SWARTLAND MUNICIPALITY

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Version Control:

Status	Description	Date	Reference
Draft	Draft 2023/2024 Annual WSDP Performance- and Water Services Audit Report	21 October 2024	Project No P09260
Approval	Final 2023/2024 Annual WSDP Performance- and Water Services Audit Report	With Annual Report	Council Resolution for the approval of the Audit Report will be forwarded to the DWS by the Municipality

Prepared by:

Designation	Name	Contact No.	E-mail
Director Civil Engineering Services	Louis Zikmann	022 487 9400 / 082 771 4008	louis@swartland.org.za
Senior Manager: Solid Waste & Trade Services	Esias de Jager	022 487 9400 / 084 620 6025	dejagere@swartland.org.za
Engineer	Jaco Human	021 912 3000 / 084 431 8728	jaco.h@ixengineers.co.za

PROJECT P09260 - SWARTLAND MUNICIPALITY: ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2023/2024

REV	DESCRIPTION	ORIG	REVIEW	IX ENGINEERS APPROVAL	DATE	CLIENT APPROVAL	DATE
Draft	Draft issued for external review	R Kuffner	JT Human				
		Author	A Reviewer	Approval		Approval	
Final	Final Report for Council approval	R Kuffner	JT Human				
		Author	A Reviewer	Approval		Approval	

FOREWORD:

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

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

Swartland Municipality's Vulnerability Index for 2024 was indicated as 0.17 "Low Vulnerability". The only one area of concern evident from the 2024 assessment is Financial Asset Management (High Vulnerability). The vulnerability of all the other key service areas are low, except basic sanitation that is moderate.

The water and sanitation services of Swartland Municipality is managed in a financially sustainable manner, with a surplus generated on the operation and maintenance budgets of both services for the last ten financial years. The Operation and Maintenance budget allocated towards the rehabilitation and maintenance of the existing water and sewerage infrastructure however can be increased. A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of existing infrastructure. In the case of the operations and maintenance of the systems, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the systems remain in good condition.

Swartland Municipality successfully completed various capital projects over the last financial year. The capital budget expenditure, for the 2023/2024 financial year, was R20.678 million (111.2% of the budget) for the water infrastructure projects and R12.379 million (97.6% of the budget) for the sewerage infrastructure projects.

The implementation of Swartland Municipality's Water Demand Management Strategy has been extremely successful, and the Municipality was able to reduce the water requirements of the towns significantly. The average annual water requirement growth over the period 2001/2002 to 2023/2024 was 1.69 %/a. The overall NRW for all the systems was 1 170 Ml (20.8%) and the water losses were 1 039 Ml (18.5%) for the 2023/2024 financial year.

The Western Cape experienced a severe drought over the period 2015 to 2017, with some relief during the winter months of the following years. This drought over the period 2015 to 2017 impacted severely on the assurance of bulk water supply by the West Coast District Municipality to Swartland Municipality from the WCWSS and the yield of the Municipality's own existing surface and groundwater sources. WC/WDM measures to lower the current water requirements and the augmentation of the West Coast District Municipality's existing water sources, as well as the augmentation of Swartland Municipality's own water resources with groundwater were therefore critical over this period.

Operational Sampling programmes are implemented by the West Coast District Municipality at their two bulk WTWs. Compliance Water Quality Monitoring Programmes are also implemented by the West Coast District Municipality and the Swartland Municipality throughout the water distribution systems. Operational and Compliance Effluent Monitoring Programmes are implemented by Swartland Municipality at their WWTWs.

The water quality of all the water distribution systems in Swartland Municipality was either “Excellent” or “Good”, according to the SANS0241 classification, except for Koringberg, Yzerfontein and Abbotsdale that were “Unacceptable” for Operational Efficiency, due to Turbidity, Total Coliform Count and pH failures. The overall percentage compliance of the water quality samples taken over the period July to June for the last three financial years are indicated in the table below for all the systems combined.

Overall percentage compliance of the water quality samples taken over the period July to June for the last three financial years															
Distribution System	Acute Health (%)						Chronic Health (%)			Aesthetic (%)			Operational Efficiency (%)		
	Microbiological			Chemical											
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
All Systems	98.9	98.3	99.1	100.0	100.0	100.0	99.9	100.0	99.9	99.9	99.7	100.0	94.7	93.8	95.2

The overall percentage compliances of the final effluent samples taken over the last three financial years are summarised in the table below.

Overall percentage compliance of the final effluent samples taken over the last three financial years									
WWTW	Microbiological (%)			Chemical (%)			Physical (%)		
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
All WWTWs	63.1	57.1	54.9	66.0	59.3	59.6	74.6	74.5	73.5

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

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

Swartland Municipality performed excellent with regard to DWS’s 2023 Blue Drop Assessment. The Withoogte System received Blue Drop status with a score of 96.48%. The Swartland system received a Blue Drop score of 93.33%. Swartland Municipality achieved an “Excellent” score of 91% for the 2023 No Drop Assessment and was acknowledged as one of the top performing WSAs in the country. The Municipality is performing above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS’s 2021 Green Drop assessment. Swartland Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Rating of Swartland Municipality was 51.2% (Medium Risk).

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WATER SERVICES AUDIT FOR 2023/2024

ITEM **DESCRIPTION** **PAGE**

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ABBREVIATIONS AND DEFINITIONS

AADD	Average Annual Daily Demand
BDRR	Blue Drop Risk Rating
BPT	Break Pressure Tank
BRVAS	Berg River Voëlvlei Augmentation Scheme
BSP	Bulk Sewer Pipeline
BV	Book Value
BWP	Bulk Water Pipeline
C	Chemical
CAH	Chemical Acute Health
CAP	Corrective Action Plan
CCH	Chemical Chronic Health
CCT	City of Cape Town
CF	Consequence of Failure
CNA	Chemical Non-Health Aesthetic
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
D	Disinfectant
DM	District Municipality
DRC	Depreciated Replacement Cost
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EC	Electrical Conductivity
ELEC	Electrical
ESETA	Energy Sector Education and Training Authority
ESKOM	Electricity Supply Commission
GAMAP	General Accepted Municipal Accounting Practice
GD	Green Drop
GDIP	Green Drop Improvement Plan
HIV	Human Immunodeficiency Virus
HL	High Level
HMI	Human Machine Interface
IAM	Infrastructure Asset Management
ICT	Information Communication Technology
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
IMQS	Information Management Quality Systems
IRIS	Integrated Regulatory Information System
IT	Information Technology
IWA	International Water Association
Kl	Kilolitre
KPI	Key Performance Indicator
l/c/d	Litre per Capita per Day
LF	Likelihood of Failure
LGSETA	Local Government Sector Education and Training Authority

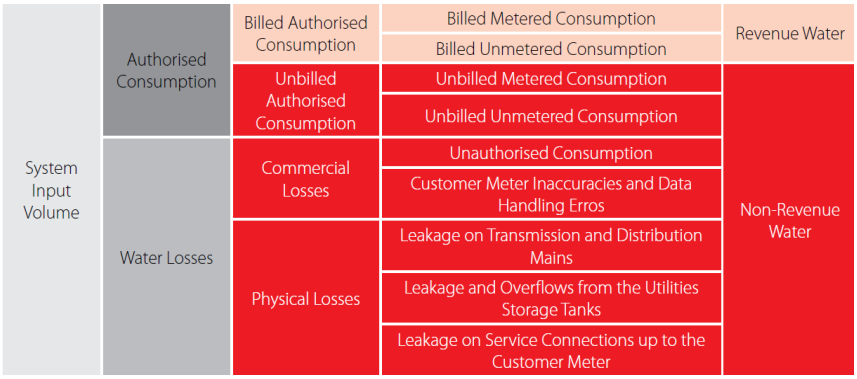
ABBREVIATIONS AND DEFINITIONS / Continue

LGTAS	Local Government Turn Around Strategy
LL	Low Level
LM	Local Municipality
l/p/d	Litre per Person per Day
M	Microbiological
MAH	Microbiological Acute Health
MFMA	Municipal Finance Management Act
MISA	Municipal Infrastructure Support Agent
Ml	Mega Litre
Ml/a	Mega Litre per Annum
Ml/d	Mega Litre per Day
MuSSA	Municipal Strategic Self-Assessment
N/A	Not Applicable
NRW	Non-Revenue Water
O	Operational
OC	Opening Cost
O&M	Operation and Maintenance
OTH	Other
P	Physical
PAT	Progress Assessment Tool
PDD	Peak Daily Demand
PRP	Pipe Replacement Potential
PRV	Pressure Reducing Valve
PS	Pump Station
PW	Potable Water
RDP	Reconstruction and Development Programme
RES	Reservoir
RUL	Remaining Useful Life
RW	Raw Water
SALGA	South African Local Government Association
SANS	South African National Standard
SCADA	Supervisory Control and Data Acquisition
SCC	Sewer Consumer Connections
SDBIP	Service Delivery and Budget Implementation Plan
SIV	System Input Volume
SL	Swartland
SPS	Sewer Pump Station
SRP	Sewer Reticulation Pipeline
SST	Secondary Settling Tank
STW	Sanitation Treatment Works
TCTA	Trans Caledon Tunnel Authority
TMG	Table Mountain Group
TSS	Total Suspended Solids
TWL	Top Water Level

ABBREVIATIONS AND DEFINITIONS / Continue

URV	Unit Reference Value
VIP	Ventilated Improved Pit
WCC	Water Consumer Connections
WC DM	West Coast District Municipality
WC/WDM	Water Conservation / Water Demand Management
WCWSS	Western Cape Water Supply System
WDM	Water Demand Management
WPS	Water Pump Station
WRP	Water Reticulation Pipeline
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSDP-IDP	Water Services Development Plan – Integrated Development Plan
WSI	Water Services Institution
WSP	Water Services Provider
WSS	Water Supply System
WTP	Water Treatment Plant
WTW	Water Treatment Works
W_2RAP	Wastewater Risk Abatement Plan
WWTW	Wastewater Treatment Works

KEY TERMS AND INTERPRETATIONS

KEY TERMS	INTERPRETATIONS
Current replacement cost (CRC)	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset. GAMAP defines CRC as the cost the entity would incur to acquire the asset on the reporting date.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Financial Year	Financial year means in relation to- • a national or provincial department, the year ending 31 March; or • a municipality, the year ending 30 June.
Integrated Development Plan (IDP)	An IDP is a legislative requirement for municipalities, which identifies the municipality's key development priorities; formulates a clear vision, mission and values; formulates appropriate strategies; shows the appropriate organisational structure and systems to realise the vision and the mission and aligns resources with the development priorities.
International Water Association (IWA) Water Balance	
System Input Volume	The volume of treated water input to that part of the water supply system to which the water balance calculation relates.
Authorised Consumption	The volume of metered and/or un-metered water taken by registered customers, the water supplier and others who are implicitly or explicitly authorised to do so by the water supplier, for residential, commercial and industrial purposes. It also includes water exported across operational boundaries. Authorised consumption may include items such as firefighting and training, flushing of mains and sewers, street cleaning, watering of municipal gardens, public fountains, frost protection, building water, etc. These may be billed or unbilled, metered or unmetered.
Water Losses	The difference between System Input and Authorised Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission or distribution schemes, or individual zones. Water Losses consist of Physical Losses and Commercial Losses (also known as Real Losses and Apparent Losses).
Billed Authorised Consumption	Those components of Authorised Consumption which are billed and produce revenue (also known as Revenue Water). Equal to Billed Metered Consumption plus Billed Unmetered Consumption.
Unbilled Authorised Consumption	Those components of Authorised Consumption which are legitimate but not billed and therefore do not produce revenue. Equal to Unbilled Metered Consumption plus Unbilled Unmetered Consumption.
Commercial Losses	Includes all types of inaccuracies associated with customer metering as well as data handling errors (meter reading and billing), plus unauthorised consumption (theft or illegal use). Commercial losses are called "Apparent Losses" by the International Water Association and in some countries the misleading term "Non-Technical Losses" is used.

KEY TERMS	INTERPRETATIONS
Physical Losses	Physical water losses from the pressurized system and the utility's storage tanks, up to the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Physical losses are called "Real Losses" by the International Water Association and in some countries the misleading term "Technical Losses" is used.
Billed Metered Consumption	All metered consumption which is also billed. This includes all groups of customers such as domestic, commercial, industrial or institutional and also includes water transferred across operational boundaries (water exported) which is metered and billed.
Billed Unmetered Consumption	All billed consumption which is calculated based on estimates or norms but is not metered. This might be a very small component in fully metered systems (for example billing based on estimates for the period a customer meter is out of order) but can be the key consumption component in systems without universal metering. This component might also include water transferred across operational boundaries (water exported) which is unmetered but billed.
Unbilled Metered Consumption	Metered Consumption which is for any reason unbilled. This might for example include metered consumption by the utility itself or water provided to institutions free of charge, including water transferred across operational boundaries (water exported) which is metered but unbilled.
Unbilled Unmetered Consumption	Any kind of Authorised Consumption which is neither billed nor metered. This component typically includes items such as fire-fighting, flushing of mains and sewers, street cleaning, frost protection, etc. In a well-run utility it is a small component which is very often substantially overestimated. Theoretically this might also include water transferred across operational boundaries (water exported) which is unmetered and unbilled – although this is an unlikely case.
Unauthorised Consumption	Any unauthorised use of water. This may include illegal water withdrawal from hydrants (for example for construction purposes), illegal connections, bypasses to consumption meters or meter tampering.
Customer Metering Inaccuracies and Data Handling Errors	Commercial water losses caused by customer meter inaccuracies and data handling errors in the meter reading and billing system.
Leakage on Transmission and /or Distribution Mains	Water lost from leaks and breaks on transmission and distribution pipelines. These might either be small leaks which are still unreported (e.g. leaking joints) or large bursts which were reported and repaired but did obviously leak for a certain period before that.
Leakage and Overflows at Utility's Storage Tanks	Water lost from leaking storage tank structures or overflows of such tanks caused by e.g. operational or technical problems.
Leakage on Service Connections up to point of Customer Metering	Water lost from leaks and breaks of service connections from (and including) the tapping point until the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Leakage on service connections might be reported breaks but will predominately be small leaks which do not surface and which run for long periods (often years).
Revenue Water	Those components of Authorised Consumption which are billed and produce revenue (also known as Billed Authorised Consumption). Equal to Billed Metered Consumption plus Billed Unmetered Consumption.
Non-Revenue Water	Those components of System Input which are not billed and do not produce revenue. Equal to Unbilled Authorised Consumption plus Physical and Commercial Water Losses.
Municipal Finance Management Act (MFMA)	Municipal Finance Management Act, 2003 (Act No. 56 of 2003)
MIG	A conditional grant from national government to support investment in basic municipal infrastructure.
Remaining useful life (RUL)	The time remaining over which an asset is expected to be used.
Service Delivery Budget Implementation Plan (SDBIP)	The SDBIP is a management, implementation and monitoring tool that enable the Municipal Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the Municipal Manager, and for the community to monitor the performance of the municipality.
Strategic Framework for Water Services	The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a

KEY TERMS	INTERPRETATIONS
	strategic framework for its implementation over the next ten years.
Water Conservation	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
Water Demand Management	The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability.
Water Services Authority (WSA)	A water services authority means a municipality with the executive authority and the right to administer water services as authorised in terms of the Municipal Structures Act, 1998 (Act No.117 of 1998). There can only be one water services authority in any specific area. Water services authority area boundaries cannot overlap. Water services authorities are metropolitan municipalities, district municipalities and authorised local municipalities.
Water Services Development Plan (WSDP)	A plan to be developed and adopted by the WSA in terms of the Water Services Act, 1997 (Act No.108 of 1997)
WSDP Guide Framework	Modular tool which has been developed by the DWS to support WSAs in complying with the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance.
Water Services Provider (WSP)	A WSP means any person or institution who provides water services to consumers or to another water services institution, but does not include a water services intermediary.

SWARTLAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2023/2024

EXECUTIVE SUMMARY

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

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 WSDP Performance- and Water Services Audit Report every financial year.

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

The WSDP Performance- and Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2023/2024 financial year, and can be seen as an annexure to Swartland Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121).

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

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

- The WSDP Performance- and Water Services Audit Report for the 2022/2023 financial year was finalised and approved by Council as part of the Annual Report. The non-revenue water balance models were updated for each of the distribution systems (Up to the end of June 2023) as part of the WSDP Performance- and Water Services Audit Process.

- The infrastructure constructed during the 2023/2024 financial year were added to the Asset Register and the Asset Register was updated.

- Feasibility Report was compiled for the Chatsworth / Riverlands Bulk Water Supply Upgrades: Investigation, Feasibility Study and Cost Estimation, June 2024, Bigen.

- Pipeline Routes Site Sensitivity and Environmental Constrain Report was compiled for the bulk water supply upgrade to Chatsworth and Riverlands, June 2024, Bigen.

- Swartland Municipality's WSDP was updated for the 2022-2027 WSDP cycle, according to DWS's new WSDP website. The WSDP was approved for public distribution by Swartland Municipality's Executive

Mayoral Committee on the 21st of May 2024. The WSDP was finalised after the public participation process and was approved by Council on the 25th of July 2024.

- Swartland Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). The effluent discharged by industrial consumers is also monitored by Swartland Municipality on a monthly basis.

- The following WSIG Business Plans were compiled and submitted for funding to the DWS.
  - Scada for Darling and Moorreesburg WWTWs.
  - Improvement of Security Measures at Reservoirs and Water Pump Stations.
  - Water Pipeline Replacement Programme.

The Municipality also received the following awards / acknowledgements:

- **Swartland Municipality performed excellent with regard to DWS's 2023 Blue Drop Assessment. The Withoogte System received Blue Drop status with a score of 96.48%. The Swartland system received a Blue Drop score of 93.33%.** The Blue Drop Risk Ratings for both systems were in the low-risk category (<50%). The Blue Drop scores were supported by an excellent site assessment score of 92% for the Swartland WTW and 95% for the Withoogte WTW.

- **Swartland Municipality achieved an "Excellent" score of 91% for the 2023 No Drop Assessment and was acknowledged as one of the top performing WSAs in the country.**

- **Swartland Municipality is performing above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS's 2021 Green Drop assessment.** The Green Drop Scores for the Malmesbury-, Riebeek Valley- and Darling WWTW were between 89% and 95% (Three potential Green Drop certified systems). **Swartland Municipality was also acknowledged by the DWS as one of the Top 3 Best Performing Municipalities for their Green Drop Results.**

- Swartland Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Rating of Swartland Municipality was 51.2% (Medium Risk). The Wastewater Risk Ratings were at low risk for the Malmesbury WWTW (<50%), at medium risk for the Chatsworth, Darling and Kalbaskraal WWTW (50% - <70%) and high risk for the Koringberg, Moorreesburg and Riebeek Valley WWTW (70% - <90%).

Quantity of Water Services Provided (Water Balance)

Detail IWA water balance models are in place for each of the distribution systems in Swartland Municipality's Management Area. These models include the volume of potable water supplied to the Swartland Municipality by the West Coast District Municipality (System Input Volume), the volume of water abstracted from the Municipality's own water resources and the NRW and Water Losses for each of the distribution systems. The flows at the WWTWs are also metered and recorded by the Municipality.

Water Services Delivery Profile

The number of consumer units per category or user type is available for each of the water distribution systems. The 2023/2024 number of formal water consumers in Swartland Municipality was 23 449. The average annual growth in the number of consumers for all the towns over the period 2014/2015 to 2023/2024, last nine financial years, was 2.30%. All the formal households in the urban areas of Swartland Municipality's Management Area are provided with water and sewer connections inside the erven.

Informal areas are provided with shared services as an intermediary measure. There are an estimated 850 informal households in Chatsworth with no access to shared water and sanitation services. The only other areas where communal water services are in use is on some of the farms in the rural areas. Swartland Municipality is committed to work with the private landowners to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services still below RDP standard.

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

Cost Recovery and Free Basic Services

A detail seven block step rising tariff system is implemented by Swartland Municipality. This tariff system discourages the wasteful or inefficient use of water. Various levels of water restriction tariffs are also in place for drought periods. It is expected that the current block step tariff structure will continue to be implemented in the future.

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

The operational and maintenance expenditure and income for the last seven financial years for water and sanitation services is summarised in the table below (Unaudited).

Operational and Maintenance expenditure and income for water and sanitation services							
Expenditure / Income	**23/24**	**22/23**	**21/22**	**20/21**	**19/20**	**18/19**	**17/18**
Expenditure	R92 439 548	R86 615 726	R79 784 692	R44 955 432	R61 301 899	R23 087 917	R47 486 198
Income	-R129 736 652	-R123 943 612	-R99 081 926	-R90 231 763	-R106 205 533	-R79 626 773	-R74 863 765
Surplus / Deficit	**-R37 297 104**	**-R37 327 886**	**-R19 297 234**	**-R45 276 331**	**-R44 903 634**	**-R56 538 856**	**-R27 377 567**
Expenditure	R66 082 402	R56 389 563	R56 552 156	R50 616 866	R49 817 322	R31 688 531	R48 691 211
Income	-R100 134 846	-R83 697 003	-R94 802 406	-R87 825 165	-R71 074 049	-R62 948 777	-R72 188 869
Surplus / Deficit	**-R34 052 444**	**-R27 307 440**	**-R38 250 250**	**-R37 208 299**	**-R21 256 727**	**-R31 260 246**	**-R23 497 658**

Water Quality

Operational Sampling programmes are implemented by the West Coast District Municipality at their two bulk WTWs. Compliance Water Quality Monitoring Programmes are also implemented by the West Coast District Municipality and the Swartland Municipality throughout the water distribution systems. Operational and Compliance Effluent Monitoring Programmes are implemented by Swartland Municipality at their WWTWs.

The water quality of all the water distribution systems in Swartland Municipality was either “Excellent” or “Good”, according to the SANS0241 classification, except for Koringberg, Yzerfontein and Abbotsdale that were “Unacceptable” for Operational Efficiency, due to Turbidity, Total Coliform Count and pH failures. A full SANS0241 analyses was done during the 2023/2024 financial year. The overall percentage of compliance of the water quality samples taken over the period July to June for the last three financial years is summarised in the table below per distribution system (SANS 241: 2015 Limits).

Percentage compliance of the final water quality samples for the last three financial years															
Distribution System	Acute Health (%)						Chronic Health			Aesthetic			Operational Efficiency		
	Chemical			Microbiological											
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
Moorreesburg	100.0	100.0	100.0	98.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.4	95.6	96.4
Koringberg	100.0	100.0	100.0	96.2	100.0	96.4	100.0	100.0	100.0	100.0	100.0	100.0	87.8	92.5	97.1
Malmesbury	100.0	100.0	100.0	99.4	100.0	98.6	100.0	100.0	100.0	99.7	99.7	100.0	98.1	96.8	97.4
Darling	100.0	100.0	100.0	98.8	97.6	98.5	99.2	100.0	100.0	100.0	98.3	100.0	96.4	90.7	91.3
Riebeek Kasteel	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.7	97.0	95.5
Riebeek Wes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	100.0	100.0	100.0	100.0	100.0	100.0
Yzerfontein	100.0	100.0	100.0	100.0	98.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	85.1	84.3	88.3
Riverlands	100.0	100.0	100.0	100.0	90.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.4	90.0	96.0
Abbotsdale	100.0	100.0	100.0	96.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	87.9	93.3	95.0
Chatsworth	100.0	100.0	100.0	100.0	89.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.4	94.2	95.3
Kalbaskraal	100.0	100.0	100.0	96.6	96.3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	90.7	94.3	94.1
All Systems	**100.0**	**100.0**	**100.0**	**98.9**	**98.3**	**99.1**	**99.9**	**100.0**	**99.9**	**99.9**	**99.7**	**100.0**	**94.7**	**93.8**	**95.2**

Note: *Unacceptable* (According to SANS241-2:2015, Table 4)

The table below indicates the compliance of the E.Coli monitoring frequency in the water distributions systems of Swartland Municipality, in terms of the minimum requirements of SANS:241-2: 2015 (Table 2). The period assessed was for samples taken from July 2023 to June 2024.

Swartland Municipality’s Compliance of the Monthly E.Coli Monitoring Frequency for the Water Distribution Systems and at the WTWs in terms of the Minimum Requirements of SANS 241-2:2015 (Table 2).					
Distribution System	Population served	Required number of monthly samples (SANS 241-2:2015: Table 2)	Number of monthly E.Coli samples taken on the network by Swartland Mun. and the West Coast DM	Number of monthly E.Coli samples taken at the Withoogte and Swartland WTW by the West Coast DM	Total monthly E.Coli samples taken for the potable water
Koringberg	1 944	2.0	4.3	7.8	12.1
Riebeek Wes and Ongegund	9 266	2.0	2.3	5.3	7.6
Riebeek Kasteel	10 723	2.1	4.3	5.3	9.6
Yzerfontein	1 825	2.0	4.4	5.3	9.7
Darling	13 215	2.6	6.5	5.3	11.8
Moorreesburg	20 616	4.1	3.9	7.8	11.7
Malmesbury	60 877	12.2	13.3	5.3	18.6
Abbotsdale	5 364	2.0	2.2	5.3	7.5
Kalbaskraal	4 330	2.0	2.3	5.3	7.6
Riverlands and Chatsworth	8 153	2.0	4.6	5.3	9.9

The above sampling done by the Swartland Municipality plus the daily sampling done at the Withoogte WTW and the Swartland WTW by the West Coast District Municipality, as well as their monthly E.Coli sampling throughout the various towns on the systems ensure that the number of monthly E.Coli samples taken, as required by SANS 241, is adequate.

The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the last three financial years at the Malmesbury-, Darling-, Moorreesburg-, Koringberg-, Chatsworth-, Kalbaskraal- and Riebeek Valley WWTW are summarised in the tables below.

Percentage microbiological, chemical and physical compliance of the compliance samples taken at the various WWTWs for the last three financial years

WWTW	Microbiological			Chemical			Physical		
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
Malmesbury	**75.0%**	100.0%	100.0%	**70.8%**	79.2%	89.6%	**66.7%**	86.1%	94.4%
Darling	**91.7%**	100.0%	75.0%	**89.6%**	83.3%	70.8%	**86.1%**	83.3%	77.8%
Moorreesburg	**100.0%**	8.3%	0.0%	**75.0%**	45.8%	35.0%	**77.8%**	60.0%	40.0%
Koringberg	**8.3%**	0.0%	0.0%	**29.2%**	27.1%	31.3%	**30.6%**	36.1%	33.3%
Chatsworth	**8.3%**	8.3%	25.0%	**37.5%**	31.3%	33.3%	**72.2%**	63.9%	72.2%
Kalbaskraal	**100.0%**	100.0%	100.0%	**66.7%**	58.3%	33.3%	**95.8%**	100.0%	100.0%
Riebeek Valley	**58.3%**	83.3%	75.0%	**93.8%**	89.6%	100.0%	**100.0%**	100.0%	100.0%
Overall Compliance %	**63.1%**	**57.1%**	**54.9%**	**66.0%**	**59.3%**	**59.6%**	**74.6%**	**74.5%**	**73.5%**

All industrial effluent discharge into the sewer system of Swartland Municipality is monitored. The Municipality's Water Services By-laws, with regard to the discharge of industrial effluent into the sewer system, were promulgated and all industrial consumers formally apply for the discharge of industrial effluent into the sewer system. An external accredited laboratory monitors the industrial effluent of the industrial consumers in Darling, Moorreesburg and Malmesbury on a weekly basis.

