL ARRANGEMENTS

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

The WSDP was updated for the 2008/2009 financial year and was approved by the Council on the 11<sup>th</sup> of June 2008. The Water Services Audit Report is compiled annually and taken to Council with the Annual Report. The Municipality is currently busy with the finalisation of their draft set of Water Services By-laws, which will be promulgated once finalised.

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

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.

Some of the Process Controllers at the WWTWs received accreditation from the DWA during the last financial year. The Municipality will re-apply for higher classifications once the current training is completed. Messrs DF Malan and B Sedres are classified as Class V operators. The current personnel busy with the water pollution control course, or who have already completed the course, are as follows:

- RG Leng, IF Groepies and W Barendse: Already completed the course and work at the Malmesbury WWTW.
- R Jenneke and J Heynse: Busy with course and will write exams in April 2012. They also work on the Malmesbury WWTW.
- JEM van Schalkwyk: Busy with course and will write exams in April 2012. He works at Moorreesburg and Ongegund WWTW.

At least the above six persons will be classified between Class I and III Process Controllers once they've completed their training. All the WWTWs in Swartland Municipality's Management Area were also registered with the DWA.

Swartland Municipality's Organogram, which include water and sanitation services, is included in Annexure E.

Swartland Municipality is currently effectively managing its water and sanitation services. Urgent attention is however required to address the backlog in sanitation services, as well as the backlog in infrastructure replacement, and forward planning of other services should be guided by the Water and Sewer Master Plans.



**13. CUSTOMER SERVICES**

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. The table below gives a summary of some the information recorded through the system.

**Table 13.1: Water and sanitation indicators monitored by Swartland Municipality with regard to customer services**

Water			Sanitation		
Incidents Normal Hours	Number of Incidents		Incidents Normal Hours	Number of Incidents	
	10/11	09/10		10/11	09/10
Burst Pipes	889	300	Empty Septic Tanks	3 088	2 243
Leakages		580	Blockages	571	1 098
Meter Related	200	68	Main line Blockage	698	431
Reservoir and Pumps	-	138			
House without water	-	119			
Pointing out stop valve	-	17			
Incidents After Hours	Number of Incidents		Incidents After Hours	Number of Incidents	
	10/11	09/10		10/11	09/10
Burst Pipes and Leakage Related	508	-	Empty Septic Tanks	434	-
Meter Related	96	-	Blockages (Private)	190	-
Reservoirs and Pump Stations	317	-	Main line Blockage	553	-
			Sewer Pumps	5	-

The average repair time for the 93 water pipeline bursts from October 2010 to June 2011 was 3 hours 18 minutes.

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 Paardeberg 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.

## 14. PROJECTS COMPLETED

Swartland Municipality completed the following water and sewerage capital projects during the 2010/2011 financial year.

Table 14.1: Water and sewerage capital projects completed during the 2010/2011 financial year			
Project Description	Budget	Actual Expenditure	% Spend
Malmesbury – Kalbaskraal Water Pipeline	R9 686 939-00	R10 307 251-68	106.40
Malmesbury – Kalbaskraal Water Pipeline	R1 412 280-00	R1 443 015-24	102.18
Water: Replace water pipe Loedolf street	R150 000-00	R108 296-59	72.20
Water: Replace water pipe Werdmuller Street	R150 000-00	R120 733-84	80.49
Water pump station Moorreesburg*	R1 200 000-00	R825 753-32	68.81
<b>Total for Water</b>	<b>R12 599 219-00</b>	<b>R12 805 050-67</b>	<b>101.63</b>



**Table 14.1: Water and sewerage capital projects completed during the 2010/2011 financial year**

Project Description	Budget	Actual Expenditure	% Spend
Telemetry: New installations	R60 500-00	R42 983-46	71.05
Sewerage: Apparatus for taking samples	R250 000-00	R192 082-74	76.83
Koringberg WWTW	R218 750-00	R62 936-17	28.77
Riebeek WWTW	R218 750-00	R154 288-56	70.53
Equipment: Replace Sewer Pump	R50 000-00	R42 859-00	85.72
Malmesbury WWTW (MIG)	R9 955 000-00	R9 955 000-00	100.00
Malmesbury WWTW	R6 277 124-00	R7 379 549-51	117.56
Malmesbury WWTW (MIG)	R8 880 000-00	R8 880 000-00	100.00
Sewerage Malmesbury	R1 222 544-00	R1 393 700-00	114.00
Sewerage Malmesbury	R1 090 526-00	R1 234 200-00	113.17
<b>Total for Sewerage</b>	<b>R28 226 194-00</b>	<b>R29 337 599-44</b>	<b>103.95</b>

## REFERENCES

- Strategic Framework for Water Services, September 2003.
- SA Census Data (2001), 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.
- DWA's Blue Drop Report 2011, South African Drinking Water Quality Management Performance.
- DWA's Green Drop Report 2011, South African Waste Water Quality Management Performance.
- DWA's Reconciliation Strategy Documents for each of the towns in Swartland Municipality's Management Area, 2011.
- Swartland Municipality's Water Services Audit Report for 2009/2010, 29 October 2010, KV3 Engineers.
- Draft Water Demand Management Strategy, Swartland Municipality, January 2008, CES.
- Swartland Municipality's Operational Budgets and Tariffs.
- Swartland Municipality's Annual Plan for 2011/2012, 5 May 2011, IDP
- SDBIP of Swartland Municipality for 2010/2011.

**ANNEXURE A**

**WATER BALANCES FOR THE VARIOUS DISTRIBUTION SYSTEMS**

**RAINFALL AND WWTWs FLOWS AND CAPACITIES**

**ANNEXURE B**

**ILI FOR THE VARIOUS DISTRIBUTION SYSTEMS**



**ANNEXURE C**

**COMPLIANCE SAMPLE RESULTS OF FINAL EFFLUENT**

**ANNEXURE D**

**DWA's SCORECARD FOR ASSESSING THE POTENTIAL FOR WC/WDM  
EFFORTS**

## **ANNEXURE E**

### **DWA's REGULATORY PERFORMANCE MANAGEMENT SYSTEM (RPMS)**

**ANNEXURE F**

**WATER AND SANITATION OPERATIONAL BUDGET**

**ANNEXURE G**

**ORGANOGRAM (WATER AND WASTEWATER)**