WC/WDM

The implementation of Swartland Municipality's Water Demand Management Strategy has been extremely successful, and the Municipality was able to reduce the water requirements of the towns significantly. The average annual water requirement growth over the period 2001/2002 to 2023/2024 was 1.69 %/a.

The table below gives a summary of the NRW, Water Losses and ILI for the various water distribution systems in Swartland Municipality's Management Area.

NRW, Water Losses and ILIs for the various water distribution systems

Description	Component	Unit	23/24	Record: Prior (Ml/a)				
				22/23	21/22	20/21	19/20	18/19
Koringberg	NRW	Volume	7.382	7.337	12.099	13.395	16.976	14.694
		Percentage	13.1%	13.5%	21.8%	23.7%	32.7%	31.5%
	Water Losses	Volume	5.649	5.608	10.368	12.634	16.224	13.953
		Percentage	10.0%	10.4%	18.7%	22.4%	31.3%	29.9%
	ILI		**0.79**	**0.83**	**1.51**	**1.80**	**1.59**	**1.41**
	The NRW and Water Losses are at excellent levels and stayed roughly the same for the last two financial years. The Municipality needs to continue with the implementation of their WC/WDM measures in order to keep the NRW and water losses percentages for Koringberg below 15%. The ILI of 0.79 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Ongegund	NRW	Volume	4.822	1.260	9.214	3.075	4.236	6.546
		Percentage	20.5%	5.9%	38.4%	17.4%	24.9%	36.4%
	Water Losses	Volume	4.595	1.037	8.986	2.968	4.130	6.438
		Percentage	19.5%	4.9%	37.4%	16.8%	24.2%	35.8%
	The NRW and Water Losses increased during the last financial year, but are still below DWS's NRW target of 30%. The Municipality needs to keep the NRW and water losses percentages for Ongegund less than 20%.							
Riebeek Wes	NRW	Volume	21.053	19.802	18.314	26.490	22.040	23.263
		Percentage	11.3%	11.2%	10.2%	15.5%	14.0%	16.6%
	Water Losses	Volume	8.982	7.749	6.255	21.468	17.044	18.302
		Percentage	4.8%	4.4%	3.5%	12.6%	10.8%	13.0%
	ILI		**0.33**	**0.29**	**0.23**	**0.80**	**0.82**	**1.09**
	The NRW and Water Losses are at excellent levels and stayed roughly the same for the last three financial years. The Municipality needs to keep the NRW below 15% and the water losses below 10%. The ILI of 0.33 is							

NRW, Water Losses and ILIs for the various water distribution systems								
Description	**Component**	**Unit**	**23/24**	**Record: Prior (Ml/a)**				
				22/23	**21/22**	**20/21**	**19/20**	**18/19**
	excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Riebeek Kasteel	NRW	Volume	146.401	153.504	98.088	52.790	47.762	25.377
		Percentage	35.9%	38.6%	29.6%	20.6%	21.4%	13.8%
	Water Losses	Volume	141.626	148.749	93.466	50.693	45.732	23.426
		Percentage	34.8%	37.4%	28.2%	19.8%	20.5%	12.8%
	ILI		**3.99**	**4.21**	**2.72**	**1.45**	**1.52**	**0.77**
	The NRW and Water Losses decreased slightly during the last financial year, which is good. The current NRW is however still above DWS's NRW target of 30%. The Municipality needs to work towards a target of 30% for the NRW and 25% for the water losses. The ILI value of 3.99 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Yzerfontein	NRW	Volume	65.361	24.725	40.333	60.201	47.109	15.977
		Percentage	19.2%	8.2%	13.1%	20.1%	19.8%	9.1%
	Water Losses	Volume	52.080	11.526	27.117	54.562	41.593	10.585
		Percentage	15.3%	3.8%	8.80%	18.2%	17.5%	6.0%
	ILI		**0.85**	**0.21**	**0.50**	**1.03**	**0.97**	**0.25**
	The NRW and Water Losses increased during the last financial year. The current percentages of NRW below 20% and Water Losses at approximately 15% are still good and below DWS's NRW target of 30%. The Municipality needs to keep the NRW below 20% and the water losses below 15%. The ILI of 0.85 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Darling	NRW	Volume	41.311	-6.984	150.430	150.505	138.078	127.003
		Percentage	7.8%	-1.5%	25.0%	26.4%	26.7%	25.8%
	Water Losses	Volume	33.229	-14.918	142.205	146.555	134.234	123.212
		Percentage	6.3%	-3.3%	23.6%	25.7%	25.9%	25.1%
	ILI		**0.72**	**2.82**	**3.09**	**3.20**	**2.08**	**1.90**
	The NRW and water losses for the last financial year are excellent. The Municipality needs to keep the NRW below 15% and the water losses below 10%. The ILI of 0.72 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Moorreesburg	NRW	Volume	215.211	196.685	169.718	136.476	119.301	110.213
		Percentage	28.6%	27.4%	24.5%	20.3%	20.2%	20.7%
	Water Losses	Volume	198.765	180.308	153.392	129.156	112.145	103.172
		Percentage	26.4%	25.1%	22.1%	19.2%	19.0%	19.4%
	ILI		**2.64**	**2.40**	**2.06**	**1.74**	**1.36**	**1.25**
	The NRW and Water Losses increased slightly during the last financial year, but the NRW is still below DWS's NRW target of 30%. The Municipality needs to work towards a target of 25% for the NRW and 20% for the water losses. The ILI value of 2.64 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Malmesbury	NRW	Volume	668.245	459.356	755.496	595.795	379.300	308.070
		Percentage	20.1%	15.0%	23.4%	20.3%	15.0%	14.1%
	Water Losses	Volume	594.275	385.917	681.709	562.994	347.331	276.769
		Percentage	17.9%	12.6%	21.1%	19.2%	13.8%	12.7%
	ILI		**2.23**	**1.46**	**2.67**	**2.20**	**1.44**	**1.17**
	The NRW and Water Losses increased during the last financial year, but the NRW is still below DWS's NRW target of 30%. The Municipality needs to keep the NRW below 20% and needs to work towards a target of 15% for the water losses. The ILI value of 2.23 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
All Systems	**NRW**	**Volume**	**1 169.786**	**855.685**	**1 253.692**	**1 038.727**	**774.802**	**631.143**
		Percentage	**20.8%**	**16.5%**	**23.1%**	**20.9%**	**18.0%**	**16.7%**
	Water Losses	**Volume**	**1 039.201**	**725.976**	**1 123.498**	**981.030**	**718.433**	**575.857**
		Percentage	**18.5%**	**14.0%**	**20.7%**	**19.7%**	**16.6%**	**15.3%**
	ILI		**2.17**	**1.83**	**2.40**	**2.11**	**1.60**	**1.41**
	The overall NRW and Water Losses increased during the last financial year, mainly because of the increase in the NRW and Water Losses of Malmesbury. The Municipality needs to keep the NRW below 20% and needs to work towards a target of 15% for the water losses. The ILI value of 2.17 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							

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

Category A = No specific intervention required.

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

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

DWS's WC/WDM scorecard was also populated as part of the Water Services Audit Process. The aim of the scorecard is to establish areas where the municipality has made good progress in relation to WC/WDM and where there is still room for improvement. **The status quo score for Swartland Municipality is 83 out of 100 suggesting that the Municipality is making good progress with regard to the implementation of specific WC/WDM activities.**

Water Services Asset Management

An Asset Register is in place, which include all the water and sewerage infrastructure. The Opening Cost, Book Value, RUL and Age distribution of the water and sewerage infrastructure included in Swartland Municipality's Asset Register is summarised in the table below (June 2024).

Opening Cost, Book Value, RUL and Age distribution of the water and sewerage infrastructure					
Asset Type			Opening Cost (OC)	Book Value (BV)	% BV / OC
Water Infrastructure			R912 528 209	R420 699 311	46%
Sewerage Infrastructure			R726 958 468	R477 350 425	66%
Remaining Useful Life					
Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Water Infrastructure	R29 013 034	R5 490 515	R98 948 549	R27 243 287	R751 832 824
Sewerage Infrastructure	R38 987 186	R15 555 699	R75 677 237	R26 065 118	R570 673 228
Age Distribution					
Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Water Infrastructure	R86 765 495	R59 393 302	R54 132 728	R173 643 815	R538 592 869
Sewerage Infrastructure	R45 934 361	R212 874 091	R31 458 970	R78 117 859	R358 573 187

The above implies that about 54% of the value of the water infrastructure and 34% of the value of the sewerage infrastructure has been consumed. The Opening Cost of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL < 5 yrs) is R68.000 million. The asset renewal needs for the water infrastructure assets over the next ten years is R3.450 million per year. The reinvestment required is R29.013 million in the first five years and R5.491 million in the second five-year period. The age of 59.02% of the water infrastructure assets is greater than twenty years. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R5.454 million per year. The reinvestment required is R38.987 million in the first five years and R15.556 million in the second five-year period. The age of 49.33% of the sewerage infrastructure assets is greater than twenty years.

Most of the maintenance work currently carried out on the water and sewerage infrastructure are re-active and it is critical for the Municipality to increase their maintenance budget for water and sewerage infrastructure in order to ensure that the required preventative maintenance work is also carried out. The Asset Management Plan needs to indicate the risks associated with the inadequate refurbishment and maintenance of the various water and sewerage infrastructure.

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

Water Services Operation and Maintenance

Design-out Maintenance, Preventative Maintenance and Corrective or Breakdown Maintenance are practised by Swartland Municipality (Planned and unplanned preventative and corrective maintenance). Adequate resources, information and activity control and management are in place to ensure proper operation and maintenance of the water and sewerage infrastructure.

The CRC of the internal water infrastructure is R2 328 050 000 (Opening Cost of water infrastructure in Asset Register R912 528 209) and the CRC of the sewerage infrastructure is R1 532 229 000 (Opening Cost of sewerage infrastructure in Asset Register is R726 958 468). Annual budgets of R46 561 000 and R30 644 580 are needed for the refurbishment of the old water and sewerage infrastructure (Best Practice).

Water Resources

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

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

The Western Cape experienced a severe drought over the period 2015 to 2017, with some relief during the winter months of the following years. This drought over the period 2015 to 2017 impacted severely on the assurance of bulk water supply by the West Coast District Municipality to Swartland Municipality from the WCWSS and the yield of the Municipality's own existing surface and groundwater sources. WC/WDM measures to lower the current water requirements and the augmentation of the West Coast District Municipality's existing water sources, as well as the augmentation of Swartland Municipality's own water resources with groundwater were therefore critical over this period.

The West Coast District Municipality applied to the DWS in December 2013 to increase the allocation from the System to initially 18.087 million m^3/a for the Withoogte supply area, which is to be increased to 30.3 million m^3/a by 2033, and to 6.39 million m^3/a for the Swartland supply area (to be increased to 11.1 million m^3/a by 2033). The current raw water abstraction Licence No. 01/G10F/A/5903 of October 2017 list the following volumes allocated to the respective WSAs, which include operational, treatment and bulk conveyance losses.

Volumes allocated to the respective WSAs in Licence No. 01/G10F/A/5903			
Name	**Resource Name**	**WSA**	**Maximum Volume (Ml/a)**
Withoogte from Misverstand Weir	Berg River	Saldanha LM	20 427.000
		Swartland LM	1 573.600
		Berg River LM	1 439.400
Swartland from Voëlvlei Dam	Berg River	Swartland LM	7 900.000
		Drakenstein LM	300.000
Langebaan Aquifer Boreholes 1 & 2	Langebaan Aquifer	Saldanha Bay LM	675.000
Langebaan Aquifer Boreholes 3 & 4		Saldanha Bay LM	675.000
Total Allocation for the West Coast District Municipality			**32 990.000**
Total Allocation for the West Coast District Municipality from the WCWSS			**31 640.000**

DWS's Reconciliation Strategies, as completed during 2016, indicated that the current water sources do not have adequate supply to cater for the current and long-term future water requirements of the various towns. The DWS is currently busy with the updating of the All Towns Reconciliation Strategies for the Western Cape, but updated strategies for Swartland Municipality are not yet available.

The table below gives an overview of the years in which the annual water requirements are likely to exceed the licence volumes from the WCWSS.

Years in which the annual water requirements are likely to exceed the total licence volumes for Swartland Municipality from the WCWSS				
Distribution System	**Total Licence Volume for Swartland Municipality (Ml/a)**	**Annual Growth on 2023/2024 Demand (Low Growth)**	**Annual Growth on 2022/2023 Demand (High Growth)**	**WSDP Projection Model**
Withoogte System	1 573.600	>2048	2037	2047
Swartland System	7 900.000	2024	2024	2024

Note: The severe drought in the Western Cape, over the period 2015 to 2017, impacted on the assurance of supply from the WCWSS, which resulted in severe water restrictions implemented by the Swartland Municipality in order to lower the current water requirements and to ensure that the systems don't "run dry" during the drought period.

A number of resource augmentation studies were previously completed by the DWS for the WCWSS, by the West Coast District Municipality for the West Coast Region and by Swartland Municipality for the towns in their Management Area. A desktop study of these previous augmentation studies was completed during the last financial year. The following recommendations with regard to water resource augmentation options available to Swartland Municipality were made based on the findings and conclusions contained in the desktop study.

- Swartland Municipality should continue to implement their WC/WDM Strategy for both the bulk water distribution systems and the internal water reticulation systems of the towns. Treatment Losses, NRW and Water Losses need to be monitored on a monthly basis.

- Investigate the cost of small groundwater schemes for Koringberg and Riebeek Wes. These are the only two towns where the yields of the newly drilled boreholes are adequate to provide a high percentage of the town's existing demand. The groundwater will require additional treatment and blending options will need to be considered.

- Compile a Feasibility Study for a bulk groundwater augmentation scheme for the Swartland Voëlvlei bulk water distribution system from the target areas included in the "Pre-Feasibility Study of Potential Water Sources for the Area Served by the West Coast District Municipality Phase 1: Assessment of Development Potential of Groundwater Resources" Report.

- The URV of R25-39/kl for a groundwater supply scheme for Yzerfontein from the Grootwater Aquifer is high and should be seen as a possible medium- to long-term possible intervention.

- An investigation has to be carried out into the Colenso Fault Zone close to Darling if the Municipality considers supplying Darling with groundwater. A possible groundwater scheme for Darling should be seen as a possible medium- to long-term possible intervention.

- Continue to reuse treated effluent from the four main WWTWs for irrigation purposes in order to reduce the demand for potable water used for irrigation purposes (Parks, Sport Fields, etc.). The options of "indirect potable reuse" and "direct potable reuse" of treated effluent should be seen as long-term possible interventions.

- Swartland Municipality should engage with the CCT with regard to the following:
  - The CCT's programme for implementing the additional infrastructure to provide the proposed 1 in 200 year level of assurance of supply (Atlantis Managed Aquifer Recharge Scheme Refurbishment Project).
  - The possibility of supplying the towns of Chatsworth and Riverlands with potable water from Atlantis.
  - The other options available to Swartland Municipality to purchase bulk potable water from the CCT, which include the following.
    (1) Purchase potable water from the CCT through their Voëlvlei bulk water pipeline, which supply the Plattekloof reservoir.

(2) The possibility for the CCT to take over the Swartland WTW and to provide potable water to Gouda and the Swartland Municipality from the WTW.

(3) Any possible other arrangements with the CCT.

- Swartland Municipality should engage with DWS and the TCTA to discuss the options available for an increased future allocation from the WCWSS for Swartland Municipality, through the implementation of the Berg River Voëlvlei Augmentation Scheme (BRVAS) project or the other future augmentation projects.

- Engage with Saldanha Bay Municipality and the West Coast District Municipality if the proposed Saldanha Bay desalination plant project is started. A possible desalination plant for Yzerfontein should only be seen as a long-term possible intervention.

Water Services Institutional Arrangements and Customer Services

Swartland Municipality is the WSA for the entire Municipal Management Area. A Service Level Agreement is in place with the West Coast District Municipality for the provision of bulk potable water to most of the towns in Swartland Municipality's Management Area. The West Coast District Municipality operate and maintain the Withoogte and Swartland bulk water distribution systems.

The DWS also approved the additional requested allocation of 1 000 Ml/a over and above the initial allocation of 660 Ml/a from the planned Berg River Voëlvlei Augmentation Scheme (BRVAS), which gives Swartland Local Municipality a total allocation of 1 660 Ml/a from the planned scheme.

The 2022-2027 WSDP was approved by the Swartland Municipality's Council on the 25th of July 2024. The WSDP Performance- and Water Services Audit Report is compiled annually and taken to Council with the Municipality's Annual Report.

Swartland Municipality's Vulnerability Index for 2023 was indicated as 0.17 "Low Vulnerability" in the Municipal Strategic Self-Assessment. The only one area of concern evident from the 2023 assessment is Financial Asset Management (High Vulnerability). The vulnerability of all the other key service areas are low, except basic sanitation that is moderate.

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

The WWTWs in Swartland Municipality's Management Area and the Process Controllers working at these plants still need to be registered according to the new Regulation 3630 requirements of the DWS. The West Coast District Municipality will ensure that the two bulk WTWs and the Process Controllers working at these two plants are also registered according to the new Regulation 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. A Client Services Charter is also in place, with specific water supply and sewage services 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 is also in place.

- Protection at points of abstraction such as Paardenberg Dam and the boreholes (Abstraction Management).

- Protection and maintenance of the distribution systems. This includes ensuring an adequate disinfectant residual at all times, rapid response to pipe bursts and other leaks, regular cleaning of reservoirs, keeping all delivery points tidy and clean, etc.

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

- A well-informed Council and municipal managers that understand the extreme importance of and are committed to providing adequate resources for continuous professional operation and maintenance of the water supply system.

- Competent managers and supervisors in the technical department who are responsible for water supply services lead by example and are passionate about monitoring and safeguarding drinking water quality.

- Well informed community members and other consumers of water supply services that know how to protect the water from becoming contaminated once it has been delivered, that have respect for water as a precious resource and that adhere to safe hygiene and sanitation practices.

SWARTLAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2023/2024

BACKGROUND

Appointment

iX engineers was appointed by Swartland Municipality to assist them with the compilation of their WSDP Performance- and Water Services Audit Report, which forms part of their annual report for the 2023/2024 financial year. The purpose of the WSDP Performance- and Water Services Audit Report is to report on the implementation of Swartland Municipality's previous year's WSDP, for the 2023/2024 financial year.

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

Purpose

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

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 WSDP Performance- and Water Services Audit every financial year. The WSDP Performance- and Water Services Audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. The Water Services Act allows the audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. The purpose of the WSDP Performance- and 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 WSDP Performance- and Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2023/2024 financial year, and can be seen as an annexure to Swartland Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121). The WSDP Performance- and Water Services Audit Report contain the following detail information:

- The Municipality's performance with regard to their KPIs for water and sewerage services for the 2023/2024 financial year, as included in the Municipality's SDBIP.
- The Municipality's Performance with regard to DWS's Blue-, Green- and No Drop Assessments. Blue drop status is awarded to those water schemes 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 wastewater quality management. No drop status is awarded to those WSAs that comply with 90% criteria to water use efficiency (Acceptable performance in water demand management in the municipal sector).
- DWS's Scorecard for assessing the potential for WC/WDM efforts in the Municipality.

- Information to be included in a WSDP Performance- and Water Services Audit as stipulated under section 9 of the Water Services Act, “Guidelines for Compulsory National Standards” and also required by DWS’s 2014 WSDP Performance- and Water Services Audit Report guidelines.

- Information on the implementation of the various WSDP activities, as included under the WSDP Business Elements in DWS’s WSDP guidelines.

A. WATER SERVICES AUTHORITY PROFILE

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

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

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

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

Figure A.1.2: Swartland Municipality’s Management Area

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

A.2. Water Services Administration and Organization

Swartland Municipality is the WSA for the entire Municipal Management Area. The West Coast District Municipality acts as Bulk Water Services Provider for Swartland Municipality and provides bulk potable water to all the towns in Swartland Municipality's Management Area and is responsible for the operation and maintenance of the bulk infrastructure. Swartland Municipality's approved Organogram is included in Annexure G (Council approved 28 March 2024). The table below gives the contact details of the persons responsible for water services management and planning within Swartland Municipality.

Table A.2.1: Water Services Administrative Structure	
Accounting Officer	
Designation	Municipal Manager
Name	Joggie Scholtz
Telephone Nr.	022-4879 400
Fax Nr.	022-4879 440
Cell Nr.	082 823 7542
Email	joggiescholtz@swartland.org.za
WSA Manager	
Designation	Director: Civil Engineering Services
Name	Louis Zikmann
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	082 823 7543
Email	louis@swartland.org.za
WSP Manager	
Designation	Director: Civil Engineering Services
Name	Louis Zikmann
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	082 823 7543
Email	louis@swartland.org.za
WSDP Manager	
Designation	Senior Manager: Solid Waste and Trade Services
Name	Esias de Jager
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	084 620 6025
Email	dejagere@swartland.org.za
IDP Manager	
Designation	IDP Manager
Name	Olivia Fransman
Telephone Nr.	022-487 9400
Fax Nr.	022-487 9440
Cell Nr.	-
Email	fransmano@swartland.org.za

A.3. Water Services Overview

Swartland Municipality is situated within the Breede-Olifants Water Management Area (WMA). The Municipality is located within the West Coast Region of the Western Cape Province, in which the following municipalities are also located:

- Matzikama Municipality;
- Cederberg Municipality;
- Bergrivier Municipality; and
- Saldanha Bay Municipality
- West Coast District Municipality

Swartland Municipality consists of 12 individual wards and is the only WSA within the Swartland Municipality's Management Area. It is also the Water Services Provider (WSP). Potable bulk water is however provided to Swartland Municipality by the West Coast District Municipality through the 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 (Wards 8, 9, 10 and 11) and Moorreesburg (Ward 2);
- The small towns of Yzerfontein (Ward 5), Darling (Ward 6), Koringberg (Ward 1), Riebeek Kasteel (Ward 12), Riebeek Wes (Ward 3);
- The rural hamlets of Abbotsdale and Kalbaskraal (Ward 7), Riverlands and Chatsworth (Ward 4); and
- The rural farm areas (Ward 1).

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

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

Riverlands Borehole, fenced and locked.

Rapid gravity sand filter for supply from Paardenberg Dam

The existing water distribution systems for which Swartland Municipality is responsible are as follows:

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

Riebeek Wes and Ongegund: Potable water is distributed from the Kasteelberg Reservoirs on the Swartland Scheme (West Coast DM) to the Ongegund Reservoirs and the Riebeek Wes Reservoirs (Three Riebeek Wes reservoirs with a total capacity of 2.69 Ml and one Ongegund reservoir with a total capacity of 2.30 Ml). Potable water is distributed from these reservoirs to the Ongegund and Riebeek Wes consumers.

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

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

Darling: Potable water is distributed from the Glen Lilly reservoirs on the Swartland Scheme (West Coast DM) via the Darling PS to the Darling Reservoirs (three reservoirs with a combined capacity of 3.43 Ml). Potable water is distributed from the three reservoirs to the Darling consumers.

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

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

Moorreesburg: Potable water is pumped from the Withoogte WTWs (West Coast DM) to the three reservoirs in Moorreesburg with a total capacity of 8.17 Ml. Potable water is distributed from the three reservoirs to the Moorreesburg consumers.

Koringberg: Potable water is pumped from the Withoogte WTWs (West Coast DM) to the two Koringberg reservoirs with a total capacity of 0.51 Ml capacity, from where it is distributed to the Koringberg consumers.

The table below gives an overview of the major bulk infrastructure components of the Swartland bulk water distribution system.

Table A.3.1: Existing water infrastructure of the Swartland Bulk Water Distribution System			
Bulk and Network Pipelines			
Component	**Bulk (km)**	**Network (km)**	**Total (km)**
Water Pipelines	260.589	207.255	**467.844**
Reservoirs			
Name	**Type**	**Capacity (Ml)**	**TWL**
Swartland WTW Clear well	WTW	Unknown	Unknown
Kamp reservoir No.1	Reservoir	0.072	Unknown
Kamp reservoir No.2	Reservoir	0.072	Unknown
Kasteelberg No.1	Reservoir	4.525	286.0
Kasteelberg No.2	Reservoir	4.525	286.0
Kasteelberg No.3	Reservoir	4.525	286.0
Kasteelberg No.4	Reservoir	4.525	286.0
Glen Lilly No.1	Reservoir	8.000	263.5
Glen Lilly No.2	Reservoir	8.000	263.5
Glen Lilly No.3	Reservoir	25.000	263.5
Wildschutsvlei	Balancing Tank	0.300	189.7
Total		**59.544**	

Water Pump Stations						
Name	**Location / Description**	**No. of Pumps**	**Operate / Standby**	**Q (l/s)**	**H (m)**	**Capacity (Ml/d)**
Darling PS	At Darling: Boost to Darling reservoir	2	1/1	47 (1)	75	4.061
Yzerfontein PS	At Darling: Boost to Wildschutsvlei Balancing Tank	2	1/1	69 (1)	88	5.962
Rustfontein PS	Booster: Kasteelberg to Glen Lily reservoirs	2	0/2	235 (1)	40	20.304
Swavelberg PS	Booster: Kasteelberg to Glen Lily reservoirs	2	0/2	302 (1)	40	26.093
Swartland RW PS	Swartland WTW (Canal through WTW)	3	2/3	369 (2)	17	31.882
Swartland PS	Swartland WTW (WTW to Kasteelberg reservoirs)	4	2/2	354 (3)	46	30.586
Gouda PS	Swartland WTW (WTW to Gouda reservoir)	2	1/2	21.2 (2)	125	1.832
Kamp PS	Swartland WTW (WTW to Kamp reservoir)	2	1/1	Unknown	Unknown	Unknown

Note: ( ) Number of pumps used for calculation of Q in l/s

The design capacities of the various treatment components of the Swartland WTW are summarised in the table below.

Table A.3.2: Design capacities of the various components of the Swartland WTW		
Design Capacities		
Component	**Ml/a**	**Ml/d**
Overall capacity	10 590.000	29.000
Flocculation	11 000.000	30.140
Clarifying	11 000.000	30.140
Filtration	10 590.000	29.000
Chlorination	10 590.000	29.000

The table below gives an overview of the maximum month average daily flow and the average annual daily flow for the last ten financial years for the Swartland WTW.

Table A.3.3: Swartland WTW's historical flows and percentage utilisation of design capacity				
Year	Maximum Month Average Daily Flow	WTW Operational Capacity for Maximum Month Average Daily Flow	Average Annual Daily Flow	WTW Operational Capacity for Average Annual Daily Flow
	Ml/d	%	Ml/d	%
2014/2015	26.496 (Febr)	91.37	19.161	66.07
2015/2016	24.226 (Febr)	83.54	18.492	63.77
2016/2017	19.816 (Febr)	68.33	15.847	54.64
2017/2018	13.958 (Jul)	48.13	11.734	40.46
2018/2019	16.171 (Febr)	55.76	13.332	45.97
2019/2020	17.663 (Febr)	60.91	13.853	47.77
2020/2021	21.089 (Febr)	72.72	16.072	55.42
2021/2022	23.392 (Febr)	80.66	17.850	61.55
2022/2023	25.441 (Febr)	87.73	18.869	65.06
2023/2024	25.455 (Febr)	87.78	21.798	75.17

The table below gives an overview of the major water infrastructure components, for the various internal distribution systems, in Swartland Municipality's Management Area.

A.3.4: Existing internal water infrastructure						
Water Distribution System	Bulk Supply	WTW		Bulk and Network	Number of Water PS	Total Res Storage
	(Resources)	Operated by West Coast DM	Add Disinfection	(km)	(RW/PW)	(Ml)
Malmesbury (Abbotsdale, Kalbaskraal, Riverlands, Chatsworth)	Berg River (Voëlvlei), Paardenberg Dam and three Riverlands bhs	29 Ml/d (Swartland WTW)	Malmesbury, Kalbaskraal, Riverlands	240.398	9 (PW)	37.543
Moorreesburg	Berg River (Misverstand)	72 Ml/d (Withoogte WTW)	-	72.702	1 (PW)	8.172
Riebeek Kasteel	Berg River (Voëlvlei)	29 Ml/d (Swartland WTW)	-	26.568	1 (PW)	1.862
Riebeek Wes	Berg River (Voëlvlei)	29 Ml/d (Swartland WTW)	-	21.985	1 (PW)	2.692
Ongegund	Berg River (Voëlvlei)	29 Ml/d (Swartland WTW)	-	7.361	1 (PW)	2.298
Koringberg	Berg River (Misverstand)	72 Ml/d (Withoogte WTW)	-	10.353	-	0.508
Darling	Berg River (Voëlvlei)	29 Ml/d (Swartland WTW)	-	46.285	-	3.432
Yzerfontein	Berg River (Voëlvlei)	29 Ml/d (Swartland WTW)	-	39.422	-	4.375

The table below gives an overview of the major sewerage infrastructure components, for the various drainage systems, in Swartland Municipality's Management Area.

A.3.5: Existing main sewerage infrastructure			
Sewer Drainage Systems	Sewer Drainage Network (m)	Number of Sewer PS	WWTW Hydraulic Design Capacity
	m	No.	M/d
Malmesbury and Abbotsdale	147.705	6	10.000
Kalbaskraal	7.197	2	0.157
Riverlands and Chatsworth	5.106	2	0.270
Moorreesburg	59.870	-	2.000
Riebeek Kasteel, Riebeek Wes and Ongegund	51.581	10	1.900
Koringberg	2.612	-	0.030
Darling	40.930	2	1.500

The table below gives a summary of the existing hydraulic design capacities and current flows at each of the WWTWs, as well as the final effluent quality compliance percentages for the 2023/2024 financial year.

Table A.3.6: Existing hydraulic design capacities and flows at each of the WWTWs						
WWTW	Existing Hydraulic Capacity	Peak Month Average Daily Flow	Average Daily Flow (2023/2024)	Average Wet Weather Flow (Jul'23, Aug'23, Sept'23, Jun'24,)	Average Daily Flow as a % of Design Capacity	Final Effluent Compliance for 2023/2024
	Ml/d	Ml/d	Ml/d	Ml/d	%	
Malmesbury	10.000	6.545 (Jul)	5.390	6.113	53.90	Microbiological: 75.0% Chemical: 70.8% Physical: 66.7%
Kalbaskraal	0.157	Unknown	0.088	Unknown	56.05%	Microbiological: 100.0% Chemical: 66.7% Physical: 95.8%
Riverlands/Chatsworth	0.270	Unknown	0.269	Unknown	99.63%	Microbiological: 8.3% Chemical: 37.5% Physical: 72.2%
Moorreesburg	2.000	1.561 (Oct)	1.317	1.402	65.85%	Microbiological: 100.0% Chemical: 75.0% Physical: 77.8%
Riebeek Valley	1.900	1.444 (Aug)	0.964	1.294	50.74%	Microbiological: 58.3% Chemical: 93.8% Physical: 100.0%
Koringberg	0.030	Unknown	0.094	Unknown	313.33%	Microbiological: 8.3% Chemical: 29.2% Physical: 30.6%
Darling	1.500	1.451 (Oct)	1.246	1.282	83.07%	Microbiological: 91.7% Chemical: 89.6% Physical: 86.1%

The organic design capacities of the activated sludge WWTWs and the current loadings at these WWTWs are indicated in the table below.

Table A.3.7: Existing organic design capacities and historical loadings at the activated sludge WWTWs							
WWTW	Organic Design Capacity	2023/2024		2022/2023		2021/2022	
		Average Load	% of Design Capacity	Average Load	% of Design Capacity	Average Load	% of Design Capacity
	kg COD/d	kg COD/d	%	kg COD/d	%	kg COD/d	%
Malmesbury	10 000	7 917	79.2	7 690	76.9	7 213	72.1
Moorreesburg	2 000	1 068	53.4	1 067	53.4	-	-
Riebeek Valley	1 500	655	43.6	748	49.9	929	61.9
Darling	1 500	1 585	105.7	1 828	121.9	1 725	115.0

Following the 2011 Census survey it became evident that there was an extensive migration into the Municipal Area. The population figure for Swartland Municipality in 2001 was 72 108 (18 675 households). This figure increased substantially to 113 763 in 2011 (29 324 households) at an average annual population growth rate of 4.67%/a.

The Community Survey of 2016 from Statistics South Africa estimate the 2016 population for Swartland Municipality at 133 762 persons and the permanent households at 39 139, at an average household size of 3.4 persons per household.

The published 2022 Census population for Swartland Municipality was 148 331 persons (Annual growth rate of 2.6% over the period 2011 to 2022) and the number of permanent households was 44 856, which is aligned with the figures included in the IDP and the 2023 Socio Economic Profile. The 2022 Census data is not yet available per town and it was therefore not possible to update Swartland Municipality's projected population and households per town (system) at this stage.

The 2023/2024 population for the various water distribution systems were estimated by applying the annual growth rates as indicated in the table below to the 2011 Census data. The current population figures and the annual population growth percentages used in the WSDP Performance- and Water Services Audit Report are aligned with the figures used in DWS's GeoDatabase.

The future estimated annual population growth percentages, as listed in the table below, were agreed with the Municipality's Engineering Department during January 2014.

Table A.3.8: Estimated future annual population growth percentages, population and households per distribution system

Distribution System	Estimated future annual Population Growth %	Projected 2023/2024 population	Projected 2023/2024 households
Darling	2.0%	13 215	3 551
Koringberg	4.0%	1 944	508
Malmesbury	4.5%	60 877	16 065
Abbotsdale	3.0%	5 364	1 317
Chatsworth & Riverlands	6.0%	8 153	2 225
Kalbaskraal	5.0%	4 330	1 183
Moorreesburg	4.0%	20 616	5 921
Riebeek Kasteel	7.0%	10 723	3 029
Ongegund (PPC)	3.0%	433	108
Riebeek Wes	6.0%	8 833	2 192
Yzerfontein	4.0%	1 825	785
Farms	3.5%	49 297	11 135
TOTALS	**4.2%**	**185 610**	**48 019**

The tables below give an overview of the projected population and permanent number of households and the water and sanitation service levels in Swartland Municipality's Management Area.

Table A.3.9: Water Services Overview (Water)

Settlement Type	2011/2012 Households	2011/2012 Population	2023/2024 Households	2023/2024 Population	Water category: Adequate: Formal	Adequate: Informal	Adequate: Sahred Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Formal Town					Adequate			Below RDP					None	
Malmesbury	9 473	35 897	16 065	60 877	P		P							
Abbotsdale	924	3 762	1 317	5 364	P		P							
Chatsworth/Riverlands	1 017	3 696	1 375	4 753	P		P							
Kalbaskraal	659	2 411	1 183	4 330	P		P							
Riebeek Kasteel	1 345	4 761	3 029	10 723	P		P							
Riebeek Wes	1 049	4 229	2195	8846	P		P							
Darling	2 800	10 420	3 551	13 215	P		P							
Moorreesburg	3 698	12 877	5 921	20 616	P		P							
Koringberg	317	1 214	508	1 944	P		P							
Yzerfontein	490	1 140	785	1 825	P		P							
Sub-Total	**21 772**	**80 407**	**35 929**	**132 493**										
Townships					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Informal Settlements					Adequate			Below RDP					None	
Chatsworth/Riverlands	89	356	850	3 400									P	
Sub-Total	**89**	**356**	**850**	**3 400**										
Working towns & service centres					Adequate			Below RDP					None	
Ongegund (PPC)	94	376	105	420	P		P							
Sub-Total	**94**	**376**	**105**	**420**										
Sub-Total: (Urban)	**21 955**	**81 139**	**36 884**	**136 313**										
RURAL														
Rural / Farming					Adequate			Below RDP					None	
Farms	7 369	32 624	11 135	49 297	P		P							P
Sub-Total	**7 369**	**32 624**	**11 135**	**49 297**										
Informal Settlements					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total (Rural)	**7 369**	**32 624**	**11 135**	**49 297**										
TOTAL	**29 324**	**113 763**	**48 019**	**185 610**										

Table A.3.10: Water Services Overview (Sanitation)

Settlement Type	2011/2012 Households	2011/2012 Population	2023/2024 Households	2023/2024 Population	Sanitation category: Adequate: Formal	Adequate: Informal	Adequate: Sahred Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Formal Town					Adequate			Below RDP					None	
Malmesbury	9 473	35 897	16 065	60 877	P		P							
Abbotsdale	924	3 762	1 317	5 364	P		P							
Chatsworth/Riverlands	1 017	3 696	1 375	4 753	P		P							
Kalbaskraal	659	2 411	1 183	4 330	P		P							
Riebeek Kasteel	1 345	4 761	3 029	10 723	P		P							
Riebeek Wes	1 049	4 229	2 195	8 846	P		P							
Darling	2 800	10 420	3 551	13 215	P		P							
Moorreesburg	3 698	12 877	5 921	20 616	P		P							
Koringberg	317	1 214	508	1 944	P		P							
Yzerfontein	490	1 140	785	1 825	P		P							
Sub-Total	**21 772**	**80 407**	**35 929**	**132 493**										
Townships					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Informal Settlements					Adequate			Below RDP					None	
Chatsworth/Riverlands	89	356	850	3 400									P	
Sub-Total	**89**	**356**	**850**	**3 400**										
Working towns & service centres					Adequate			Below RDP					None	
Ongegund (PPC)	94	376	105	420	P		P							
Sub-Total	**94**	**376**	**105**	**420**										
Sub-Total: (Urban)	**21 955**	**81 139**	**36 884**	**136 313**										
RURAL														
Rural / Farming					Adequate			Below RDP					None	
Farms	7 369	32 624	11 135	49 297	P		P							P
Sub-Total	**7 369**	**32 624**	**11 135**	**49 297**										
Informal Settlements					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total (Rural)	**7 369**	**32 624**	**11 135**	**49 297**										
TOTAL	**29 324**	**113 763**	**48 019**	**185 610**										

B. WSDP PERFORMANCE REPORT

B.1. WSDP Reference and Status

DWS's new WSDP website was rolled-out to all the WSAs in the West Coast District on the 31st of October 2017. The Municipality updated their WSDP during the 2023/2024 financial year, according to DWS's new WSDP website requirements for the new five-year WSDP cycle (2022-2027). The table below gives an overview of Swartland Municipality's WSDP status.

Table B.1.1: WSDP and Reporting Reference

Nr	WSDP Title and Reference	Status	Date	WSDP Year	Financial Year	Reporting year
1	2022-2027 WSDP, Administration, Information and Comprehensive Overview Report, Future Demand and Functionality Requirements Report, WSDP IDP Water Sector Input Report	Drafted:	March 2024	Year 1	2022/23	Year - 1
		Comment submit:	May/June 2024	**Year 2**	**2023/24**	**Year 0**
		Finalised:	30 June 2024	Year 3	2024/25	Year + 1
		Adopted:	25 July 2024	Year 4	2025/26	Year + 2
		Published:	July 2024	Year 5	2026/27	Year + 3

Legend:

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

B.2. Performance on Water Services Objectives and Strategies

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

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

Finally, the Annual Report, of which the WSDP Performance- and Water Services Audit Report forms a part, records the success or otherwise of the previous year's implementation.

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

Table B.2.1: Performance on Water Services Objectives and Strategies per WSDP Topic

Nr	Objective / Strategy	Key Performance Indicator	Inclusion (yes/no)		WSDP Year 1		WSDP Year 2		WSDP Year 3		WSDP Year 4		WSDP Year 5	
					FY 1	2019/20	FY 2	2020/21	FY 3	2021/22	FY 4	2022/23	FY 5	2023/24
			WSDP	IDP	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
WSDP Topic 1: Administration														
WSDP Topic 2: Demographics														
WSDP Topic 3: Service levels														
	Improved access to water, sanitation and refuse removal.	% of urban households with access to bsic water supply (at least piped (tap) water within 200 meters from dwelling).	-	-	100%	100%	100%	100%	100%	100%	-	-	-	-
D36	Number of formal residential properties with piped water connections	Number of formal residential properties with piped water connections.	Yes	Yes							22602	24774	21942	22060
	Improved access to water, sanitation and refuse removal.	% of urban households with access to basic sanitation (at least a flush toilet, chemical toilet or pit toilet with ventilation (VIP)).	-	-	100%	100%	100%	100%	100%	100%	-	-	-	-
D37	Number of formal residential properties with access to sewerage services	Supplying of sanitation services to municipal residential account holders as at 30 June	Yes	Yes							20409	31160	22124	21850
WSDP Topic 4: Socio economic														
WSDP Topic 5: Water Services Infrastructure														
D26	Asset safeguarding	A condition assessment and a review of the remaining useful life of all assets in the department done and a certification in this regard provided to the Head Asset Management.	Yes	Yes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
D45	Master plans reviewed and updated if required annually by June	Master plans reviewed and updated if required annually by June	Yes	Yes	-	-	-	-	-	-	-	-	1	1
WSDP Topic 6: Operation Maintenance														
D35	Manage the % water losses within the National Treasury norm annually by end of June	% total water losses	Yes	Yes	< 17%	12.1%	< 17%	19.7%	< 17%	23.1%	< 17%	13.2%	21%	18.78%
WSDP Topic 7: Associated services														
WSDP Topic 8: Conservation and Demand management														
WSDP Topic 9: Water Resources														
D39	Berg River Voëlvlei Augmentation Scheme (BRVAS) - conclusion of section 33 process by July 2023 (Water resource augmentation)	Berg River Voëlvlei Augmentation Scheme (BRVAS) - conclusion of section 33 process by July 2023	Yes	Yes	-	-	-	-	-	-	-	-	1	1
D40	Submit report to Council by November 2023 to consider a water supply agreement with the DWS to partake in the BRVAS (Water resource augmentation)	Submit report to Council by November 2023 to consider a water supply agreement with the DWS to partake in the BRVAS	Yes	Yes	-	-	-	-	-	-	-	-	1	1
WSDP Topic 10: Financial profile														
D1	Capital expenditure in line with budget and time frames	% of capital budget spent	Yes	Yes	95%-105%	88.1%	95%-105%	98.4%	95%-105%	100.8%	95%-105%	92.2%	95%	95.0%
	Capital project implementation	Average % completion of capital projects	-	-	90%	90.0%	90%	99.0%	90%	100.0%	95%	92.2%	-	-
D3	Operating expenditure in line with budget and time frames	% of operating budget spent	Yes	Yes	90%-100%	99.0%	90%-100%	85.9%	90%-100%	98.0%	90%-100%	91.2%	90%	90.0%
D31	Spending of grants	% spending of grants	Yes	Yes	100%	99%	100%	100%	100%	97%	100%	83.7%	100%	100.0%
WSDP Topic 11: Institutional Arrangements profile														
D32	Ensure that accurate revenue estimates are prepared in relation to operating requirements	Projected tariff increases determined for the budget of the new financial year	Yes	Yes	100%	100%	100%	100%	-	-	-	-	100%	100%
D40	Workforce training roll-out	% of planned training sessions according to the Workplace Skills Plan realised.	Yes	Yes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
WSDP Topic 12: Social and Customer service requirements														
	Correspondence addressed in a timely manner	% of all correspondence recorded by Collaborator less than 60 days old	-	-	90%	95.3%	90%	95.2%	-	-	-	-	-	-
WSDP Topic 13: Needs development plan														

Legend:

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

KPIs: Director Civil Engineering Services

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

- The WSDP Performance- and Water Services Audit Report for the 2022/2023 financial year was finalised and approved by Council as part of the Annual Report. The non-revenue water balance models were updated for each of the distribution systems (Up to the end of June 2023) as part of the WSDP Performance- and Water Services Audit Process.

- The infrastructure constructed during the 2023/2024 financial year were added to the Asset Register and the Asset Register was updated.

- Feasibility Report was compiled for the Chatsworth / Riverlands Bulk Water Supply Upgrades: Investigation, Feasibility Study and Cost Estimation, June 2024, Bigen.

- Pipeline Routes Site Sensitivity and Environmental Constrain Report was compiled for the bulk water supply upgrade to Chatsworth and Riverlands, June 2024, Bigen.

- Swartland Municipality's WSDP was updated for the 2022-2027 WSDP cycle, according to DWS's new WSDP website. The WSDP was approved for public distribution by Swartland Municipality's Executive Mayoral Committee on the 21st of May 2024. The WSDP was finalised after the public participation process and was approved by Council on the 25th of July 2024.

- Swartland Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). The effluent discharged by industrial consumers is also monitored by Swartland Municipality on a monthly basis.

- The following WSIG Business Plans were compiled and submitted for funding to the DWS.
  - Scada for Darling and Moorreesburg WWTWs.
  - Improvement of Security Measures at Reservoirs and Water Pump Stations.
  - Water Pipeline Replacement Programme.

The Municipality also received the following awards / acknowledgements:

- **Swartland Municipality performed excellent with regard to DWS's 2023 Blue Drop Assessment. The Withoogte System received Blue Drop status with a score of 96.48%. The Swartland system received a Blue Drop score of 93.33%.** The Blue Drop Risk Ratings for both systems were in the low-risk category (<50%). The Blue Drop scores were supported by an excellent site assessment score of 92% for the Swartland WTW and 95% for the Withoogte WTW.

- **Swartland Municipality achieved an "Excellent" score of 91% for the 2023 No Drop Assessment and was acknowledged as one of the top performing WSAs in the country.**

- **Swartland Municipality is performing above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS's 2021 Green Drop assessment.** The Green Drop Scores for the Malmesbury-, Riebeek Valley- and Darling WWTW were between 89% and 95% (Three potential Green Drop certified systems). **Swartland Municipality was also acknowledged by the DWS as one of the Top 3 Best Performing Municipalities for their Green Drop Results.**

- Swartland Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Rating of Swartland Municipality was 51.2% (Medium Risk). The Wastewater Risk Ratings were at low risk for the Malmesbury WWTW (<50%), at medium risk for the Chatsworth, Darling and Kalbaskraal WWTW (50% - <70%) and high risk for the Koringberg, Moorreesburg and Riebeek Valley WWTW (70% - <90%).

B.3. Status of Water Services Projects

The table below gives an overview of the water and sewerage capital infrastructure expenditure per project for the last financial year.

Table B3.1: Water Services Projects Status and Performance

Nr	Project Title and Description	Inclusion		Total Project Cost R'000	Project Progress (%)	Year 0 Performance - FY2023/24			Funding Source(s)	Project Category / Type	Planned Period		Project Status	Actual Completion Year
		WSDP	IDP			FY Budget R'000	Expended R'000	%			From FY	To FY		
1	Water: Upgrading water reticulation network: PRVs, flow control, zone metering and water augmentation	Yes	Yes	R8 982	80%	R100	R51	51%	CRR	Water	2012/2013	2026/2027	In Progress	-
2	Equipment water	Yes	Yes	R670	75%	R53	R52	99%	CRR	Water	2013/2014	2026/2027	In Progress	-
3	Bulk water infrastructure (Emergency Spending)	Yes	Yes	R6 263	68%	R2 500	R2 452	98%	CRR	Water	2020/2021	2026/2027	In Progress	-
4	Connections: Water Meters (New /Replacements)	Yes	Yes	R5 572	44%	R797	R455	57%	CRR	Water	2019/2020	2026/2027	In Progress	-
5	Generator for Wesbank Water Tower and Boosters	No	Yes	R2 373	100%	R2 373	R2 373	100%	DLG, CRR	Water	2023/2024	2023/2024	Complete	2023/2024
6	Generator Installation: Riverlands Water Pumpstation	No	Yes	R1 338	100%	R1 338	R1 338	100%	DLG	Water	2023/2024	2023/2024	Complete	2023/2024
7	Generator Installation: Kalbaskraal Water Pumpstation	No	Yes	R1 469	100%	R1 469	R1 469	100%	DLG	Water	2023/2024	2023/2024	Complete	2023/2024
8	Generator Installation: Rustfontein Water Pumpstation	No	Yes	R1 671	100%	R1 140	R1 140	100%	DLG	Water	2022/2023	2023/2024	Complete	2023/2024
9	Darling SDW2.4 & SDW2.5, SDW1.2 & SDW2.1 water network upgrades (for housing project)	Yes	Yes	R5 055	14%	R700	R700	100%	CRR	Water	2023/2024	2026/2027	In Progress	-
10	Water: CK15380 Isuzu 250 Crew Cab	Yes	Yes	R731	100%	R731	R731	100%	CRR	Water	2023/2024	2023/2024	Complete	2023/2024
11	Chatsworth/Riverlands upgrade bulk water supply	Yes	Yes	R499	100%	R500	R499	100%	CRR	Water	2023/2024	2023/2024	Complete	2023/2024
12	Replace Existing Water pipe: Illinge Lethu	Yes	Yes	R4 075	7%	R300	R300	100%	WCED, CRR	Water	2023/2024	2024/2025	In Progress	-
13	Donated PPE: Water Infrastructure (De Werf)	No	Yes	R9 117	100%	R6 588	R9 117	138%	CRR	Water	2023/2024	2023/2024	Complete	2023/2024
14	Sewerage: Moorreesburg WWTW	Yes	Yes	R119 202	100%	R1 402 R0	R1 402 R0	100%	CRR MIG	Sewerage	2016/2017	2023/2024	Complete	2023/2024
15	Equipment: Sewerage telemetry	Yes	Yes	R545	77%	R38	R38	100%	CRR	Sewerage	2017/2018	2026/2027	In Progress	-
16	Equipment: Sewerage	Yes	Yes	R391	72%	R32	R32	100%	CRR	Sewerage	2013/2014	2026/2027	In Progress	-
17	Sewerage: Darling WWTW	Yes	Yes	R35 841	97%	R162 R0	R141 R0	87%	CRR MIG	Sewerage	2019/2020	2026/2027	In Progress	-
18	Schoonspruit: Pipe Replacement	Yes	Yes	R8 258	64%	R3 900	R3 896	100%	CRR	Sewerage	2022/2023	2024/2025	In Progress	-
19	Generator Installation: Abbotsdale Sewer Pump Station	No	Yes	R1 208	100%	R1 208	R1 208	100%	DLG	Sewerage	2023/2024	2023/2024	Complete	2023/2024
20	Generator Installation: Darling WWTW and Pump Station	No	Yes	R2 204	100%	R2 204	R2 204	100%	DLG	Sewerage	2023/2024	2023/2024	Complete	2023/2024
21	Generator Installation: Moorreesburg WWTW	No	Yes	R1 597	100%	R62	R62	100%	DLG	Sewerage	2022/2023	2023/2024	Complete	2023/2024
22	Sewerage Works Chatsworth: Fencing	No	Yes	R1 212	100%	R1 316	R1 212	92%	CRR	Sewerage	2023/2024	2023/2024	Complete	2023/2024
23	Upgrading of bulk collectors: Darling	Yes	Yes	R4 016	7%	R300	R300	100%	CRR, MIG	Sewerage	2023/2024	2024/2025	In Progress	-
24	Replace: Darling Drum Screens	No	Yes	R1 107	100%	R1 250	R1 107	89%	CRR	Sewerage	2023/2024	2023/2024	Complete	2023/2024
25	Upgrading of bulk collectors: Moorreesburg	Yes	Yes	R2 311	9%	R200	R200	100%	CRR, MIG	Sewerage	2023/2024	2024/2025	In Progress	-
26	Donated PPE: Sewerage Infrastructure (De Werf)	No	Yes	R578	100%	R605	R578	96%	CRR	Sewerage	2023/2024	2023/2024	Complete	2023/2024
Total				**R226 285**		**R31 267**	**R33 057**	**106%**						

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

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

Table B.4.1: Past Financial Year Project Impact Declaration

Nr	Project Title and Description	Project Category	Settlements which benefitted	Nr Beneficiaries		Impact Declaration
				Households	Population	
1	Water: Upgrading water reticulation network: PRVs, flow control, zone metering and water augmentation	WC/WDM	Management Area	-	-	Reduce NRW and water losses and ensure adequate monitoring of water usage.
2	Equipment water	Other	Management Area	-	-	Ensure adequate O&M of systems.
3	Bulk water infrastructure (emergency spending)	Bulk Pipeline	Management Area	-	-	Ensure adequate O&M of systems.
4	Connections: Water Meters (New/Replacements)	WC/WDM	Management Area	152	592	Ensure all water usage is metered. Reduce NRW and Water Losses.
5	Generator for Wesbank Water Tower and Boosters	Other	Malmesbury	-	-	Ensure back-up power is available for load shedding periods, in order to ensure adequate supply.
6	Generator Installation: Riverlands Water Pumpstation	Other	Riverlands	2225	8153	Ensure back-up power is available for load shedding periods, in order to ensure adequate supply.
7	Generator Installation: Kalbaskraal Water Pumpstation	Other	Kalbaskraal	1183	4330	Ensure back-up power is available for load shedding periods, in order to ensure adequate supply.
8	Generator Installation: Rustfontein Water Pumpstation	Other	Malmesbury	25127	93764	Ensure back-up power is available for load shedding periods, in order to ensure adequate supply.
9	Darling SDW2.4 & SDW2.5, SDW1.2 & SDW2.1 water network upgrades (for housing project)	Reticulation	Darling	3029	10723	Provide a higher level of water services to new housing development. Ensure adequate water supply.
10	Water: CK15380 Isuzu 250 Crew Cab	Other	Management Area	-	-	Ensure adequate vehicles for O&M and improved service delivery.
11	Chatsworth/Riverlands upgrade bulk water supply	Bulk Pipeline	Chatsworth/Riverlands	2225	8153	Ensure adequate bulk water pipeline capacity, increased assurance of supply.
12	Replace Existing Water pipe: Illinge Lethu	Reticulation	Malmesbury	300	1170	Provide a higher level of water services to residents, ensure adequate water supply.
13	Donated PPE: Water Infrastructure (De Werf)	Pump Station	Malmesbury	26	101	Installation of new booster pump station to ensure adequate pressure.
14	Sewerage: Moorreesburg WWTW	WWTW	Moorreesburg	5921	20616	Increase capacity of WWTW and ensure final effluent compliance.
15	Equipment: Sewerage telemetry	Other	Management Area	-	-	Ensure proper process control and system management.
16	Equipment: Sewerage	Other	Management Area	-	-	Ensure adequate O&M of systems.
17	Sewerage: Darling WWTW	WWTW	Darling	3551	13215	Increase capacity of WWTW and ensure final effluent compliance.
18	Schoonspruit: Pipe Replacement	Drainage network	Malmesbury	156	608	Implementation of pipeline replacement programme to ensure adequate capacity and to prevent blockages.
19	Generator Installation: Abbotsdale Sewer Pump Station	Other	Abbotsdale	1317	5364	Ensure back-up power is available for load shedding periods, in order to prevent spillages at the sewer pump station.
20	Generator Installation: Darling WWTW and Pump Station	Other	Darling	3551	13215	Ensure back-up power is available for load shedding periods, in order to prevent spillages at the sewer pump station and operation of the WWTW.
21	Generator Installation: Moorreesburg WWTW	Other	Moorreesburg	5921	20616	Ensure back-up power for WWTW during load shedding periods. Ensure final effluent compliance.
22	Sewerage Works Chatsworth: Fencing	WWTW	Chatsworth/Riverlands	-	-	Improved security at WWTW, in order to prevent illegal access and possible drownings.
23	Upgrading of bulk collectors: Darling	Bulk Pipeline	Darling	3551	13215	Ensure adequate bulk sewer pipeline capacity.
24	Replace: Darling Drum Screens	WWTW	Darling	-	-	Improved screening at WWTW for improved process control and to ensure final effluent compliance.
25	Upgrading of bulk collectors: Moorreesburg	Bulk Pipeline	Moorreesburg	5921	20616	Ensure adequate bulk sewer pipeline capacity.
26	Donated PPE: Sewerage Infrastructure (De Werf)	Other	Malmesbury	26	101	Installation of sewerage infrastructure
TOTAL				**64183**	**234553**	

C. WATER SERVICES AUDIT REPORT

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

The tables below give an overview of the volume of water supplied by the West Coast District Municipality through the Withoogte and Swartland bulk water schemes, the treatment losses at the Withoogte WTW and the Swartland WTW and the bulk water distribution losses for the two bulk schemes.

Table C.1.1: Volume of water supplied by the West Coast District Municipality (Ml/a)

Year	Raw Water			Treated Water (System Input Volume)		Billed Metered Consumption		Totals		
	WH	LOG	SL	WH	SL	WH	SL	Raw	Treated	Billed
2014/2015	20 738.318	0.000	6 993.623	19 473.750	6 572.495	18 082.462	6 128.899	27 731.941	26 046.245	24 211.361
2015/2016	20 230.454	583.318	6 749.603	18 955.808	6 326.667	17 738.149	5 992.835	27 563.375	25 865.793	23 730.984
2016/2017	16 952.798	928.765	5 784.056	16 196.973	5 455.098	16 854.138	5 122.162	23 665.619	22 580.836	21 976.300
2017/2018	12 129.606	1 055.105	4 282.906	11 898.399	4 208.092	12 614.429	3 783.008	17 467.617	17 161.596	16 397.437
2018/2019	12 626.990	412.341	4 866.029	12 320.023	4 770.391	12 410.194	4 384.439	17 905.360	17 502.755	16 794.633
2019/2020	13 127.882	118.869	5 056.347	12 480.771	4 920.110	12 526.147	4 623.505	18 303.098	17 519.750	17 149.652
2020/2021	12 918.000	170.146	5 866.143	12 534.000	5 732.805	12 792.298	5 190.546	18 954.289	18 436.951	17 982.844
2021/2022	14 560.000	224.112	6 515.111	13 774.000	6 241.020	12 712.535	5 812.752	21 299.223	20 239.132	18 525.287
2022/2023	15 468.000	408.965	6 887.064	14 688.000	6 682.462	13 902.486	5 687.547	22 764.029	21 779.427	19 590.033
2023/2024	16 525.000	648.815	7 956.390	15 515.000	7 520.697	14 500.399	6 277.250	25 130.205	23 684.512	20 777.649

Table C.1.2: Treatment and distribution losses for the Withoogte and Swartland bulk water schemes

Year	Purification				Distribution				Totals			
	WH		SL		WH		SL		Purification		Distribution	
	Ml/a	%	Ml/a	%	Ml/a	%	Ml/a	%	Ml/a	%	Ml/a	%
2014/2015	1 264.568	6.10	421.128	6.02	1 391.288	7.14	443.596	6.75	1 685.696	6.08	1 834.884	7.04
2015/2016	1 274.646	6.30	422.936	6.27	1 800.977	9.22	333.832	5.28	1 697.582	6.16	2 134.809	8.25
2016/2017	755.825	4.46	328.958	5.69	271.600	1.59	332.936	6.10	1 084.783	4.58	604.536	2.68
2017/2018	231.207	1.91	74.814	1.75	339.075	2.62	425.084	10.10	306.021	1.75	764.159	4.45
2018/2019	306.967	2.43	95.638	1.97	322.170	2.53	385.952	8.09	402.605	2.25	708.122	4.05
2019/2020	647.111	4.93	136.237	2.69	73.493	0.58	296.605	6.03	783.348	4.28	370.098	2.11
2020/2021	384.000	2.97	133.338	2.27	-88.152	-0.70	542.259	9.46	517.338	2.73	454.107	2.46
2021/2022	786.000	5.40	274.091	4.21	1 285.577	9.18	428.268	6.86	1 060.091	4.98	1 713.845	8.47
2022/2023	780.000	5.04	204.602	2.97	1 194.479	7.91	994.915	14.89	984.602	4.33	2 189.394	10.05
2023/2024	1 010.000	6.11	435.693	5.48	1 663.416	10.29	1 243.447	16.53	1 445.693	5.75	2 906.863	12.27

The treatment losses at both the Withoogte WTW and the Swartland WTW were less than 6.11% for the last eight financial years, which is excellent. The bulk water distribution losses for the last eight financial years for the Withoogte system were between 0% and 10.29% and for the Swartland system it were between 6% and 16.53%. The treatment losses for the two systems combined were less than 5.75% for the last eight financial years, which is excellent. The bulk distribution losses for the two systems combined increased from below 4.5% over the financial years 2017/2018 to 2020/2021 to 8.47%, 10.05% and 12.27% for the last three financial years respectively.

Detail IWA Water Balances are available for each of the water distribution systems (towns) in Swartland Municipality's Management Area. The graph below gives an overview of the annual System Input volume for all the towns in Swartland Municipality's Management Area.

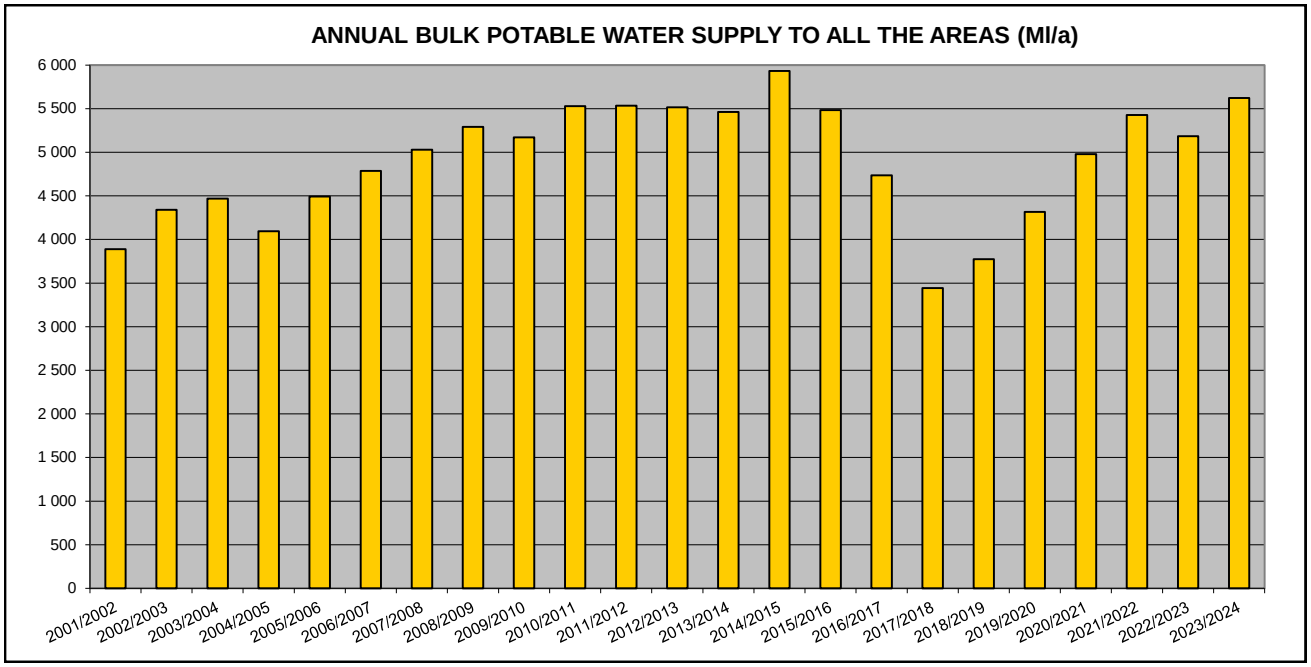


Figure C.1.1: Swartland Municipality's annual bulk potable water supply (System Input Volume) for all the systems

The graph below gives an overview of the total bulk potable water supplied (System Input Volume) for the various water distribution systems in Swartland Municipality's Management Area.

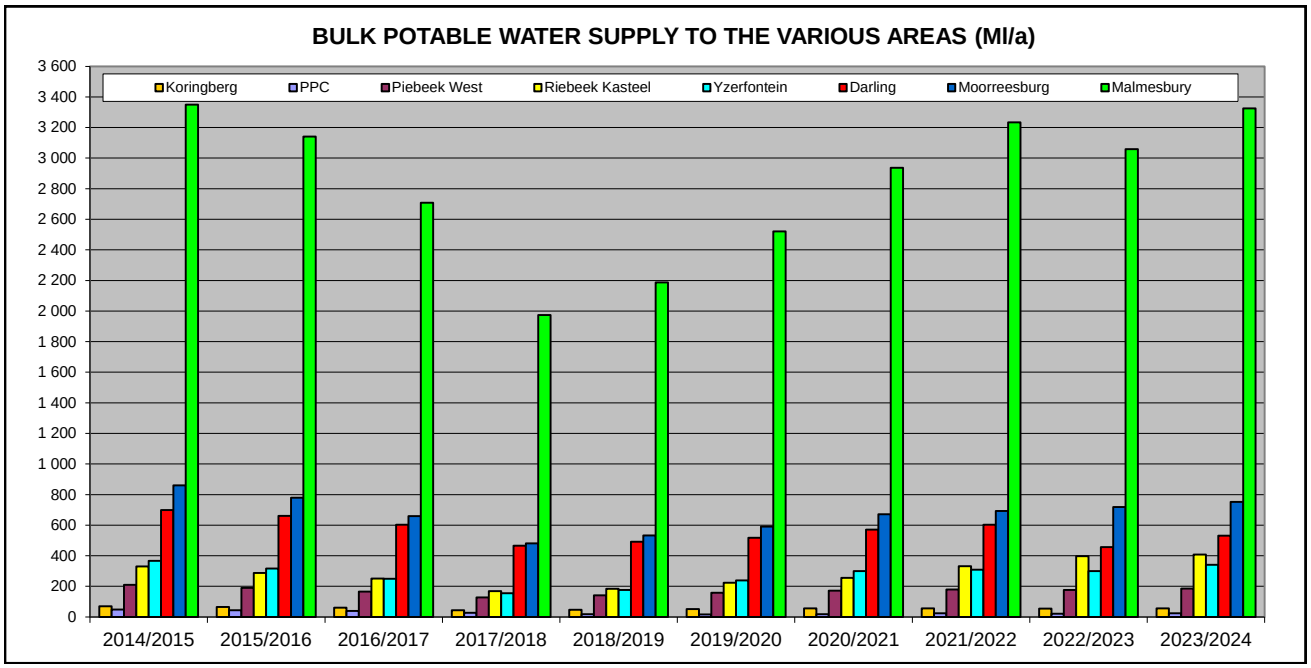


Figure C.1.2: Bulk potable water supply (System Input Volume) for the various water distribution systems.

The severe impact of the 2015 to 2017 drought on the total water requirements of the various towns can be noted from the previous two graphs and the table below. The total system input volume for all the towns came down from 15.020 Ml/d in 2015/2016 to 9.430 Ml/d in 2017/2018, with a steady recovery over the last six financial years. A significant part of this effort related to the Municipality's WC/WDM initiatives to reduce the overall water requirements and to reduce the NRW and Water Losses for the various systems.

Quantity of water provided by the WSA

The table below gives a summary of the total bulk potable water supplied to the various towns within Swartland Municipality's Management Area.

Table C.1.3: Bulk water supply (System Input Volume) for the various towns

Distribution System	Source	23/24	Record: Prior (Ml/a)				
			22/23	21/22	20/21	19/20	18/19
Koringberg	Misverstand Scheme	56.505	54.168	55.417	56.412	51.908	46.609
Ongegund	Voëlvlei Scheme	23.534	21.200	24.013	17.662	17.033	18.004
Riebeek Wes	Voëlvlei Scheme	185.545	176.547	179.456	171.006	157.908	140.524
Riebeek Kasteel	Voëlvlei Scheme	407.288	397.478	330.992	256.218	223.405	183.446
Yzerfontein	Voëlvlei Scheme	340.644	299.729	308.290	299.537	238.116	175.903
Darling	Voëlvlei Scheme	531.035	456.832	602.718	570.859	518.097	491.479
Moorreesburg	Misverstand Scheme	752.853	718.573	692.967	671.591	590.106	532.506
Malmesbury	Voëlvlei Scheme, Paardenberg dam, Boreholes	3 324.756	3 059.176	3 233.662	2 936.354	2 520.750	2 186.436
Total		**5 622.160**	**5 183.703**	**5 427.515**	**4 979.639**	**4 317.323**	**3 774.907**

The graph below gives an overview of the percentage distribution of the system input volume for the 2023/2024 financial year for the different water distribution systems.

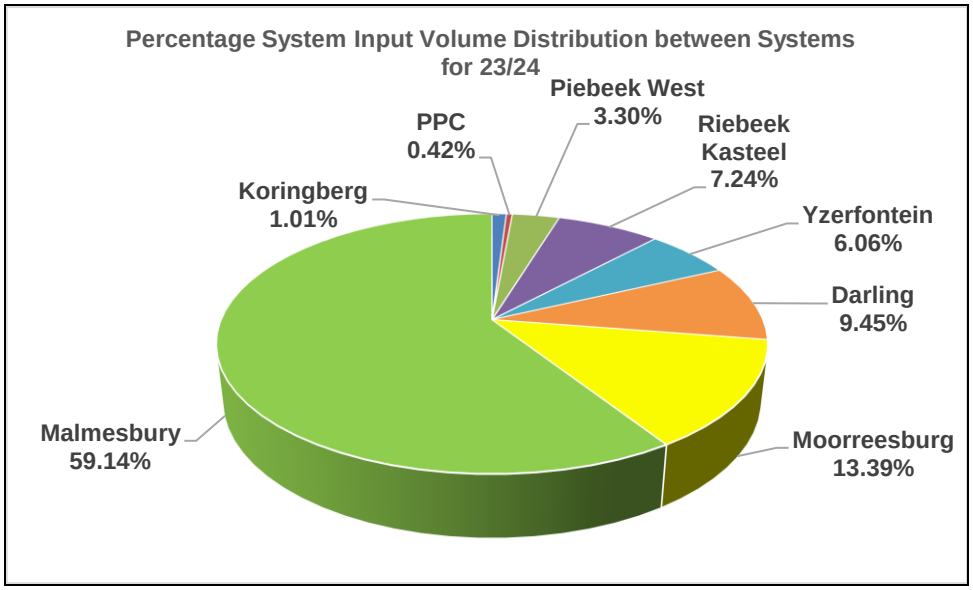


Figure C.1.3: Percentage distribution of the system input volume for the 2023/2024 financial year

Graphs of the water usage per sector for the various water distribution systems within Swartland Municipality's Management Area are included as part of the IWA water balance models included in Annexure A.

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

Table C.1.4: Quantity of Water Services Provided / Water Balance									
WSDP Ref. #	Regulations Ref. #	Description	m^3 per annum			Ml/d		
			Year 0	Year - 1	Year - 2	Year 0	Year - 1	Year - 2
			FY2023/24	FY2022/23	FY2021/22	FY2023/24	FY2022/23	FY2021/22
		RAW WATER						
7.2.1		Surface water purchased	0	0	0	0.00	0.00	0.00
7.1 / 7.2.2		Surface water abstracted	443	242	338	0.00	0.00	0.00
7.1 / 7.2.3		Ground water abstracted	0	0	30 426	0.00	0.00	0.08
7.2.14		Effluent recycled	0	0	0	0.00	0.00	0.00
7.2.4		*less* Raw water supplied to others	0	0	0	0.00	0.00	0.00
7.2.5		**Sub-Total: Raw Water supplied**	**443**	**242**	**30 764**	**0.00**	**0.00**	**0.08**
	10.2 (g) (i)	**BULK WATER SUPPLY**						
7.2.6		Volume of water treated	443	242	30 764	0.00	0.00	0.08
7.2.7	10.2 (a) (ii)	Purchased treated water	5 621 717	5 183 461	5 396 751	15.40	14.20	14.79
7.2.7A		Ground water not treated	0	0	0	0.00	0.00	0.00
7.2.6A		*less* Treated water supplied to others	0	0	0	0.00	0.00	0.00
		Sub-Total: System Input Volume	**5 622 160**	**5 183 703**	**5 427 515**	**15.40**	**14.20**	**14.87**
		WATER CONSUMPTION						
7.2.8.1		Billed Metered:	4 452 371	4 328 018	4 173 824	12.20	11.86	11.44
	10.2 (a) (i)	Domestic	3 239 157	3 072 933	2 987 819	8.87	8.42	8.19
	10.2 (a) (i)	Commercial	712 124	722 107	677 006	1.95	1.98	1.85
	10.2 (a) (i)	Industrial	2 958	2 215	2 100			
	10.2 (a) (i)	etc.	498 132	530 763	506 899	1.36	1.45	1.39
7.2.8.2		Billed Unmetered	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Domestic	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Commercial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Industrial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	etc.	0	0	0	0.00	0.00	0.00
7.2.8.3		Unbilled Metered	0	0	0	0.00	0.00	0.00
7.2.8.4		Unbilled Unmetered	130 584	129 706	130 195	0.36	0.36	0.36
	10.2 (g) (i)	**Sub-Total: Authorized consumption**	**4 582 955**	**4 457 724**	**4 304 019**	**12.56**	**12.21**	**11.79**
		UNACCOUNTED FOR WATER						
7.3.1		Raw water bulk loss	0	0	0	0.00	0.00	0.00
7.2.3/7.2.4		Billing losses	130 584	129 706	130 195	0.36	0.36	0.36
7.2.5		Apparent losses	176 665	123 416	190 994	0.48	0.34	0.52
7.2.5.1		Illegal connections	20 784	14 520	22 470	0.06	0.04	0.06
7.2.5.2		Inaccurate meters	103 921	72 598	112 350	0.28	0.20	0.31
7.2.5.3		Data errors	51 960	36 299	56 175	0.14	0.10	0.15
7.2.6		Real losses	862 540	602 563	932 502	2.36	1.65	2.55
	10.2 (g) (ii)	**Sub-Total: Unaccounted for water**	**1 039 205**	**725 979**	**1 123 496**	**2.85**	**1.99**	**3.08**
		WASTEWATER TREATMENT						
7.2.9	10.2 (a) (iii)	Total received at WWTW	3 419 191	3 526 775	3 337 457	9.37	9.66	9.14
7.2.11		Total discharged	2 627 662	2 708 871	2 588 051	7.20	7.42	7.09
7.2.13		Returned to environment	1 393 948	1 446 537	1 390 062	3.82	3.96	3.81
7.2.14		Recycled	1 233 714	1 262 334	1 197 989	3.38	3.46	3.28
	10.2 (a) (iv)	**Quantity of water supplied not discharged to WWTW's**	**1 163 764**	**930 949**	**966 562**	**3.19**	**2.55**	**2.65**

The graph below gives an overview of billed metered consumption per type of consumer for the last three financial years.

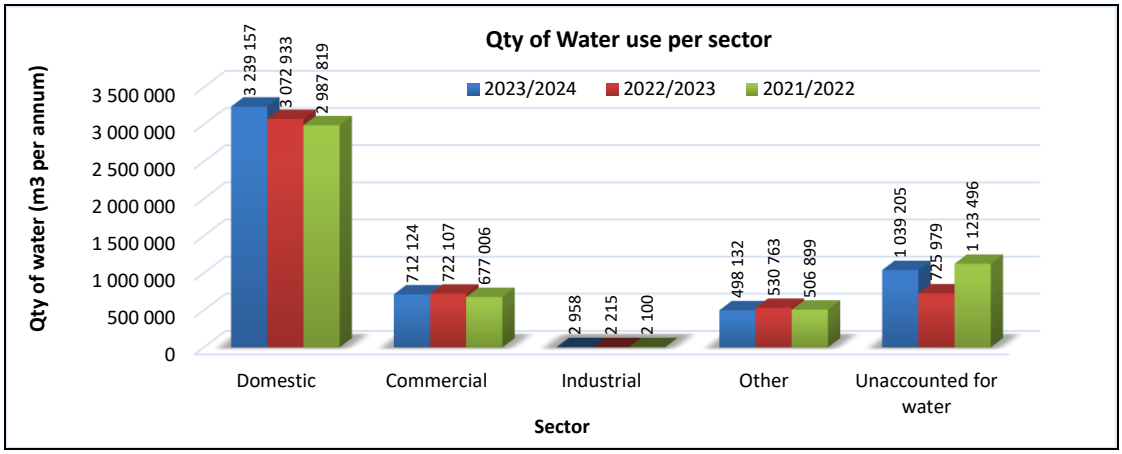


Figure C.1.4: Quantity of water services provided / water balance

The table below gives a summary of the annual billed metered consumption volume per consumer type for the various distribution systems and financial years.

Table C.1.5: Quantity of water used by each user sector (Ml/a)

Town	Year	Residential	Business & Industrial	Other	Farms	Total
Koringberg	14/15	52.873	3.583	2.525	0	58.981
	15/16	47.886	5.215	2.330	0	55.431
	16/17	44.529	5.340	1.396	0	51.265
	17/18	25.758	3.051	1.135	0	29.944
	18/19	27.862	3.061	0.992	0	31.915
	19/20	31.362	2.362	1.208	0	34.932
	20/21	40.579	1.216	1.222	0	43.017
	21/22	37.424	4.743	1.151	0	43.318
	22/23	39.137	5.448	2.246	0	46.831
	23/24	42.513	4.287	2.323	0	49.123
Ongegund	14/15	31.118	1.930	4.748	0	37.796
	15/16	22.268	3.091	3.204	0	28.563
	16/17	18.239	2.166	1.133	0	21.538
	17/18	9.202	0.919	0.836	0	10.957
	18/19	11.453	0	0.005	0	11.458
	19/20	12.793	0	0.004	0	12.797
	20/21	14.472	0.037	0.078	0	14.587
	21/22	14.553	0.181	0.065	0	14.799
	22/23	18.545	1.386	0.009	0	19.940
	23/24	16.505	2.141	0.066	0	18.712
Riebeek Wes	14/15	131.796	30.236	22.229	0	184.261
	15/16	121.093	25.304	11.473	0	157.870
	16/17	121.949	22.368	9.711	0	154.028
	17/18	73.064	15.210	17.338	0	105.612
	18/19	84.487	17.007	15.767	0	117.261
	19/20	96.265	17.084	22.519	0	135.868
	20/21	118.764	14.953	10.799	0	144.516
	21/22	121.425	25.891	13.827	0	161.143
	22/23	119.248	17.959	19.539	0	156.746
	23/24	128.061	12.439	23.992	0	164.492
Riebeek Kasteel	14/15	224.115	24.410	13.490	4.995	267.010
	15/16	194.956	25.221	9.514	9.894	239.585
	16/17	165.532	22.359	8.153	11.438	207.482

Table C.1.5: Quantity of water used by each user sector (Ml/a)						
Town	**Year**	**Residential**	**Business & Industrial**	**Other**	**Farms**	**Total**
	17/18	93.786	11.801	4.228	7.066	116.881
	18/19	125.625	16.629	8.325	7.490	158.069
	19/20	144.016	18.085	6.845	6.697	175.643
	20/21	171.842	10.802	11.934	8.850	203.428
	21/22	187.583	25.133	11.147	9.042	232.905
	22/23	209.616	16.065	12.364	5.928	243.973
	23/24	231.279	17.128	7.328	5.153	260.887
Yzerfontein	14/15	302.994	11.351	18.852	0	333.197
	15/16	247.560	11.503	14.738	0	273.801
	16/17	195.307	7.914	12.047	0	215.268
	17/18	88.626	5.087	8.968	0	102.681
	18/19	142.166	5.475	12.285	0	159.926
	19/20	165.718	6.243	19.046	0	191.007
	20/21	218.279	10.784	10.273	0	239.336
	21/22	231.664	12.000	24.292	0	267.956
	22/23	236.049	14.859	24.096	0	275.004
	23/24	263.838	15.288	-3.844	0	275.283
Darling	14/15	389.988	155.304	81.533	0	626.825
	15/16	353.330	144.849	50.635	0	548.814
	16/17	355.139	134.866	29.218	0	519.223
	17/18	228.404	129.920	15.601	0	373.925
	18/19	254.530	96.992	12.954	0	364.476
	19/20	279.913	87.055	13.051	0	380.019
	20/21	324.719	78.725	16.910	0	420.354
	21/22	327.638	103.959	20.691	0	452.288
	22/23	322.101	119.771	21.943	0	463.815
	23/24	341.812	131.703	16.205	0	489.721
Moorreesburg	14/15	566.974	135.372	37.202	7.394	746.942
	15/16	502.598	123.776	24.287	8.207	658.868
	16/17	454.057	91.142	17.923	6.427	569.549
	17/18	293.675	61.312	11.675	3.217	369.879
	18/19	330.550	63.275	25.092	3.376	422.293
	19/20	369.022	58.184	40.022	3.577	470.805
	20/21	416.587	67.556	45.188	5.784	535.115
	21/22	415.964	74.323	26.930	6.032	523.249
	22/23	406.312	75.005	34.653	5.919	521.889
	23/24	417.541	78.750	34.212	7.139	537.642
Malmesbury	14/15	1 852.113	407.323	427.192	46.441	2 733.069
	15/16	1 648.433	402.766	368.562	43.247	2 463.008
	16/17	1 567.750	430.508	315.334	30.380	2 343.972
	17/18	1 062.301	334.187	267.066	19.559	1 683.113
	18/19	1 241.947	291.858	253.886	90.675	1 878.366
	19/20	1 387.791	356.109	285.499	112.051	2 141.450
	20/21	1 537.917	398.212	293.799	110.631	2 340.559
	21/22	1 651.568	432.876	314.160	79.562	2 478.166
	22/23	1 721.925	473.829	327.167	76.899	2 599.820
	23/24	1 797.609	453.345	318.706	86.852	2 656.511
TOTAL	**14/15**	**3 551.971**	**769.509**	**607.771**	**58.830**	**4 988.081**
	15/16	**3 138.124**	**741.725**	**484.743**	**61.348**	**4 425.940**
	16/17	**2 922.502**	**716.663**	**394.915**	**48.245**	**4 082.325**
	17/18	**1 874.816**	**561.487**	**326.847**	**29.842**	**2 792.992**
	18/19	**2 218.620**	**494.297**	**329.306**	**101.541**	**3 143.764**
	19/20	**2 486.880**	**545.122**	**388.194**	**122.325**	**3 542.521**
	20/21	**2 843.159**	**582.285**	**390.203**	**125.265**	**3 940.912**
	21/22	**2 987.819**	**679.106**	**412.263**	**94.636**	**4 173.824**
	22/23	**3 072.933**	**724.322**	**442.017**	**88.746**	**4 328.018**
	23/24	**3 239.157**	**715.082**	**398.988**	**99.144**	**4 452.371**

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

Recorded flows are available for the Malmesbury-, Moorreesburg-, Darling- and Riebeek Valley WWTWs. The influent received at the other WWTWs is not metered and was therefore calculated as a percentage of the billed metered consumption. The monthly flows and rainfall at the various WWTWs are also summarised in Annexure A. The table below gives an overview of the metered and estimated volume of effluent received at the various WWTWs for the last six financial years.

Table C.1.6: Quantity of effluent received at the various WWTWs

WWTWs	% of Historic Water Demands	23/24	Record: Prior (Ml/a)				
			22/23	21/22	20/21	19/20	18/19
Malmesbury	N/A (Metered)	1 967.200	2 119.441	2 028.272	1 932.526	1 764.088	1 494.426
Moorreesburg	N/A (Metered)	480.578	450.414	399.445	400.243	351.586	337.553
Darling	N/A (Metered)	454.765	477.148	460.101	452.898	401.561	383.607
Koringberg	70%	34.386	32.782	30.323	30.112	24.452	22.341
Kalbaskraal	40%	31.950	30.489	27.971	27.759	22.176	23.692
Chatsworth / Riverlands	40%	98.364	124.358	89.498	92.656	63.458	60.466
Riebeek Valley	N/A (Metered)	351.948	292.143	301.847	307.636	273.968	277.396
Total		**3 419.191**	**3 526.775**	**3 337.457**	**3 243.830**	**2 901.289**	**2 599.481**

Quantity of treated effluent returned to the water resource system:

The quantity of effluent treated by industrial consumers on their own premises and re-used by them is not known at this stage. All effluent discharged into the Municipal sewer system is however treated at the existing WWTWs. The current volume of treated effluent re-use from the various WWTWs and the current effluent re-use practices are as indicated in the table below.

Table C.1.7: Volume of effluent re-use and current re-use practices at the various WWTWs

WWTW	Re-use of treated effluent					Current effluent re-use practices
	Billed Volume (Ml)				Consumers	
	23/24	22/23	21/22	20/21		
Malmesbury	1 125.206	1 161.959	1 123.616	1 365.802	Rooiheuwel JV, Primary School Swartland, High School Swartland, Wesbank Sportsfields, Golf Course, Landbougenootskap, Ilinge Lethu Sportgrounds, St Thomas Primary, Alkana Childcare, Bowling Club, Alfa Street Sport Centre, Building Contractors.	Building Contractors, 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	63.728	62.897	43.667	63.444	WWTW, Gene Louw, Golf Course	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	33.988	17.343	16.232	46.757	Golf Course, Gabriel Faroa Sport	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 Valley	10.792	20.135	14.474	10.731	Farmers	Re-use for agricultural purposes (Tender was awarded for 20-year period).
Koringberg	-	-	-	-	-	No re-use practices. Treated effluent returned into a local stream (Brak River)
Kalbaskraal	-	-	-	-	-	No re-use practices. Evaporate
Chatsworth / Riverlands	-	-	-	-	-	No re-use practices. Evaporate
Total	**1 233.714**	**1 262.334**	**1 197.989**	**1 486.734**		

C.2. Water Services Delivery Profile

The National Norms and Standards for Domestic Water and Sanitation Services, as published in the Government Gazette No.41100 of 8 September 2017, makes provision for the following norms and standards for levels of water supply and sanitation services:

Table C.2.1: Norms and standards for levels of water supply services

Full level of service: People access and pay for more than 90 l/c/d at high pressure.	Interim **Full**	**Full provision**: People access a minimum of 50 l/c/d of SANS241 quality water on demand at the boundary of the yard, metered and tariffed.
Middle level of service: People access and pay for 51-90 l/c/d at medium pressure.	Interim **Upper**	**Upper provision**: People access a maximum of 90 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed.
	Interim **Intermediate**	Intermediate provision: People access more than 50 l/c/d but less than 90 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed.
Minimum level of service: People access 25-50 l/c/d at low to medium pressure, use of more than 25 l/c/d is paid for.	Interim **Basic Plus**	**Basic Plus provision**: People access more than 25 l/c/d but less than 50 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed.
	Interim **Basic**	**Basic provision**: People access a minimum of 25 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed.
	Interim **Free Basic**	**Free basic provision**: People access a minimum of 25 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered.
	Intermittent	**Intermittent provision**: People access a minimum of 1500 l/household/week of acceptable quality water on a weekly basis within 100m, which is metered.
Bulk service: Source of potable water to be provided to people, which is metered in all circumstances.		
No service / provision = backlog: People access water from insecure or unimproved sources, or sources that are too distant, too time consuming or are of poor quality.		

Interim provision: People access a minimum of 25 l/c/d of acceptable quality water within 24 hours of disruption, normal service to be restored within 7 days.

Table C.2.2: Norms and standards for levels of sanitation services

Hygiene promotion; Prevention of pollution; Re-use / recycle; Operation and Maintenance; Metering and tariffing; Solid Waste Management; Asset Management		
Full level: Full concern for human health, environment and sustainability of interconnected systems.	**Full services**	**In-house facility**: Storm water, wastewater/excreta, greywater, solid waste are collected and managed to achieve maximum benefits from treatment and re-use of water and nutrients.
		In-house facility: Access to a pleasant, safe, reliable and properly maintained facility for 24 hours a day, with control of nutrients in human excreta, wastewater and greywater.
Basic level: Remove excreta from the environment through treatment, pathogen reduction, resource recovery and nutrient reuse.	**Free basic services**	**Toilet with functional hand washing facility in the yard**: Access to a pleasant, safe and reliable facility for 24 hours a day, including privacy, personal safety and shelter through a subsidy for free. Maintenance of the facility is for free and is the responsibility of services provider.
	Basic services	**Toilet with functional hand washing facility in the yard**. Access to a pleasant, safe and reliable facility for 24 hours a day, including privacy, personal safety and shelter through a capital subsidy. Maintenance of the facilities is not for free and is the responsibility of the household / owner.
Interim level: Blocking the spread of faecal-oral diseases through proper excreta containment at a fixed point.	**Excreta containment**	**Household, shared or communal toilets with functional hand washing facilities**: Access to safe, reliable and properly maintained toilet and hand washing facility, free of charge, within 200m of the dwelling, which at a minimum safely contains human excreta. Maintenance is the responsibility of the services provider. To be phased out by 2030.
No service / provision = backlog: People practice open defecation or access an unimproved sanitation facility, such as pit toilets and bucket toilets. To be completely eliminated by 2030.		

Proper disposal, clean platform, vector and rodent control, resource use and health protection.

Emergency level: People access pleasant, safe, reliable and properly maintained improved toilets and hand washing facility on the premises in close proximity to the temporary dwelling within 24 hours and for duration of event.

C.2.1. User Connection Profile

The total number of user connections in each user sector, for the consumers provided with water services by Swartland Municipality, is as follows (June 2024).

Table C.2.1.1: User Connection Profile for Water Services

WSDP Ref. #	Category of users	Water Services						
		Year 0 FY2023/24		Year - 1 FY2022/23		Year - 2 FY2021/22		New Connections Year 0 FY2023/24
		Nr	%	Nr	%	Nr	%	Nr
	RESIDENTIAL (DOMESTIC)							
3.3	Metered: Uncontrolled	21 873	93%	21 596	93%	20 938	93%	277
3.3	Metered: Controlled	0	0%	0	0%	0	0%	0
	Unmetered (Flat rate)	0	0%	0	0%	0	0%	0
	Communal water supply	0	0%	0	0%	0	0%	0
	Sub-Total: Residential	**21 873**	**93%**	**21 596**	**93%**	**20 938**	**93%**	**277**
	EDUCATION							
3.3	Schools	30	0%	30	0%	30	0%	0
	Tertiary educaton facilities	1	0%	1	0%	1	0%	0
	Sub-Total: Education	**31**	**0%**	**31**	**0%**	**31**	**0%**	**0**
	HEALTH							
3.3	Clinics	4	0%	4	0%	4	0%	0
3.3	District Hospitals	1	0%	1	0%	1	0%	0
3.3	Health Centres	1	0%	1	0%	1	0%	0
	Sub-Total: Health	**6**	**0%**	**6**	**0%**	**6**	**0%**	**0**
	INSTITUTIONAL							
	Public Institutions (Est)	25	0%	25	0%	25	0%	0
3.3	Magistrate Offices	2	0%	2	0%	2	0%	0
3.3	Police Stations	5	0%	5	0%	5	0%	0
3.3	Prisons	1	0%	1	0%	1	0%	0
	etc	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	**33**	**0%**	**33**	**0%**	**33**	**0%**	**0**
	INDUSTRIAL							
3.3	Dry industries (Incl. with Businesses)	0	0%	0	0%	0	0%	0
3.3	Wet industries	9	0%	9	0%	9	0%	0
	Sub-Total: Industrial	**9**	**0%**	**9**	**0%**	**9**	**0%**	**0**
	COMMERCIAL							
3.3	Businesses	859	4%	845	4%	830	4%	14
3.3	Office Buildings (Incl. with Businesses)	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**859**	**4%**	**845**	**4%**	**830**	**4%**	**14**
	MINING							
	Mining	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**
	OTHER							
	Agriculture: raw water	0	0%	0	0%	0	0%	0
	etc	638	3%	648	3%	641	3%	-10
	Sub-Total: Other	**638**	**3%**	**648**	**3%**	**641**	**3%**	**-10**
	TOTAL	**23 449**	**100%**	**23 168**	**100%**	**22 488**	**100%**	**281**

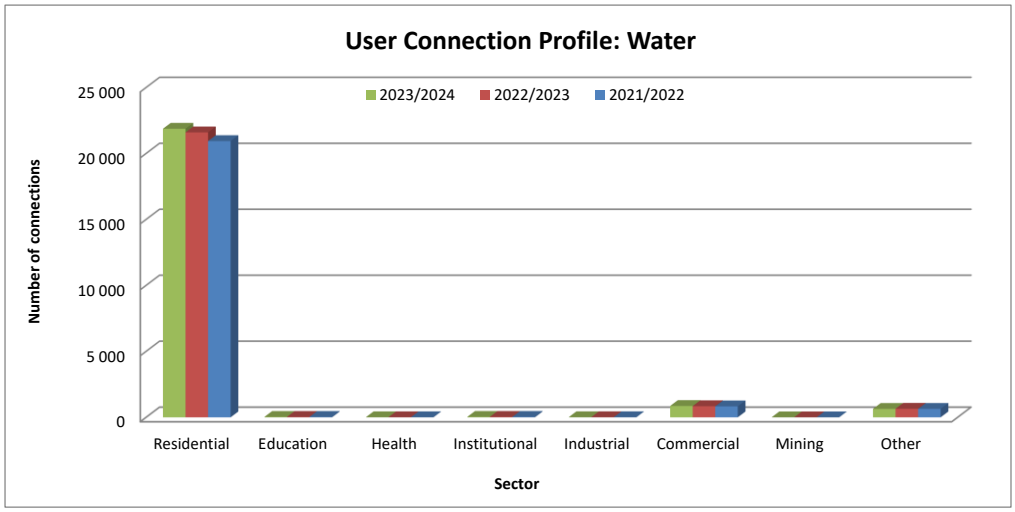


Figure C.2.1.1: User connection profile for water

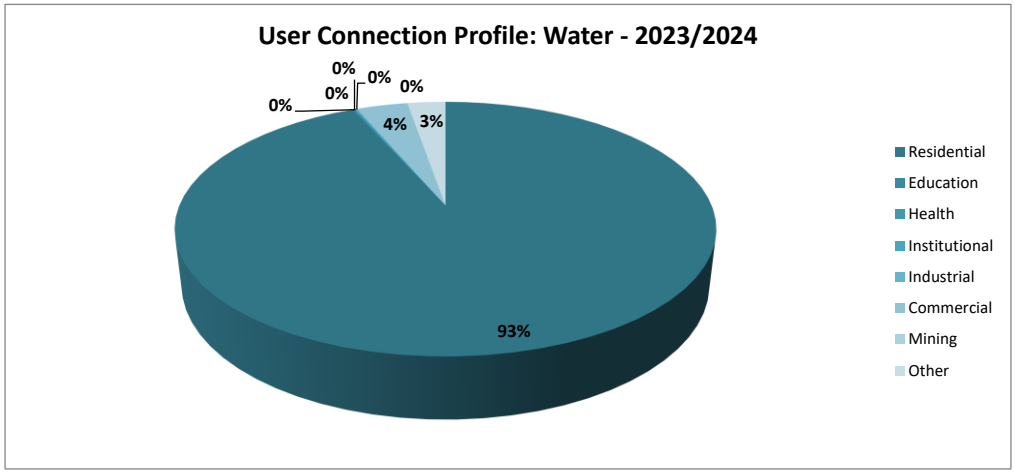


Figure C.2.1.2: User connection distribution for water – Year 2023/2024

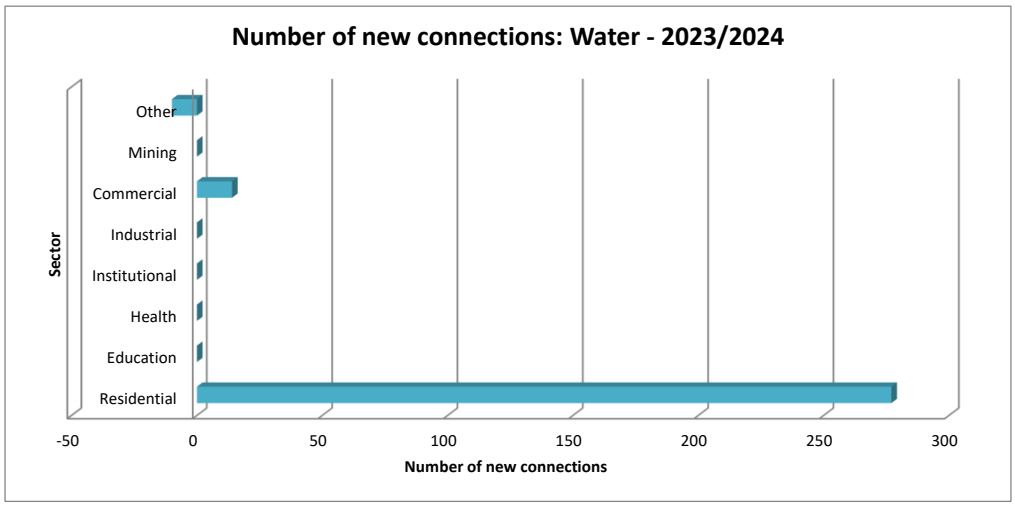


Figure C.2.1.3: Number of new water connections provided during 2023/2024

Table C.2.1.2: User Connection Profile for Wastewater Services								
WSDP Ref. #	Category of users	Wastewater Services						
		Year 0 FY2023/24		Year - 1 FY2022/23		Year - 2 FY2021/22		New Connections Year 0 FY2023/24
		Nr	%	Nr	%	Nr	%	Nr
	RESIDENTIAL (DOMESTIC)							
3.3	Metered: Uncontrolled	21 873	93%	21 596	93%	20 938	93%	277
3.3	Metered: Controlled	0	0%	0	0%	0	0%	0
	Unmetered (Flat rate)	0	0%	0	0%	0	0%	0
	Communal water supply	0	0%	0	0%	0	0%	0
	Sub-Total: Residential	**21 873**	**93%**	**21 596**	**93%**	**20 938**	**93%**	**277**
	EDUCATION							
3.3	Schools	30	0%	30	0%	30	0%	0
	Tertiary educaton facilities	1	0%	1	0%	1	0%	0
	Sub-Total: Education	**31**	**0%**	**31**	**0%**	**31**	**0%**	**0**
	HEALTH							
3.3	Clinics	4	0%	4	0%	4	0%	0
3.3	District Hospitals	1	0%	1	0%	1	0%	0
3.3	Health Centres	1	0%	1	0%	1	0%	0
	Sub-Total: Health	**6**	**0%**	**6**	**0%**	**6**	**0%**	**0**
	INSTITUTIONAL							
	Public Institutions (Est)	25	0%	25	0%	25	0%	0
3.3	Magistrate Offices	2	0%	2	0%	2	0%	0
3.3	Police Stations	5	0%	5	0%	5	0%	0
3.3	Prisons	1	0%	1	0%	1	0%	0
	etc	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	**33**	**0%**	**33**	**0%**	**33**	**0%**	**0**
	INDUSTRIAL							
3.3	Dry industries (Incl. with Businesses)	0	0%	0	0%	0	0%	0
3.3	Wet industries	9	0%	9	0%	9	0%	0
	Sub-Total: Industrial	**9**	**0%**	**9**	**0%**	**9**	**0%**	**0**
	COMMERCIAL							
3.3	Businesses	859	4%	845	4%	830	4%	14
3.3	Office Buildings (Incl. with Businesses)	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**859**	**4%**	**845**	**4%**	**830**	**4%**	**14**
	MINING							
	Mining	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**
	OTHER							
	Agriculture: raw water	0	0%	0	0%	0	0%	0
	etc	638	3%	648	3%	641	3%	-10
	Sub-Total: Other	**638**	**3%**	**648**	**3%**	**641**	**3%**	**-10**
	TOTAL	**23 449**	**100%**	**23 168**	**100%**	**22 488**	**100%**	**281**

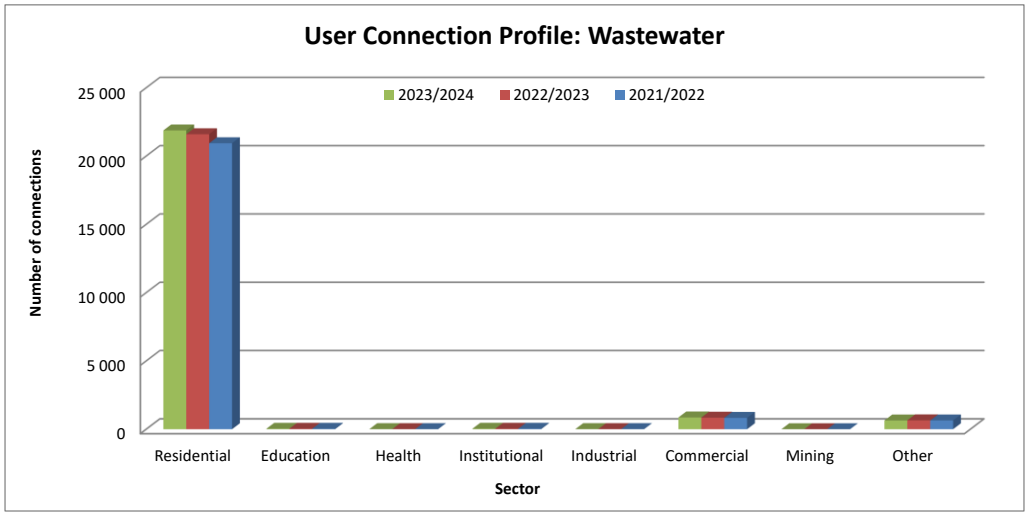


Figure C.2.1.4: User connection profile for wastewater

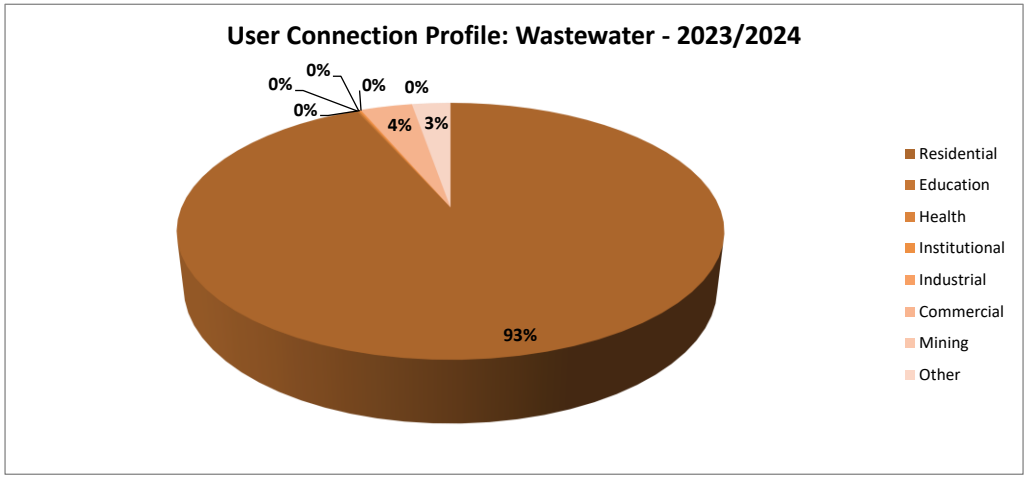


Figure C.2.1.5: User connection distribution for wastewater – Year 2023/2024

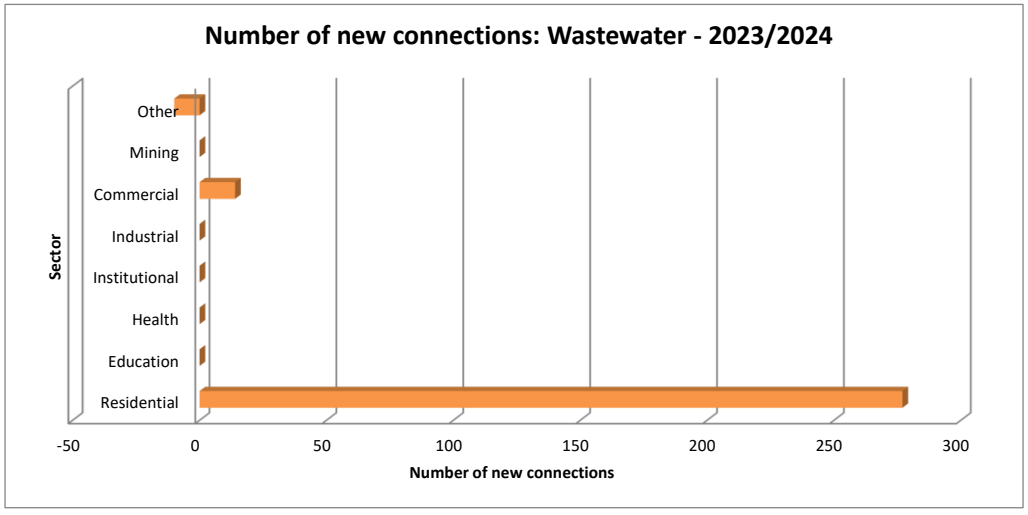


Figure C.2.1.6: Number of new wastewater connections provided during 2023/2024

The number of Billed Metered Consumers in each user sector, for the various distribution systems in Swartland Municipality's Management Area, are summarised in the table below.

Table C.2.1.3: Number of user connections in each user sector												
Distribution System	**23/24**			**22/23**			**21/22**			**20/21**		
	Res	**Bus**	**Other**	**Res**	**Bus**	**Other**	**Res**	**Bus**	**Other**	**Res**	**Bus**	**Other**
Koringberg	339	10	8	344	11	8	335	11	8	332	11	8
Ongegund	89	2	16	88	2	19	88	2	19	88	2	19
Riebeek Wes	977	50	31	975	50	33	963	51	34	966	50	33
Riebeek Kasteel	1 598	38	28	1 586	38	29	1 527	38	30	1 564	38	29
Yzerfontein	1 765	32	42	1 717	29	45	1 626	24	39	1 590	24	36
Darling	2 548	115	44	2 538	114	45	2 519	112	46	2 503	112	46
Moorreesburg	2 933	194	59	2 920	196	59	2 892	194	59	2 876	192	58
Malmesbury	8 497	419	424	8 327	406	423	7 955	400	420	7 908	400	420
Abbotsdale	1 139	0	12	1 135	0	12	1 127	0	13	1 118	0	13
Kalbaskraal	622	4	16	606	4	17	581	4	16	589	5	16
Riverlands	330	1	10	330	1	10	330	1	9	330	1	10
Chatsworth	1 036	3	18	1 030	3	18	995	2	18	965	1	17
TOTALS	**21 873**	**868**	**708**	**21 596**	**854**	**718**	**20 938**	**839**	**711**	**20 829**	**836**	**705**

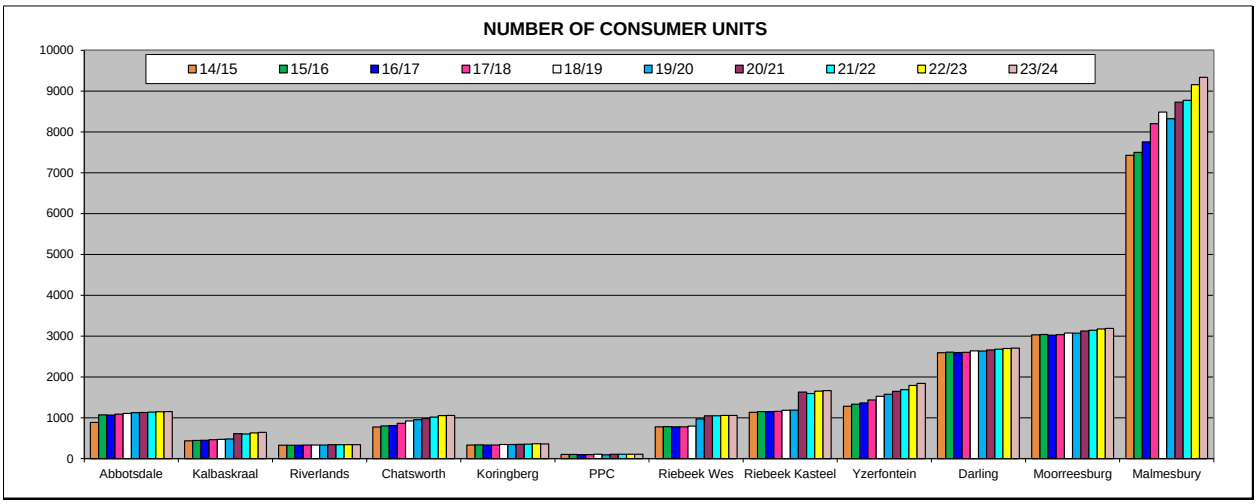


Figure C.2.1.7: Number of consumer units per distribution system

The annual total number of Billed Metered Consumers for the various distribution systems and the annual growth over the period 2014/2015 to 2023/2024 are summarised in the table below.

Table C.2.1.4: Total number of consumer units per system and the annual percentage growth from 2014/2015 to 2023/2024										
Distribution System	**Annual Growth % 14/15 – 23/24**	**23/24**	**22/23**	**21/22**	**20/21**	**19/20**	**18/19**	**17/18**	**16/17**	**15/16**	**14/15**
Koringberg	0.84%	357	363	354	351	347	346	333	333	335	332
Ongegund	0.64%	107	109	109	109	94	105	99	100	102	101
Riebeek Wes	3.49%	1 058	1 058	1 048	1 049	973	793	777	779	783	777
Riebeek Kasteel	4.33%	1 664	1 653	1 595	1 631	1 189	1 184	1 158	1 154	1 151	1 136
Yzerfontein	4.09%	1 839	1 791	1 689	1 650	1 577	1 528	1 435	1 366	1 330	1 283
Darling	0.47%	2 707	2 697	2 678	2 661	2 636	2 638	2 602	2 598	2 607	2 596
Moorreesburg	0.56%	3 186	3 175	3 144	3 126	3 073	3 077	3 036	3 024	3 040	3 029
Malmesbury	2.57%	9 340	9 156	8 775	8 728	8 325	8 487	8 203	7 760	7 500	7 431
Abbotsdale	2.92%	1 151	1 147	1 140	1 131	1 122	1 109	1 087	1 069	1 071	889
Kalbaskraal	4.39%	642	627	601	610	479	474	462	450	446	436
Riverlands	0.47%	341	341	340	341	333	333	331	328	329	327
Chatsworth	3.51%	1 057	1 051	1 015	983	956	922	864	812	802	775
TOTALS	**2.30%**	**23 449**	**23 168**	**22 488**	**22 370**	**21 104**	**20 996**	**20 387**	**19 773**	**19 496**	**19 112**

The number of new water and sanitation connection made:

The financial system indicated that the number of billed metered residential consumers increased with 277 for the 2023/2024 financial year. The billed metered "Business" and "Other" consumers increased by 4 consumers, as also indicated in Tables C.2.1.1, C.2.1.2 and C.2.1.3. The stats from the Engineering Department indicated that 197 new water connections and 48 new sewer connections were installed during the 2023/2024 financial year.

C.2.2. Residential Water Services Delivery Access Profile

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

Table C.2.2.1: Residential Water Services Delivery Access Profile: Water

Census Category	Description	Year 0 FY2023/24		Year - 1 FY2022/23		Year - 2 FY2021/22	
		Nr	%	Nr	%	Nr	%
	WATER (ABOVE MIN LEVEL)						
Piped (tap) water inside dwelling/institution	House connections	30 997	63%	30 344	65%	29 322	65%
Piped (tap) water inside yard	Yard connections	16 691	34%	15 482	33%	14 677	32%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	335	1%	335	1%	335	1%
	Sub-Total: Minimum Serivce Level and Above	**48 023**	**98%**	**46 161**	**98%**	**44 334**	**98%**
	WATER (BELOW MIN LEVEL)						
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	Standpipe connection: > 200 m < 500 m	61	0%	61	0%	61	0%
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	Standpipe connection: > 500 m < 1 000 m	18	0%	18	0%	18	0%
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	Standpipe connection: > 1 000 m	3	0%	3	0%	3	0%
No access to piped (tap) water	No services	925	2%	775	2%	775	2%
	Sub-Total: Below Minimum Service Level	**1 007**	**2%**	**857**	**2%**	**857**	**2%**
	Total number of households	**49 030**	**100%**	**47 018**	**100%**	**45 191**	**100%**

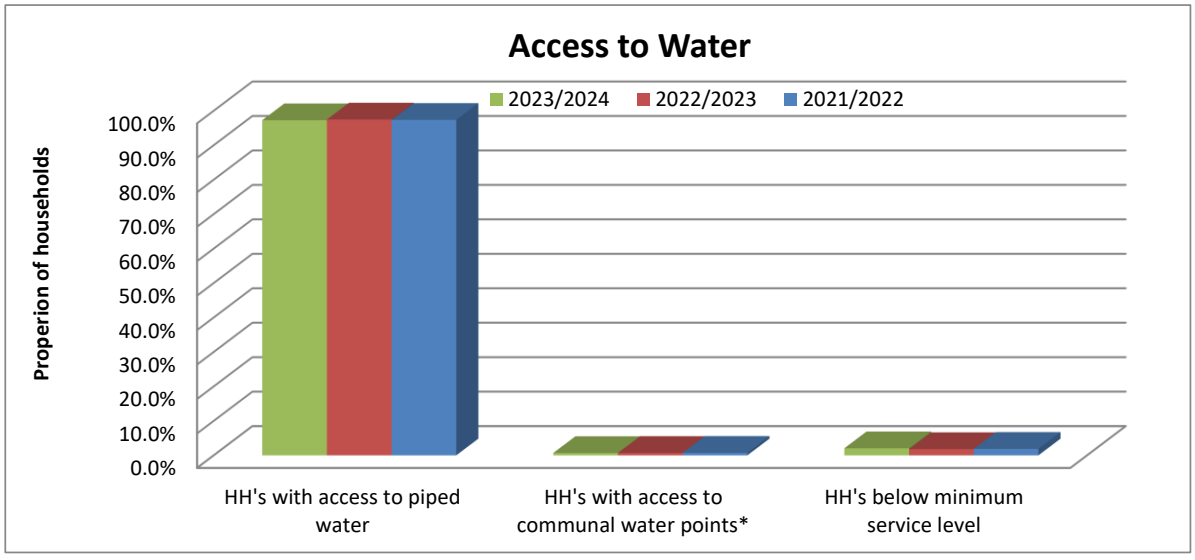


Figure C.2.2.1: Household water access profile

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

Table C.2.2.2: Residential water service levels (Consumer Units)													
Service Level	**Malmes-bury**	**Abbotsdale**	**Riverlands**	**Chatsworth**	**Kalbas-kraal**	**Riebeek Kasteel**	**Riebeek Wes**	**Darling**	**Moorrees-burg**	**Koringberg**	**Yzerfon-tein**	**Farms**	**Total**
No Water Services	0	0	0	0	0	0	0	0	0	0	0	75 [2)]	**75**
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	0	0	0	82 [3)]	**82**
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**157**	**157**
Below Housing Interim [4)]	0	0	0	850	0	0	0	0	0	0	0	0	**850**
Adequate Housing Permanent [5)]	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Housing Need	**0**	**0**	**0**	**850**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**850**
Standpipes	0	0	0	0	0	0	0	0	0	0	0	335	**335**
Yard Connections [6)]	7 568	178	30	10	561	1 431	1 234	1 003	2 988	169	0	1 519	**16 691**
House Connections [1)]	8 497	1 139	330	1 036	622	1 598	1 066	2 548	2 933	339	1 765	9 124	**30 997**
Total Adequate	**16 065**	**1 317**	**360**	**1 046**	**1 183**	**3 029**	**2 300**	**3 551**	**5 921**	**508**	**1 765**	**10 978**	**48 023**
Total per Area	**16 065**	**1 317**	**360**	**1 896**	**1 183**	**3 029**	**2 300**	**3 551**	**5 921**	**508**	**1 765**	**11 135**	**49 030**

Notes: 1) Number of residential billed metered consumer units for the various towns for 2023/2024, as calculated from the financial data.

2) Census 2011: Number of households with no access to piped (tap) water 75

3) Census 2011: Number of households with communal services (200m – 500m) 61, (500m – 1000m) 18 and (>1000m) 3

4) Below Housing Interim in the above table is the number of households in informal areas without basic water services. There is an estimated 850 informal households in Chatsworth without basic water services.

5) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal water services.

6) Projected number of residential households (2023/2024) – Number of residential billed metered consumers (2023/2024) = Estimated number of backyard dwellers.

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

Table C.2.2.3: Residential Water Services Delivery Access Profile: Sanitation

Census Category	Description	Year 0 FY2023/24		Year - 1 FY2022/23		Year - 2 FY2021/22	
		Nr	%	Nr	%	Nr	%
	SANITATION (ABOVE MIN LEVEL)						
Flush toilet (connected to sewerage system)	Waterborne	34 683	71%	33 044	70%	31 761	70%
	Waterborne: Low Flush	0	0%	0	0%	0	0%
Flush toilet (with septic tank)	Septic tanks / Conservancy	11 641	24%	11 418	24%	10 874	24%
Chemical toilet	Non-waterborne (above min. service level)	54	0%	54	0%	54	0%
Pit toilet with ventilation (VIP)		211	0%	211	0%	211	0%
Other / Communal Services		0	0%	0	0%	0	0%
	Sub-Total: Minimum Serivce Level and Above	**46 589**	**95%**	**44 727**	**95%**	**42 900**	**95%**
	SANITATION (BELOW MIN LEVEL)						
Pit toilet without ventilation	Pit toilet	401	1%	401	1%	401	1%
Bucket toilet	Bucket toilet	303	1%	303	1%	303	1%
Other toilet provision (below min. service level	Other	380	1%	380	1%	380	1%
No toilet provisions	No services	1 357	3%	1 207	3%	1 207	3%
	Sub-Total: Below Minimum Service Level	**2 441**	**5%**	**2 291**	**5%**	**2 291**	**5%**
	Total number of households	**49 030**	**100%**	**47 018**	**100%**	**45 191**	**100%**

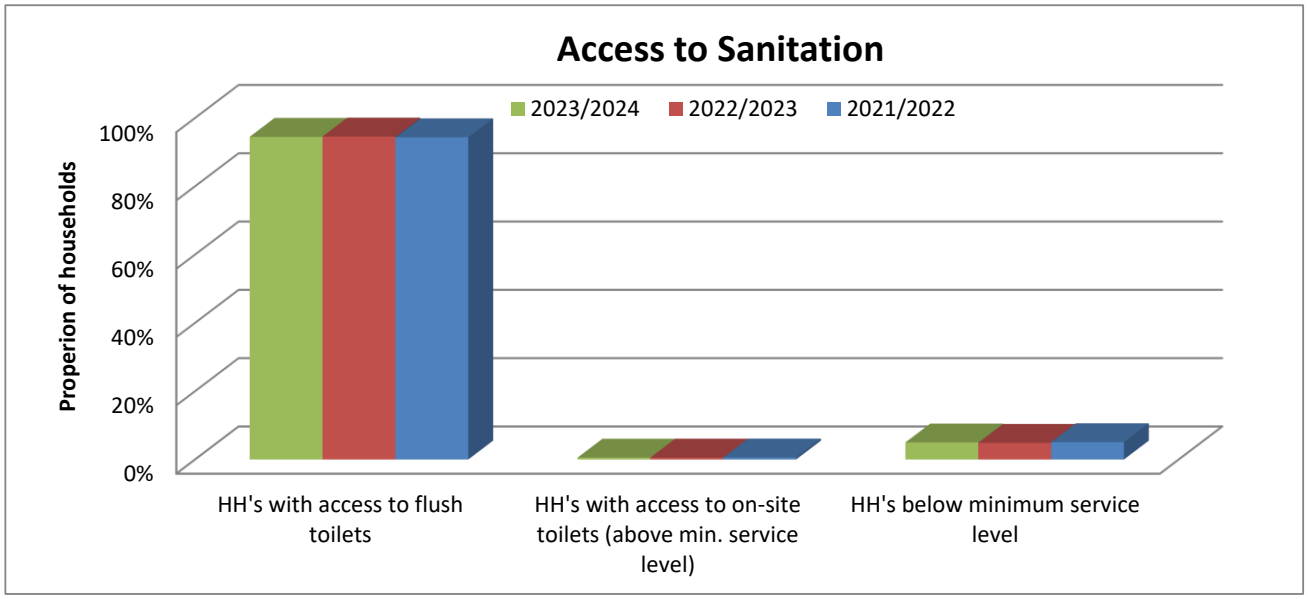


Figure C.2.2.2: Household sanitation access profile

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

Table C2.2.4: Residential sanitation service levels (Consumer Units)													
Service Levels	**Malmes-bury**	**Abbots-dale**	**River-lands**	**Chats-worth**	**Kalbas-kraal**	**Riebeek Kasteel**	**Riebeek Wes**	**Darling**	**Moorrees-burg**	**Koring-berg**	**Yzerfon-tein**	**Farms**	**Total**
No Sanitation Services	0	0	0	0	0	0	0	0	0	0	0	507 [3]	**507**
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	0	0	0	1 138 [4]	**1 138**
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1 645**	**1 645**
Below Housing Interim [6]	0	0	0	850	0	0	0	0	0	0	0	0	**850**
Adequate Housing Permanent [7]	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Housing Need	**0**	**0**	**0**	**850**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**850**
Non-Waterborne	0	0	0	0	0	0	0	0	0	0	0	211 [5]	**211**
Waterborne Low Flush	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Septic Tanks / Conservancy [1]	10	5	2	131	98	33	122	23	84	89	1 765	9 279	**11 641**
Waterborne WWTW [2]	16 055	1 312	358	915	1 085	2 996	2 178	3 528	5 837	419	0	0	**34 683**
Total Adequate	**16 065**	**1 317**	**360**	**1 046**	**1 183**	**3 029**	**2 300**	**3 551**	**5 921**	**508**	**1 765**	**9 490**	**46 535**
Total per Area	**16 065**	**1 317**	**360**	**1 896**	**1 183**	**3 029**	**2 300**	**3 551**	**5 921**	**508**	**1 765**	**11 135**	**49 030**

Notes:
1) The number of tanks per town was calculated from the total number of tanks pumped (Pump 1) during 2023/2024 divided by 5.
2) Include Backyard dwellers
3) Census 2011: Number of households with no toilet facility 507.
4) Census 2011: Number of households with existing buckets 303, chemical toilets 54, pit toilets without ventilation 401 and "other" 380
5) Census 2011: Number of households with pit toilets with ventilation 211.
6) Inadequate Housing Interim in the above table is the number of informal households in informal areas without basic sanitation services. There is an estimated 850 informal households in Chatsworth without basic sanitation services.
7) Inadequate Housing Permanent in the above table is the number of informal households in informal areas with communal ablution facilities.

Number of households provided with water through communal water services:

The National Norms and Standards for Domestic Water and Sanitation Services, as published in the Government Gazette No.41100 of 8 September 2017, include the following interim water and sanitation services:

Table C.2.2.5: Interim water and sanitation services (National Norms and Standards for Domestic Water and Sanitation Services)
Intermittent provision of water at a minimum level of water supply services
• A minimum volume of 1 500 litres of potable water shall be made available to a household per week. • The water provided shall comply with the SANS241 quality standards. • The access/delivery point shall be at a minimum a communal standpipe, or a storage facility in the yard (water container, yard tank, roof tank) of at least a volume of 1 500 litres. • In the case of a communal standpipe, it shall be within a reasonable walking distance of no more than 100m from the farthest household. • In the case of a storage facility in the yard (water container, yard tank, roof tank), it shall be refilled by a water tanker with potable water at least once a week. • The water shall be made available for 52 weeks per year. • All water use and/or supply shall be metered, but not tariffed. • Maintenance of the infrastructure for this level of service is the responsibility of the WSA. • Point-of-use water treatment systems and methods shall be advocated. • Efforts shall be made to ensure user acceptance and understanding for this level of service. • Users shall be educated in effective water use and hygiene. • This level of service shall be phased out by 2030 to comply with the National Development Plan's requirement of providing a basic service of at least a yard connection for water.
Interim sanitation services (Communal and shared facilities)

• Users shall be consulted on the siting and design, and the responsible cleaning and maintenance of shared toilets. Clean toilets are more likely to be frequently used.
• Plumbing in and for communal and shared facilities needs to be more robust than that installed on private premises and shall comply with the general principles of the National Building Regulations. Precautions need to be taken in the design against vandalism, theft and misuse.
• Efforts shall be made to provide people living with chronic illnesses, such as HIV and AIDS, with easy access to a toilet as they frequently suffer from chronic diarrhoea and reduced mobility.
• Where possible, communal and shared toilets must be provided with lighting, or users provided with torches. The input of the users must be sought with regard to ways of enhancing the safety of users.
• Efforts to build a sense of communal ownership and pride of possession shall be made so that cooperation is voluntarily given or assured by peer pressure.
• Sufficient sanitation facilities shall be provided for the number of users
  ➢ Communal toilet: Toilet seats – 1 seat per 50 users; Urinal units – 1 unit per 100 users; Hand washing – 1 basin per 10 toilet seats.
  ➢ Shared toilet mostly used all the time: Toilet seats – 1 seat per 20 users; Urinal units – 1 unit per 50 users; Hand washing – 1 basin per 4 toilet seats.
• Shared and communal facilities shall have separate toilet blocks for men and women with separate entries; waste bins with lids in toilet block for women – emptied once a week and disposed of appropriately; urinal facilities for men; seats for children in the section for women; waiting / circulating area; separate washing cubicles for men and women; facility to store large volumes of water (water-borne sanitation); appropriate wastewater disposal system; and store room for keeping the cleaning material / equipment.

All the formal households in the urban areas of Swartland Municipality's Management Area are provided with water and sewer connections inside the erven. Informal areas are supplied with shared services as an intermediary measure. There are an estimated 850 informal households in Chatsworth with no access to shared water and sanitation services.

The only other areas where communal water services are in use is on some of the farms in the rural areas. Swartland Municipality is committed to work with the private landowners to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services still below RDP standard.

All the schools and tertiary education facilities in Swartland Municipality's urban areas are provided with adequate water and sanitation services and there is no backlog with regard to water and sanitation services for the schools in the urban areas. The service levels of the primary schools in the rural areas however need to be verified. The existing water and sanitation service levels for all the schools in the Swartland Municipality Management Area is summarised in the table below.

Table C.2.2.6: 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
Primary school	26	16	10 (To be verified)		16	10 (To be verified)	
Secondary school	5	5	0	0	5	0	0
Tertiary	1	1	0	0	1	0	0
Combined	5	5	0	0	5	0	0
Special needs	1	1	0	0	1	0	0
Other	24	22	2 (To be verified)		22	2 (To be verified)	
Total	**62**	**50**	**12 (To be verified)**		**50**	**12 (To be verified)**	

Source for number of facilities: Swartland Municipality's WSDP, July 2024

All the medical facilities in Swartland Municipality's Management Area are provided with adequate water and sanitation services and there is no backlog with regard to water and sanitation services for the medical facilities. 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 C.2.2.7: 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	2	2	0	0	2	0	0
Health Centres	2	2	0	0	2	0	0
Fixed Clinics	4	4	0	0	4	0	0
Mobile/Satellite Clinics	7	7	0	0	7	0	0

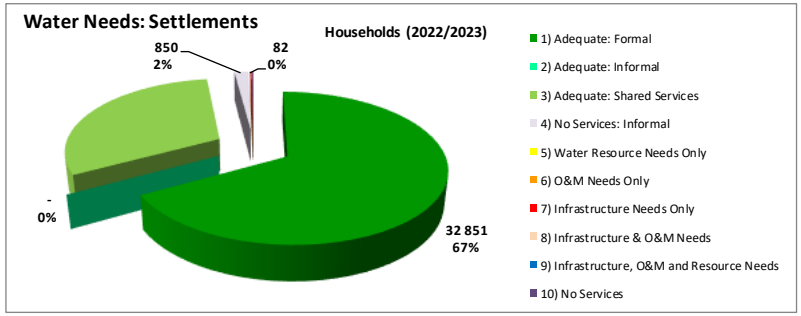
Source for number of facilities: Swartland Municipality's WSDP, July 2024

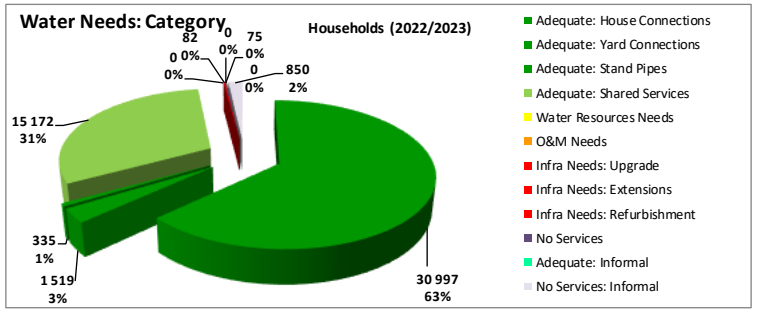
C.2.3. Residential Water Services Delivery Adequacy Profile

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

Table C.2.3.1: Residential Water Services Delivery Adequacy Profile (Water)

Water Categorisation	Number of settlements	FORMAL																		INFORMAL			
		Adequate								Water Resource needs		O & M Needs		Infrastructure Needs						No services		Adequate		No services	
		House Connections		Yard Connections		Stand Pipes		Shared Services						Upgrades		Extensions		Refurbishment							
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
1	37	30 997	100%	1 519	100%	335	100%																		
2	1																								
3	10							15 172	100%																
4	1																							850	100%
5	0																								
6	0																								
7	3															82	100%								
8	0																								
9	0																								
10	3																			75	100%				
Total Household Interventions required		30 997		1 519		335		15 172		0		0		0		82		0		75		0		850	



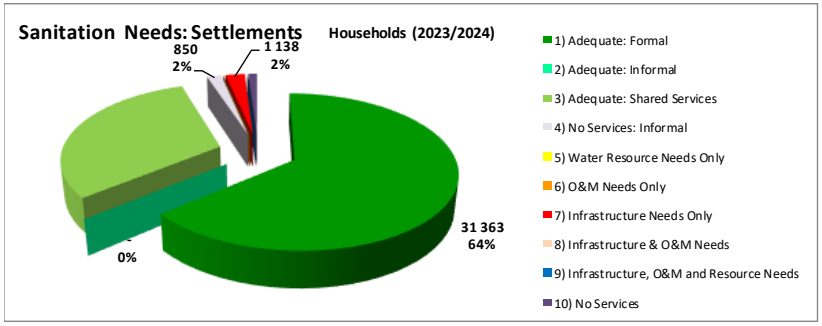


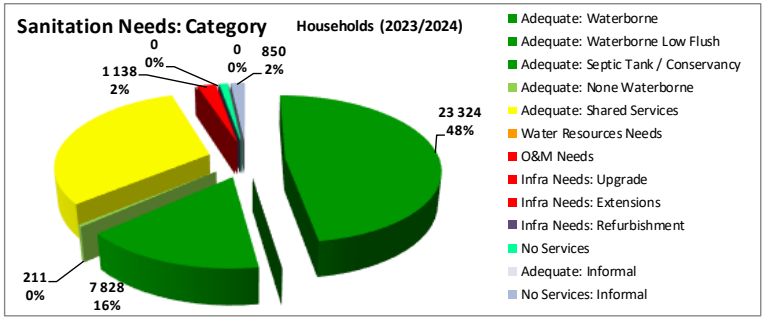
1	Adequate	3	Adequate: Shared services	5	Water Resources Needs **Only**	7	Infrastructure Needs **Only**	9	Infrastructure, O&M & Resource Needs
2	Adequate: Informal	4	No Services: Informal	6	O & M Needs **Only**	8	Infrastructure& O&M needs	10	No Services

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

Table C.2.3.2: Residential Water Services Delivery Adequacy Profile (Sanitation)

Water Categorisation	Number of settlements	FORMAL																				INFORMAL			
		Adequate										Water Resource needs		O & M Needs		Infrastructure Needs						No services		Adequate		No services	
		Waterborne		Waterborne Low flush		Septic Tank/ Conservancy		None Waterborne		Shared Services						Upgrades		Extensions		Refurbishment							
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
1	37	23 324	100%			7 828	100%	211	100%																		
2	1																										
3	10									15 172	100%																
4	1																									850	100%
5	0																										
6	0																										
7	3															1 138	100%										
8	0																										
9	0																										
10	3																					507	100%				
Total Household Interventions required		23 324		0		7 828		211		15 172		0		0		1 138		0		0		507		0		850	





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

C.3. Cost Recovery and Free Basic Services

C.3.1. Tariffs

The water tariff structures for Swartland Municipality for the 2023/2024 financial year and the previous four financial years are summarised in the table below (Subject to 15% VAT).

Table C.3.1: Water tariffs for 2023/2024 and the previous four financial years

Consumer/Description	Category	19/20	20/21	21/22	22/23	23/24
All	Availability Fees per month	R91-69	R91-69	R91-69	R96-09	R101-18
Residential Consumers	Water network charge	R64-87	R64-87	R67-14	R70-16	75-07
	0 – 6 Kl	R5-03	R5-03	R5-21	R5-44	R6-02
	7 – 10 Kl	R8-64	R8-64	R8-94	R9-34	R9-99
	11 – 15 Kl	R15-77	R16-54	R17-12	R17-89	R18-95
	16 – 20 Kl	R19-99	R20-97	R21-70	R22-98	R24-34
	21 – 25 Kl	R29-64	R31-09	R32-18	R34-08	R36-09
	26 – 35 Kl	R61-75	R64-78	R47-94	R50-77	R53-77
	36 Kl and above	R85-22	R89-40	R89-40	R94-67	R100-26
Indigent Households	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	Free Water 6 Kl (6 Kl EQS)	R0-00	R0-00	R0-00	R0-00	R0-00
	7 – 10 Kl	R8-64	R8-64	R8-94	R9-34	R9-99
	11 – 15 Kl	R15-77	R16-54	R17-12	R17-89	R18-95
	16 – 20 Kl	R19-99	R20-97	R21-70	R22-98	R24-34
	21 – 25 Kl	R29-64	R31-09	R32-18	R34-08	R36-09
	26 – 35 Kl	R61-75	R64-78	R47-94	R50-77	R53-77
	36 Kl and above	R85-22	R89-40	R89-40	R94-67	R100-26
Agricultural (Residential)	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	0 – 6 Kl	R5-03	R5-03	R5-21	R5-44	R6-02
	7 – 10 Kl	R8-64	R8-64	R8-94	R9-34	R9-99
	11 – 15 Kl	R15-77	R16-54	R17-12	R17-89	R18-95
	16 – 20 Kl	R19-99	R20-97	R21-70	R22-98	R24-34
	21 – 25 Kl	R29-64	R31-09	R32-18	R34-08	R36-09
	26 – 35 Kl	R61-75	R64-78	R47-94	R50-77	R53-77
	36 kl and above	R85-22	R89-40	R89-40	R94-67	R100-26
Business / Commercial / Industrial / etc.	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	Per Kl	R21-60	R21-60	R22-36	R23-43	R24-58
Industrial	Water network charge	-	-	-	-	-
	Per Kl	-	-	-	-	R24-58
Water: Agricultural Business	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	Per Kl	R21-60	R21-60	R22-36	R23-43	R24-58
Schools	Water network charge	R64-87	R68-05	R70-43	R73-81	R77-73
	Per Kl	R22-90	R24-02	R24-86	R26-33	R13-81
Government Institutions	Water network charge	R64-87	R68-05	R70-43	R119-31	R125-16
	Per Kl	R22-90	R24-02	R24-86	R26-33	R27-88
Sport Clubs	Water network charge	R64-87	R64-87	R67-14	R70-36	R73-81
	Per Kl	R22-90	R22-90	R23-70	R24-84	R26-06
Municipality (Departmental)	Per Kl	R8-64	R6-46	R6-46	R6-46	R6-84
Raw Water (Untreated) to Anne Pienaar Primary School	From first Kl	R3-81	R4-08	R4-32	R4-32	R5-79
5% Increase in Tariffs Residential and Agricultural Residential	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	0 – 6 Kl	R5-28	R5-28	R5-47	R5-72	R6-32
	7 – 10 Kl	R9-07	R9-07	R9-39	R9-81	R10-49
	11 – 15 Kl	R16-56	R17-37	R17-97	R18-78	R19-90
	16 – 20 Kl	R20-99	R22-02	R22-79	R24-13	R25-56
	21 – 25 Kl	R31-12	R32-64	R33-79	R35-78	R37-89
	26 – 35 Kl	R64-84	R68-02	R50-34	R53-31	R56-46
	36 kl and above	R89-48	R93-87	R93-87	R99-40	R105-27
5% Increase in Tariffs Businesses / Commercial / Industrial / Business	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	From first Kl	R22-68	R22-68	R23-47	R24-60	R25-81

Table C.3.1: Water tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	**Category**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**
Agricultural						
5% Increase in Tariffs Industrial	Water network charge	-	-	-	-	-
	From first Kl	-	-	-	-	R25-81
5% Increase in Tariffs Schools	Water network charge	R64-87	R68-05	R70-43	R73-81	R77-43
	From first Kl	R24-05	R25-22	R26-10	R27-65	R14-50
5% Increase in Tariffs Government Institutions	Water network charge	R64-87	R68-05	R70-43	R119-31	R125-16
	From first Kl	R24-05	R25-22	R26-10	R27-65	R29-27
5% Increase in Tariffs Sport Clubs	Water network charge	R64-87	R64-87	R67-14	R70-36	R73-81
	From first Kl	R24-05	R24-05	R24-89	R26-08	R27-36
10% Increase in Tariffs Residential and Agricultural Residential (Level 1)	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	0 – 6 Kl	R5-53	R5-53	R5-73	R5-99	R6-62
	7 – 10 Kl	R9-50	R9-50	R9-84	R10-27	R10-99
	11 – 15 Kl	R17-35	R18-19	R18-83	R19-68	R20-85
	16 – 20 Kl	R21-99	R23-07	R23-87	R25-28	R26-77
	21 – 25 Kl	R32-60	R34-20	R35-40	R37-49	R39-70
	26 – 35 Kl	R67-93	R71-26	R52-73	R55-85	R59-15
	36 kl and above	R93-74	R98-34	R98-34	R104-14	R110-29
10% Increase in Tariffs Businesses / Commercial / Industrial / Business Agricultural (Level 1)	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	From first Kl	R23-76	R23-76	R24-59	R25-77	R27-04
10% Increase in Tariffs Industrial (Level 1)	Water network charge	-	-	-	-	-
	From first Kl	-	-	-	-	R27-04
10% Increase in Tariffs Schools (Level 1)	Water network charge	R64-87	R68-05	R70-43	R73-81	R77-43
	From first Kl	R25-19	R26-42	R27-35	R28-96	R15-19
10% Increase in Tariffs Government Institutions (Level 1)	Water network charge	R64-87	R68-05	R70-43	R119-31	R125-16
	From first Kl	R25-19	R26-42	R27-35	R28-96	R30-67
10% Increase in Tariffs Sport Clubs (Level 1)	Water network charge	R64-87	R64-87	R67-14	R70-36	R73-81
	From first Kl	R25-19	R25-19	R26-07	R27-32	R28-67
15% Increase in Tariffs Residential and Agricultural Residential (Level 1B)	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	0 – 6 Kl	R5-78	R6-07	R6-28	R6-26	R6-92
	7 – 10 Kl	R9-94	R10-42	R10-79	R10-74	R11-49
	11 – 15 Kl	R18-14	R19-02	R19-69	R20-57	R21-79
	16 – 20 Kl	R22-99	R24-12	R24-96	R26-43	R27-99
	21 – 25 Kl	R34-09	R35-75	R37-00	R39-19	R41-50
	26 – 35 Kl	R71-01	R74-50	R55-13	R58-39	R61-84
	36 kl and above	R98-00	R102-81	R106-41	R108-87	R115-30
15% Increase in Tariffs Businesses / Commercial / Industrial / Business Agricultural (Level 1B)	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	From first Kl	R24-84	R26-06	R26-97	R26-94	R28-27
15% Increase in Tariffs Industrial (Level 1B)	Water network charge	-	-	-	-	-
	From first Kl	-	-	-	-	R28-27
15% Increase in Tariffs Schools (Level 1B)	Water network charge	R64-87	R68-05	R70-43	R73-81	R77-43
	From first Kl	R26-34	R27-62	R28-59	R30-28	R15-88
15% Increase in Tariffs Government Institutions (Level 1B)	Water network charge	R64-87	R68-05	R70-43	R119-31	R125-16
	From first Kl	R26-34	R27-62	R28-59	R30-28	R32-06
15% Increase in Tariffs Sport Clubs (Level 1B)	Water network charge	R64-87	R64-87	R67-14	R70-37	R73-81
	From first Kl	R26-34	R27-63	R28-60	R28-57	R29-97
20% Increase in Tariffs Residential and Agricultural Residential (Level 2)	Water network charge	R64-87	R64-87	R67-14	R70-16	R75-07
	0 – 6 Kl	R6-04	R6-33	R6-55	R6-53	R7-22
	7 – 10 Kl	R10-37	R10-88	R11-26	R11-21	R11-99
	11 – 15 Kl	R18-92	R19-85	R20-54	R21-47	R22-74
	16 – 20 Kl	R23-99	R25-16	R26-04	R27-57	R29-21
	21 – 25 Kl	R35-57	R37-31	R38-61	R40-90	R43-31
	26 – 35 Kl	R74-10	R77-74	R57-53	R60-92	R64-52
	36 kl and above	R102-26	R107-28	R111-03	R113-60	R120-32
20% Increase in Tariffs Businesses / Commercial / Industrial / Business Agricultural (Level 2)	Water network charge	R110-00	R110-00	R113-85	R119-31	R125-16
	From first Kl	R25-92	R27-19	R28-14	R28-12	R29-50

Table C.3.1: Water tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	**Category**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**
20% Increase in Tariffs Industrial (Level 2)	Water network charge	-	-	-	-	-
	From first Kl	-	-	-	-	R29-50
20% Increase in Tariffs Schools (Level 2)	Water network charge	R64-87	R68-05	R70-43	R73-81	R77-43
	From first Kl	R27-48	R28-82	R29-83	R31-60	R16-57
20% Increase in Tariffs Government Institutions (Level 2)	Water network charge	R64-87	R68-05	R70-43	R119-31	R125-16
	From first Kl	R27-48	R28-82	R29-83	R31-60	R33-46
20% Increase in Tariffs Sport Clubs (Level 2)	Water network charge	R64-87	R64-87	R67-14	R70-36	R73-81
	From first Kl	R27-48	R28-83	R29-84	R29-81	R31-27
Connection Low Cost		Contract	Contract	Contract	Contract	Contract
Connection (15mm)		R5 260-87	R5 459-13	R5 986-09	R5 913-04	R6 200-00
Connection (22mm)		R6 469-57	R6 469-57	R6 676-52	R8 260-87	R8 260-87
Connection 22mm Private Developments		R4 460-87	R4 460-87	R4 636-52	R4 469-57	R4 843-48
Deposit Payable: Letting of Municipal Standpipe		R6 086-96	R6 521-74	R7 500-00	R7 500-00	R7 500-00
Test of water meter – Refundable if result is faulty		R704-35	R782-61	R782-61	R826-09	R869-57

Note: 25% Increase in Tariffs (Level 2B), 30% Increase in Tariffs (Level 3), 35% Increase in Tariffs (Level 3B), 40% Increase in Tariffs (Level 4), 50% Increase in Tariffs (Level 5), 60% Increase in Tariffs (Level 6), 70% Increase in Tariffs (Level 7) and 80% Increase in Tariffs (Level 8) are also in place.

The sewerage tariff structures for Swartland Municipality for the 2023/2024 financial year and the previous four financial years are summarised in the table below (Subject to 15% VAT).

Table C.3.2: Sewerage tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	**Category**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**
Basic Network Charge	Sewerage connection / pumping service	-	-	R105-10	-	-
Households, Flats, Semi-detached households	Availability Fees per month	R234-35	R234-35	R143-08	R262-82	R278-33
Businesses, Industrial, Schools, Churches, Sport Facilities, etc.	Availability Fees per month	R234-35	R234-35	R143-08	R262-82	R278-33
For each additional toilet	Businesses, etc. per month	R35-15	R36-87	R39-08	R41-04	R43-47
Sewer connections	100mm PVC	R4 626-09	R4 789-57	R5 024-35	R5 732-82	R6 852-17
Sewer connections	150mm PVC	R6 252-17	R6 673-04	R6 525-22	R6 663-18	R7 800-00
Sewer blockages	Office hours	R487-83	R524-35	R556-52	R560-06	R643-48
Sewer blockages	After hours and public holidays	R690-43	R743-48	R789-57	R795-05	R913-04
Emptying of tanks	For two emptying per month	R234-35	R234-35	R143-08	R303-91	R347-83
	Every additional emptying	R839-13	R858-43	R909-94	R1 149-10	R1 304-35
	3rd pumping during Easter Weekend and school holidays in the same month will be charged.	R839-13	R858-43	R909-94	R1 149-10	R1 304-35
Emptying of tanks (Riebeek Kasteel and Abbotsdale)	From the 1st sewerage pumping	R839-13	R858-43	R909-94	R1 149-10	R1 304-35
	Plus fixed sewerage pan levy (Owner do not connect to the new waterborne system)	R266-00 (VAT incl.)	R266-00 (VAT incl.)	R285-41 (VAT incl.)	R302-24 (VAT incl.)	R320-08 (VAT incl.)
Ad-hoc emptying of tanks	After hours	R1 021-74	R1 081-91	R1 137-39	R1 252-17	R1 391-30
Treated Waste Water	Per Kl	R2-86	R2-96	R3-13	R3-30	R3-56
Treated Waste Water Rooiheuwel JV	Per Kl	R0-76	R0-81	R0-86	R0-90	R0-96
Partially connection (Emptying)		R117-18	R125-98	R52-61	R131-41	R139-13
Industrial effluent per Kl (COD)		R10-65	R11-27	R11-95	R12-52	R13-30
Grotto Baai and Jakkelsfontein – Network Charge		-	-	R105-10	-	-
Grotto Baai and Jakkelsfontein for two emptying per month		R234-35	R234-35	R143-08	R303-91	R347-83
Partial connection (pumping) sewerage tanks for two emptying per month.		-	-	R71-60	R303-91	R330-43
Rural and Non-urban areas – emptying of sewerage tanks per pumping		R1 469-57	R1 545-22	R1 619-13	R1 630-85	R1 956-52

C.3.2. Metering, Billing and Free Basic Services

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

Table C.3.2.1: Overview of Metering, Billing and Free Basic Services

Regulations Ref. #	Description	Unit	Year 0	Year - 1	Year - 2
			FY2023/24	FY2022/23	FY2021/22
	UNITS SUPPLIED (as per water services access profile)				
10.2 (b) (i)	Household water connections (house and yard connections)	Nr	**47 688**	**45 826**	**43 999**
10.2 (b) (iv)	Household sewerage connections	Nr	**46 324**	**44 462**	**42 635**
	METERING				
	Metered Water Connections (aligned with Table C2.1)				
	Residential	Nr	21 873	21 596	20 938
	Commercial / Business	Nr	859	845	830
	Industrial	Nr	9	9	9
	Government / Institutional	Nr	70	70	70
	Other	Nr	638	648	641
	Sub-Total: Metered Water Connections	**Nr**	**23 449**	**23 168**	**22 488**
	Proportion of metered connections (residential)*	%	46%	47%	48%
	Total number of meters	Nr	**23 449**	**23 168**	**22 488**
10.2 (b) (vi)	Total number of new connections (aligned with Table C.2.1)	Nr	281	680	118
10.2 (e) (i)	Total number of new meters installed	Nr	281	680	118
	Proportion of new connections, metered	%	100.0%	100.0%	100.0%
	Number of meters tested	Nr	0	0	0
10.2 (e) (ii)	Proportion of meters tested to total number of meters	%	0.0%	0.0%	0.0%
	Number of meters replaced**	Nr	598	224	230
10.2 (e) (ii)	Proportion of meters replaced to total number of meters	%	2.6%	1.0%	1.0%
	BILLING				
	Customer billing (water and sewerage)		**Nr**	**Nr**	**Nr**
	Residential	Nr	21 873	21 596	20 938
	Commercial / Business	Nr	859	845	830
	Industrial	Nr	9	9	9
	Government / Institutional	Nr	70	70	70
	etc.		638	648	641
	Sub-Total: Customers billed	Nr	**23 449**	**23 168**	**22 488**
	Proportion of bills to metered connections	%	**100%**	**100%**	**100%**
	Residential	%	100%	100%	100%
	Commercial / Business	%	100%	100%	100%
	Industrial	%	100%	100%	100%
	Government / Institutional	%	100%	100%	100%
	etc.	%	100%	100%	100%
	FREE BASIC SERVICES				
	Nr customers receiving:				
	Free Basic Water	Nr	8 966	9 205	9 223
10.2 (b) (v)	Free Basic Sanitation	Nr	8 650	9 205	8 918
	Proportion of Free Basic Services				
	Water	%	41%	43%	44%
	Sewerage	%	19%	21%	21%

Note:

* All residential consumers in the urban areas of Swartland Municipality's Management Area are metered. The "Water Services Access Profile" however includes the consumers on the farms and the backyard dwellers on formal erven in the urban areas. Backyard dwellers use the service of the main house, which is metered. Consumers on the farms utilise their own water sources, which is not metered by the Municipality, therefore the 46% - 48% compliance in the above table.

** Include number of meters inspect / test / repair / install

C.3.3. Revenue Collection and Cost Recovery

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

Table C.3.3.1: Overview of Water Services Revenue Collection and Cost Recovery

Regulations Ref. #	Description	Year 0	Year - 1	Year - 2
		FY2023/24	FY2022/23	FY2021/22
	INCOME	**R'000**	**R'000**	**R'000**
	Billed			
	Water reticulation / provision	R 116 151	R 110 054	R 85 192
	Sewerage / wastewater	R 71 315	R 55 272	R 66 378
	Sub-Total: Billed	**R 187 466**	**R 165 326**	**R 151 570**
	Collections			
	Water reticulation / provision	R 116 504	R 110 248	R 86 449
	Sewerage / wastewater	R 93 065	R 77 838	R 87 654
	Sub-Total: Collections	**R 209 569**	**R 188 086**	**R 174 103**
	Equitable share income			
	Water reticulation / provision	R 13 585	R 13 890	R 13 890
	Sewerage / wastewater	R 28 820	R 28 425	R 28 425
	Sub-Total: Equitable share income	**R 42 406**	**R 42 314**	**R 42 314**
	EXPENDITURE (O&M)	**R'000**	**R'000**	**R'000**
	Water services	R 92 440	R 86 616	R 86 616
	Sewerage / wastewater services	R 66 082	R 56 390	R 56 390
	Total: Water Services O&M	**R 158 522**	**R 143 005**	**R 143 005**
	COST RECOVERY ANALYSIS / RATIO'S	**%**	**%**	**%**
10.2 (d) (ii)	**Billed as % of Cost**			
	Water	140%	143%	114%
	Sewerage	152%	148%	168%
	Total	**145%**	**145%**	**136%**
10.2 (d) (iii)	**Unrecovered as % of Cost**			
	Water services	14%	16%	15%
	Sewerage / wastewater services	11%	10%	13%
	Total	**13%**	**14%**	**14%**

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

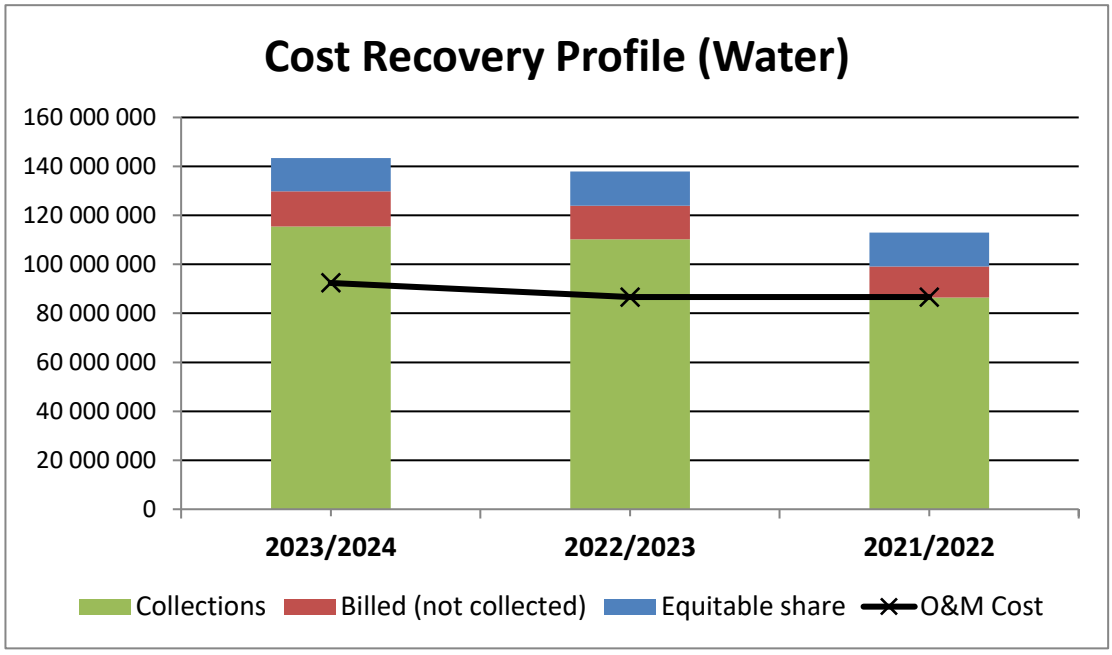


Figure C.3.3.1: Revenue collection and cost recovery profile (Water)

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

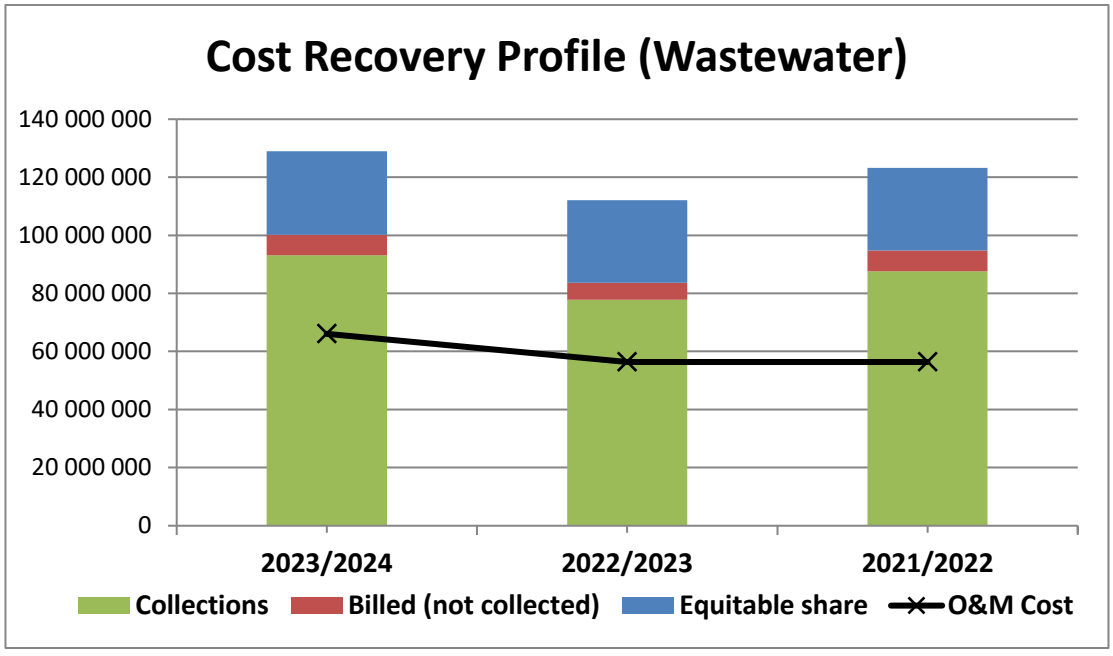


Figure C.3.3.2: Revenue collection and cost recovery profile (Wastewater)

Swartland Municipality's Operational and Maintenance Budget for water services for the last seven financial years are summarised in the table below (Unaudited). A more detailed breakdown of the water operational budgets are also included in Annexure F.

Table C.3.3.2: Operational and Maintenance expenditure and income for water services							
Description	**Actual 23/24**	**Record: Prior**					
		Actual 22/23	**Actual 21/22**	**Actual 20/21**	**Actual 19/20**	**Actual 18/19**	**Actual 17/18**
EXPENDITURE							
Wages and Salaries	R21 301 060	R19 267 099	R18 280 445	R14 087 315	R13 729 548	R11 721 909	R10 478 480
Social Contributions	R3 204 155	R2 924 612	R2 784 942	R2 462 631	R2 292 675	R2 035 437	R1 721 005
Bad Debts	R1 338 002	R924 286	R2 096 897	R0	R6 462 307	R0	R200 950
Depreciation: Property, plant and equipment	R17 035 022	R16 260 078	R15 396 207	R14 639 011	R14 437 698	R0	R13 023 409
Repairs and Maintenance	R2 067 055	R1 860 174	R1 630 875	R1 021 131	R1 369 954	R1 341 566	R1 461 808
Interest Expense	R62 909	R87 121	R197 429	R387 675	R959 499	R1 552 598	R2 265 271
General Expenses: Bulk Purchases	R0	R598 233	R0	R0	R0	R0	R993 632
General Expenses: Departmental	R0	R0	R1 599 615	R1 453 743	R1 522 537	R742 701	R1 472 035
Inter Departmental Recoveries	R577 638	R540 553	R608 080	R0	R431 913	R304 742	R331 928
General Expenses: Other	R46 305 045	R43 705 732	R36 800 382	R10 903 926	R20 095 768	R5 388 964	R15 537 680
Loss on Disposal of Assets	R548 662	R447 838	R389 820	R0	R0	R0	R0
Expenditure Total	**R92 439 548**	**R86 615 726**	**R79 784 692**	**R44 955 432**	**R61 301 899**	**R23 087 917**	**R47 486 198**
INCOME							
Service Charges	-R93 693 045	-R83 195 597	-R78 150 261	-R72 183 322	-R71 489 657	-R60 146 111	-R52 670 179
Grants and Subsidies received: Operating	-R267 361	-R600 000	R0	-R141 591	-R123 760	R0	R0
Unconditional and Other Grants	-R14 953 047	-R14 804 997	-R14 659 002	-R16 770 715	-R14 874 317	-R16 009 462	-R6 338 634
Grants and Subsidies received: Capital	-R5 504 744	-R21 359 212	-R350 000	R0	-R16 367 200	R0	-R12 329 552
Other Revenue	-R15 318 455	-R3 983 806	-R5 900 953	-R4 145 841	-R3 350 599	-R3 471 200	-R3 525 400
Unconditional and Other Grants	R0	R0	-R22 000				
Less Revenue Foregone	R0	R0	-R290	R3 009 706	R0	R0	R0
Income Total	**-R129 736 652**	**-R123 943 612**	**-R99 081 926**	**-R90 231 763**	**-R106 205 533**	**-R79 626 773**	**-R74 863 765**
Nett Surplus / Deficit	**-R37 297 104**	**-R37 327 886**	**-R19 297 234**	**-R45 276 331**	**-R44 903 634**	**-R56 538 856**	**-R27 377 567**

Swartland Municipality's Operational and Maintenance Budget for sanitation services for the last seven financial years are summarised in the table below (Unaudited). A more detail breakdown of the sanitation operational budgets are also included in Annexure F.

Table C.3.3.3: Operational and Maintenance expenditure and income for sanitation services							
Description	**Actual 23/24**	**Record: Prior**					
		Actual 22/23	**Actual 21/22**	**Actual 20/21**	**Actual 19/20**	**Actual 18/19**	**Actual 17/18**
EXPENDITURE							
Wages and Salaries	R11 844 139	R10 946 800	R9 684 345	R8 189 332	R7 934 618	R6 882 200	R6 754 761
Social Contributions	R1 876 670	R1 692 442	R1 527 960	R1 483 313	R1 403 886	R1 308 109	R1 200 356
Bad Debts	R916 222	R475 436	R1 280 373	R0	R0	R0	R0
Depreciation: Property, plant and equipment	R20 366 214	R16 414 351	R16 317 745	R16 092 587	R16 134 374	R0	R16 006 871
Gains and Losses: Impairment Loss: Property, plant and equipment	-R817 913	-	-	-	-	-	-
Repairs and Maintenance	R6 708 497	R5 209 746	R6 019 299	R4 383 979	R3 915 063	R3 097 134	R2 809 945
Interest Expense: External Borrowings	R5 512 544	R8 557 112	R9 128 835	R9 642 519	R10 127 577	R10 518 757	R10 909 157
General Expenses: Bulk Purchases Electricity	R0	R0	R0	R0	R0	R0	R833 276
General Expenses: Departmental	R0	R0	R724 862	R353 591-00	R689 934	R336 553	R667 050
Interdepartmental Recoveries	R8 179 999	R5 715 033	R6 040 607	R5 259 223	R5 337 182	R4 950 888	R4 831 852
General Expenses: Other	R9 636 321	R7 331 479	R5 654 712	R5 212 322	R4 274 688	R4 594 890	R4 677 943
Loss on Disposal of Assets	R1 859 709	R47 164	R173 418	R0	R0	R0	R0
Nett Expenditure	**R66 082 402**	**R56 389 563**	**R56 552 156**	**R50 616 866**	**R49 817 322**	**R31 688 531**	**R48 691 211**
INCOME							
Service Charges	-R51 544 302	-R45 782 452	-R42 148 282	-R35 856 914	-R45 674 849	-R35 200 087	-R32 999 794
Grants and Subsidies Received Operational	-R3 133 832	-R55 200	-R41 400	-R38 511	-R53 040	R0	-R319 596
Unconditional and Other grants	-R30 626 075	-R28 622 500	-R26 750 000	-R25 641 135	-R23 454 400	-R22 769 691	-R20 699 719
Grants and Subsidies Received Capital	R0	-R2 438 483	-R18 877 474	-R20 156 251	-R4 933 800	R0	-R11 669 293
Transfer Revenue	R0	R0	R0	R0	R0	R0	R0
Other Revenue	-R14 830 637	-R6 798 368	-R6 985 250	-R6 132 354	-R5 806 902	-R4 978 781	-R6 449 135
Less Revenue Foregone	R0	R0	R0	R0	-R2 344	-R218	R0
Reversal of Impairment Loss	R0	R0	R0	R0	R8 851 286	R0	-R51 332
Income Total	**-R100 134 846**	**-R83 697 003**	**-R94 802 406**	**-R87 825 165**	**-R71 074 049**	**-R62 948 777**	**-R72 188 869**
Nett Surplus / Deficit	**-R34 052 444**	**-R27 307 440**	**-R38 250 250**	**-R37 208 299**	**-R21 256 727**	**-R31 260 246**	**-R23 497 658**

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

Table C.3.3.4: Analysis of Consumer Debtors age in days as on the 30th of June						
Service	**Total**	**Current 0-30 Days**	**31 – 60 Days**	**61 – 90 Days**	**91 – 120 Days**	**120+ Days**
2023/2024						
Electricity	R62 918 023	R57 729 812	R3 765 751	R112 015	R91 367	R1 219 078
Water	R30 948 149	R17 252 494	R2 532 179	R1 127 809	R765 484	R9 270 183
Sewerage	R10 801 360	R4 038 994	R1 332 742	R368 556	R313 375	R4 747 693
Refuse Removal	R8 762 272	R3 149 313	R978 348	R297 036	R256 034	R4 081 541
Housing Rentals	R103 216	R35 099	R20 688	R4 304	R1 962	R41 163
Other Debtors	R17 465 682	R14 735 333	R328 312	R89 802	R74 716	R2 237 519
Total	**R130 998 702**	**R96 941 045**	**R8 958 020**	**R1 999 522**	**R1 502 938**	**R21 597 177**
2022/2023						
Electricity	R51 522 153	R46 844 364	R2 451 404	R103 375	R65 697	R2 057 313
Water	R27 757 495	R15 466 664	R1 972 776	R673 661	R583 584	R9 060 810
Sewerage	R10 831 638	R3 897 653	R1 207 966	R364 306	R307 444	R5 054 269
Refuse Removal	R8 914 469	R2 960 281	R877 525	R285 667	R247 018	R4 543 978
Housing Rentals	R87 436	R34 357	R18 672	R2 061	R1 815	R30 531
Other Debtors	R4 447 366	R2 368 472	R215 491	R106 524	R119 904	R1 636 975
Total	**R103 560 557**	**R71 571 791**	**R6 743 834**	**R1 535 594**	**R1 325 462**	**R22 383 876**
2021/2022						
Electricity	R49 720 423	R43 585 652	R4 041 464	R171 040	R61 179	R1 861 089
Water	R24 583 765	R13 314 376	R2 887 002	R682 515	R690 304	R7 009 568
Sewerage	R9 771 010	R3 894 606	R1 175 653	R335 443	R269 701	R4 095 606
Refuse Removal	R7 695 324	R2 667 891	R828 970	R249 298	R204 400	R 3 744 764
Housing Rentals	R79 820	R31 915	R20 212	R2 458	R2 038	R23 196
Other Debtors	R11 693 206	R9 879 525	R249 616	R94 671	R82 876	R1 386 518
Total	**R103 543 548**	**R73 373 966**	**R9 202 919**	**R1 535 425**	**R1 310 498**	**R18 120 740**
2020/2021						
Electricity	R45 169 248	R39 450 816	R3 002 076	R222 638	R251 079	R2 242 639
Water	R20 483 738	R10 720 585	R2 592 453	R710 719	R618 094	R5 841 887
Sewerage	R7 902 773	R3 309 940	R1 050 544	R285 657	R219 870	R3 036 762
Refuse Removal	R6 699 622	R2 495 606	R783 030	R229 113	R182 834	R3 009 039
Housing Rentals	R68 920	R30 438	R13 526	R2 916	R2 902	R19 138
Other Debtors	R13 053 274	R11 661 601	R191 860	R104 255	R59 665	R1 035 893
Total	**R93 377 575**	**R67 668 986**	**R7 633 489**	**R1 555 298**	**R1 334 444**	**R15 185 358**
2019/2020						
Electricity	R43 459 993	R35 519 028	R2 240 095	R548 277	R312 445	R4 840 148
Water	R27 633 016	R11 612 889	R1 196 526	R703 545	R898 116	R13 221 940
Sewerage	R22 306 177	R3 209 681	R1 054 899	R453 445	R362 495	R17 225 657
Refuse Removal	R15 161 724	R2 443 408	R781 252	R373 629	R309 326	R11 254 109
Housing Rentals	R71 421	R31 143	R19 691	R8 811	R6 176	R5 600
Other Debtors	R18 934 333	R17 380 805	R147 618	R91 245	R68 479	R1 246 186
Total	**R127 566 664**	**R70 196 954**	**R5 440 081**	**R2 178 952**	**R1 957 037**	**R47 793 640**

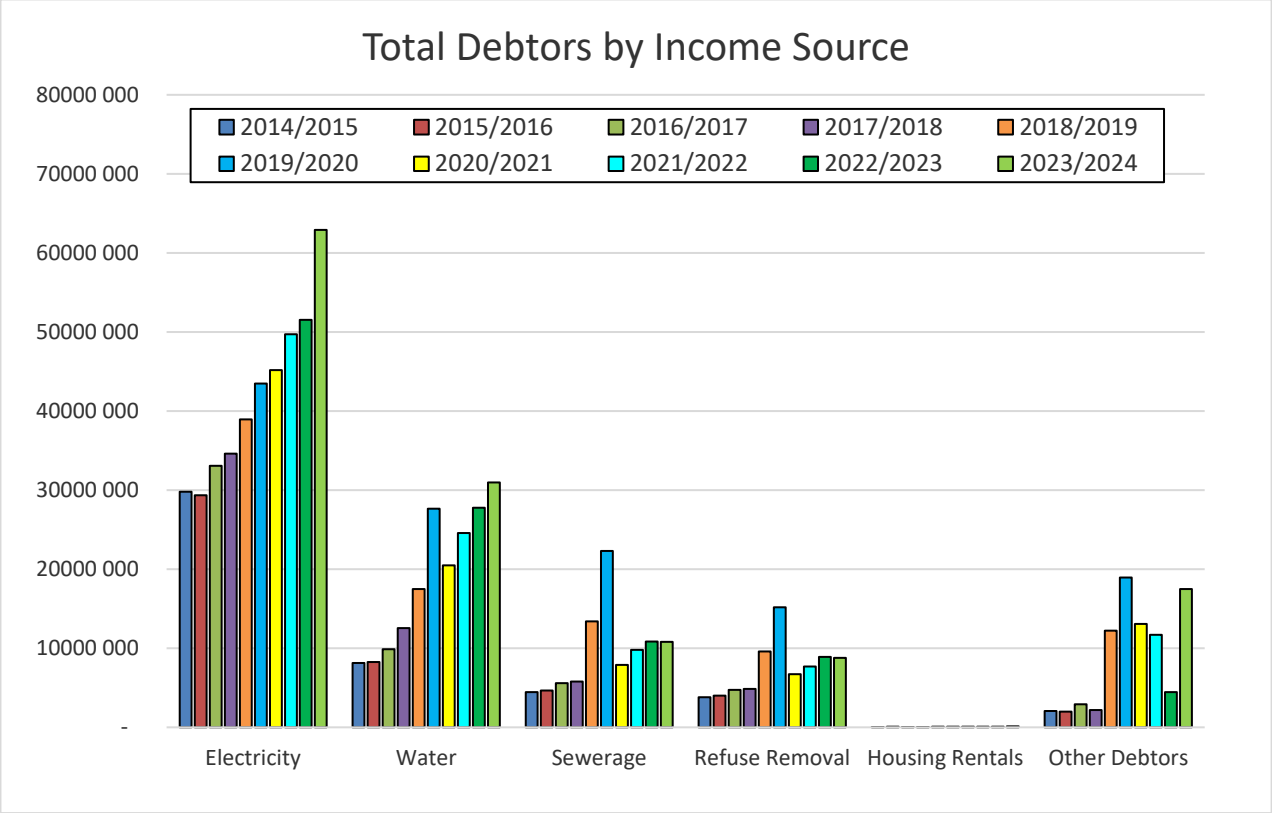


Figure C.3.3.3: Consumer Debtors by Income Source

C.4. Water Quality

C.4.1. Sampling Programme

Operational Sampling programmes are implemented by the West Coast District Municipality at their two bulk WTWs. Compliance Water Quality Monitoring Programmes are also implemented by the West Coast District Municipality and the Swartland Municipality throughout the internal water distribution systems. Operational and Compliance Effluent Monitoring Programmes are also implemented by Swartland Municipality at their WWTWs.

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

Table C.4.1.1: Sampling Programme for Potable Water Quality (Bulk WTWs)

Treated Water Schemes: Withoogte and Swartland WTW Final

Registered Sites per Scheme		Active (yes/no)			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2023/24	FY2022/23	FY2021/22		FY2023/24	FY2022/23	FY2021/22
33687	Withoogte Final (WCDM)	Yes	Yes	Yes	**Microbiological (Health)**			
32210	Swartland Final (WCDM)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	7	7	7
					Aesthetic			
					Conductivity at 25°C (mS/m)	7	7	7
					Colour (mg/l)	7	7	7
					Total Dissolved Solids (mg/l)	7	7	7
					Chloride as Cl⁻ (mg/l)	7	7	7
					Iron as Fe (ug/l)	30	60	30
					Manganese as Mn (ug/l)	30	60	30
					Operational			
					pH at 25°C	7	7	7
					Turbidity NTU	7	7	7
					Total Coliforms count per 100ml	7	7	7
					Heterotrophic Plate Count per 1 ml	15	15	15
					Aluminium as Al (ug/l)	30	60	30
					Disinfectant Residual			
					Free Chlorine	7	7	7
					Not in STD / Limit Set			
					Alkalinity (as CaCO3)	7	-	-

Table C.4.1.1: Sampling Programme for Potable Water Quality (Internal Water Reticulation Networks)

Treated Water Schemes: Distribution Networks

Registered Sites per Scheme		Active (yes/no)			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2023/24	FY2022/23	FY2021/22		FY2023/24	FY2022/23	FY2021/22
33818	Yzerfontein (WCDM)	Yes	Yes	Yes	**Microbiological (Health)**			
25274	Darling (WCDM)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	15	15	15
26627	Koringberg (WCDM)	Yes	Yes	Yes				
27846	Malmesbury (WCDM)	Yes	Yes	Yes	**Aesthetic**			
	Kasteelberg Reservoir (WCDM)	Yes	Yes	Yes	Conductivity at 25°C (mS/m)	15	15	15
	Abbotsdale School	Yes	Yes	Yes				
	Kalbaskraal Shopping Center	Yes	Yes	Yes	**Operational**			
	Riverlands Primary School	Yes	Yes	Yes	pH at 25°C	15	15	15
	Chatsworth Clinic	Yes	Yes	Yes	Turbidity	15	15	15
	Moorreesburg Sewage	Yes	Yes	Yes	Total Coliforms count per 100ml	15	15	15
	Moorreesburg Municipal Office	Yes	Yes	Yes	Heterotrophic Plate Count per 1 ml	15	15	15
	Koringberg Municipal Office	Yes	Yes	Yes				
	Riebeek Wes Municipal Office	Yes	Yes	Yes	**Disinfectant Residual**			
	Riebeek Kasteel Municipal Office	Yes	Yes	Yes	Free Chlorine	15	15	15
	Yzerfontein Municipal Office	Yes	Yes	Yes				
	Darling Sewage Works	Yes	Yes	Yes				
	Darling Municipal Office	Yes	Yes	Yes				
	Malmesbury City Hall	Yes	Yes	Yes				
	Malmesbury Mount Royal Office	Yes	Yes	Yes				
	Malmesbury Municipal Office Abbattoir Str.	Yes	Yes	Yes				
	Malmesbury Traffic Office Wesbank	Yes	Yes	Yes				
	Malmesbury Swartland High School	Yes	Yes	Yes				

The current samples taken by the Swartland Municipality, over and above the existing Operational Sampling programme of the West Coast District Municipality, and the proposed additional samples to be taken are summarised in the table below.

Table C.4.1.2: Current parameters sampled by the Swartland Municipality: Routine monitoring of Process Indicators

System	Sampling Point	Current Parameters Sampled by Swartland Municipality (Number of samples and frequency)	Additional Proposed Parameters to be sampled by Swartland Municipality (Number of samples and frequency)
Abbotsdale, Kalbaskraal, Riverlands, Chatsworth	Intake Paardenberg	-	pH, Conductivity and Turbidity Daily
	Final Water Paardenberg	-	pH Daily
		-	Conductivity Morning and Afternoon
		-	Turbidity Morning and Afternoon
		-	E.Coli and Heterotrophic Plate Count Weekly
	Distribution Systems	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (4 Sample points fortnightly).	*Adequately covered by the sampling done by the Swartland LM.*
Moorreesburg	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (2 Sample points fortnightly	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality at the Withoogte WTW.*
Koringberg	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (1 Sample point fortnightly)	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality*
Malmesbury	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (5 Sample points fortnightly)	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality and the sampling done at the Swartland WTW (West Coast District Municipality)*
Riebeek Wes	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (1 Sample point fortnightly)	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality at the Swartland WTW.*
Riebeek Kasteel	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (1 Sample point fortnightly)	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality at the Swartland WTW.*
Yzerfontein	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (1 Sample point fortnightly)	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality*
Darling	Distribution System	pH, Conductivity, Turbidity, Heterotrophic Plate Count, E.Coli, Total Coliform Count and Free Chlorine (2 Sample points fortnightly	*Adequately covered by the sampling done by the Swartland LM and the West Coast District Municipality*

The table below indicates the compliance of the E.Coli monitoring frequency in the water distributions systems of Swartland Municipality, in terms of the minimum requirements of SANS:241-2: 2015 (Table 2). The period assessed was for samples taken from July 2023 to June 2024.

Table C.4.1.3: Swartland Municipality's Compliance of the Monthly E.Coli Monitoring Frequency for the Water Distribution Systems and at the WTWs in terms of the Minimum Requirements of SANS 241-2:2015 (Table 2).

Distribution System	Population served	Required number of monthly samples (SANS 241-2:2015: Table 2)	Number of monthly E.Coli samples taken on the network by Swartland Mun. and the West Coast DM	Number of monthly E.Coli samples taken at the Withoogte and Swartland WTW by the West Coast DM	Total monthly E.Coli samples taken for the potable water
Koringberg	1 944	2.0	4.3	7.8	12.1
Riebeek Wes and Ongegund	9 266	2.0	2.3	5.3	7.6
Riebeek Kasteel	10 723	2.1	4.3	5.3	9.6
Yzerfontein	1 825	2.0	4.4	5.3	9.7
Darling	13 215	2.6	6.5	5.3	11.8
Moorreesburg	20 616	4.1	3.9	7.8	11.7
Malmesbury	60 877	12.2	13.3	5.3	18.6
Abbotsdale	5 364	2.0	2.2	5.3	7.5
Kalbaskraal	4 330	2.0	2.3	5.3	7.6

Table C.4.1.3: Swartland Municipality's Compliance of the Monthly E.Coli Monitoring Frequency for the Water Distribution Systems and at the WTWs in terms of the Minimum Requirements of SANS 241-2:2015 (Table 2).					
Distribution System	**Population served**	**Required number of monthly samples (SANS 241-2:2015: Table 2)**	**Number of monthly E.Coli samples taken on the network by Swartland Mun. and the West Coast DM**	**Number of monthly E.Coli samples taken at the Withoogte and Swartland WTW by the West Coast DM**	**Total monthly E.Coli samples taken for the potable water**
Riverlands and Chatsworth	8 153	2.0	4.6	5.3	9.9

The above sampling done by the Swartland Municipality plus the daily sampling done at the Withoogte WTW and the Swartland WTW by the West Coast District Municipality, as well as their monthly E.Coli sampling throughout the various towns on the systems ensure that the number of monthly E.Coli samples taken, as required by SANS 241, is adequate.

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

Table C.4.1.4: Sampling Programme for Wastewater Effluent Quality								
Registered Sites		**Active**			**Determinands per Category**	**Frequency (days)**		
		Year 0	**Year-1**	**Year-2**		**Year 0**	**Year-1**	**Year-2**
#	**Name**	**FY2023/24**	**FY2022/23**	**FY2021/22**		**FY2023/24**	**FY2022/23**	**FY2021/22**
1	Malmesbury	Yes	Yes	Yes	**Microbiological**			
2	Darling	Yes	Yes	Yes	Faecal Coliforms (Count per 100mℓ)	30	30	30
3	Moorreesburg	Yes	Yes	Yes				
4	Riebeek Valley	Yes	Yes	Yes	**Chemical**			
5	Chatsworth	Yes	Yes	Yes	Ammonia Nitrogen (mg/ℓ as N)	30	30	30
6	Kalbaskraal	Yes	Yes	Yes	Nitrate Nitrogen (mg/ℓ as N)	30	30	30
7	Koringberg	Yes	Yes	Yes	Nitrite Nitrogen (mg/ℓ as N)	30	30	30
					Ortho Phosphate (mg/ℓ as P)	30	30	30
					COD Filtered (mg/ℓ)	30	30	30
					Physical			
					Free Chlorine (Activated Sludge Plants)	30	30	30
					Total Chlorine (Activated Sludge Plants)	30	30	30
					Conductivity (mS/m at 25°C)	30	30	30
					pH	30	30	30
					TSS (mg/ℓ)	30	30	30

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

Table C.4.1.5: Compliance to the Sampling Programme (s)																							
Measurable / Enabling Factor	**Unit**	**Year 0**						**Year 1**						**Year 1**									
		FY2023/24						**FY2022/23**						**FY2021/22**									
		MAH	**CAH**	**CCH**	**CNA**	**O**	**D**	**MAH**	**CAH**	**CCH**	**CNA**	**O**	**D**	**MAH**	**CAH**	**CCH**	**CNA**	**O**	**D**				
Potable Water Quality																							
Supply system submissions	Nr registered	Information not available on IRIS						Information not available on IRIS						Information not available on IRIS									
	Nr submitted																						
	Annual %																						
Monitoring compliance	Average %																						
Certified Data	Average %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
In-Time Submission	Annual %	96%	100%	98%	96%	96%	96%	99%	100%	100%	99%	99%	99%	98%	100%	99%	98%	98%	97%				
Wastewater Quality																							
		M	**C**	**P**	**O**			**M**	**C**	**P**	**O**			**M**	**C**	**P**	**O**						
Monitoring compliance	Average %	68%	59%	71%	-			62%	55%	67%	-			54%	47%	56%	-						
Certified Data	Average %	100%	100%	100%	-			100%	100%	100%	-			100%	100%	100%	-						
In-Time Submission	Average %	89%	90%	89%	-			90%	90%	90%	-			96%	97%	97%	-						

Legend Water **MAH**: Microbiological Acute Health; **CAH**: Chemical Acute Health; **CCH**: Chemical Chronic Health; **CNA**: Chemical Non Health Aesthetic; **O**: Operational; **D**: Disinfectant

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

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

Table C.4.1.6: Water Quality Monitoring Overview from WSDP Guide Framework Perspective					
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2023/24	FY2022/23	FY2021/22
6.3	**Water Supply and Quality (West Coast Bulk WTWs)**				
6.3.2	Process Control in place	yes/total WTW in %	100%	100%	100%
6.3.3	Monitoring Programme in place	yes/total schemes in %	100%	100%	100%
6.3.4	Sample Analysis Credibility	Average %	100%	100%	100%
9.2	**Monitoring**				
9.2.1	% of water abstracted monitored: Surface water	Q monitored / Q abstracted in %	100%	100%	100%
9.2.2	% of water abstracted monitored: Ground water	Q monitored / Q abstracted in %	100%	100%	100%
9.2.3	% of water abstracted monitored: External Sources (Bulk purchase)	Q monitored own / Q purchased in %	100%	100%	100%
9.2.6	Water quality for formal schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	Monthly	Monthly	Monthly
9.2.7	Water quality for rudimentary schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	N/A	N/A	N/A
9.2.9	Is the number sufficient in accordance to the SANS241 requirements?	yes/no	Yes	Yes	No
9.3	**Water Quality**				
	Is there a water safety plan in place?	yes/no	Yes	Yes	Yes
9.3.1	Reporting on quality of water taken from source: urban & rural	yes/total schemes in %	Yes	Yes	Yes
9.3.5	Quality of water taken from source: urban - % monitored by WSA self?	monitored by WSA / total schemes in %	100%	100%	100%
9.3.6	Quality of water taken from source: rural - % monitored by WSA self?	monitored by WSA / total schemes in %	N/A	N/A	N/A
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes

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

Table C.4.1.7 : Wastewater Quality Monitoring Overview from WSDP Guide Framework Perspective					
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2023/24	FY2022/23	FY2021/22
5.3.1	**Monitoring and Sample Failure**				
5.3.1.1	Compliance Monitoring: % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	66%	61%	52%
5.3.1.2	Operational: % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	Not captured on IRIS and recorded by Process Controllers at each of the WWTW		
6.4	**Wastewater Supply and Quality**				
6.4.2	Process Control in place	yes/total WWTW in %	Yes	Yes	Yes
6.4.3	Monitoring Programme in place	yes/total WWTW in %	Yes	Yes	Yes
6.4.4	Sample Analysis Credibility	Average %	100%	100%	100%
9.2	**Monitoring**				
9.2.10	Is the number sufficient in accordance to licences?	yes/no	Yes	Yes	Yes
9.3	**Water Quality**				
	Is there a wastewater risk abatement plan in place?	yes/no	Yes	Yes	Yes
9.3.2	Reporting on quality of water returned to the resource: urban	yes/total WWTW in %	100%	100%	100%
9.3.3	Reporting on quality of water returned to the resource: rural	yes/total WWTW in %	N/A	N/A	N/A
9.3.7	Quality of water returned to resource: urban - % monitored by WSA self?	monitored by WSA / urban WWTW in %	100%	100%	100%
9.3.8	Quality of water returned to resource: rural - % monitored by WSA self?	monitored by WSA / rural WWTW in %	N/A	N/A	N/A
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes

DWS's Blue Drop Process

The DWS completed the Blue Drop process for the WSAs in 2023. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. The blue drop performance of Swartland Municipality was summarised as follows in the DWS's 2023 Blue Drop Report.

Table 4.1.8: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)

Municipal Blue Drop Score	2011 - 92.89%, 2012 - 95.24%, 2014 - 74.26% and 2023 - 93.76%

Introductions: The Swartland Local Municipality (SLM) supplies approximately 72 375 people with potable water from its Swartland system and 8 974 people from its Withoogte system, using a water service provider namely West Coast District Municipality (WCDM):

- The Swartland system receives treated water from the Swartland WTP, delivered at a SIV of 12.81 Ml/d of which 100% is distributed by the SLM.
- The Withoogte system receives treated water from the Withoogte WTP, delivered at a SIV of 2.05 Ml/d kl/d of which 100% is distributed by the SLM.

Regulatory Impression: The Swartland Local Municipality (SLM) was well prepared for the Blue Drop assessment and was represented by the Director of the Water and Sanitation Services and accompanied by a team of three technical managers as well as a representative from a private engineering company assisting the SLM with its Blue Drop related requirements. The SLM had a constant Blue drop score history in 2011 and 2012 of between 93% and 95% before ranging down to 74% in 2014. The WSI has an agreement in place with the WCDM which operates the two water treatment plants and delivery system on behalf of the SLM. Both the WSP and the WSI has water safety plans in place which are reviewed on an ongoing basis. Proof of the implementation of these plans were presented of which the installation of chlorine dioxide as additional treatment to counter deteriorating raw water qualities is a major step in ensuring safe water. Both the WSI with its WSP have sufficient technical capabilities in place as well as an operational supply chain system to ensure maintenance is done in time. Scientific services from the WSI are outsourced to a service provider. Incidents are adequately reported and actioned on to ensure good service delivery. The total capital budget for the municipality is R5.3 million, of which R8.2 million has been used mainly on the piping network.

Technical Findings:

Swartland WSS:

- The WTP site is adequately staffed with trained process controllers and with competent supervision.
- The design capacity was confirmed as 29.1 Ml/d and operating at 52% of its capacity.
- Implementation of the water safety plan and the process audit findings are taking place, with specifically the use of chlorine dioxide at the plant mentioned as an initiative to counter deteriorating raw water qualities.
- Vandalism, aging pipework, and load shedding remains the key high-risk areas in the distribution system and capital work done at this WSS was focused on upgrading and repairing key pump stations and network piping.
- The microbiological compliance was excellent while the chemical acute compliance was also excellent, resulting in a low-risk rating of 26.6% for this system.

Withoogte WSS:

- The WTP site has sufficient process controller attendance, as well as a competent supervisory section.
- Apart from the same capital work done as the Swartland system to counter vandalism and aging pipework, the WCDM's capital expenses was focused on laboratory equipment to improve monitoring, as well as movable items such as machinery and valves to attend to bulk pipeline repairs.
- The design capacity of the WTP was confirmed as 72 Ml/d and operating at 50% of its capacity.
- Both the microbiological compliance and chemical acute compliance of its final water were excellent, resulting in a low-risk rating of 23% for this system.

Technical Site Assessment:

Both plants from the WCDM were inspected to verify the Blue Drop audit findings and the Swartland WTP received a technical site score of 92%, while the Withoogte WTP received a technical site score of 95%. Both plants were found to be neat, well operated, and regularly monitored for performance.

Both plants have been testing the addition of chlorine dioxide to its treatment train, with the view of taste and odour removal, as well as ensuring a residual in the pipeline. This was also installed to counter the risk of low supplies of chlorine gas.

At Swartland WTP, the installation of lights at the sludge dams, and additional handrails at the filters to ensure safe working conditions, as well as the installation of one more air blower can be considered. The Withoogte plant should install emergency washes at the flocculant dosing station, while the filter backwash pumps should be regularly maintained to ensure sufficient standby.

Performance Area		Swartland	Withoogte
Bulk/WSP		West Coast DM Bulk	West Coast DM Bulk
Capacity Management	15%	82.00%	82.00%
DWQ Risk Management	20%	96.00%	96.00%
Financial Management	10%	87.95%	87.95%
Technical Management	20%	95.50%	95.50%
DWQ Compliance	35%	89.80%	98.80%
Bonus	10%	100.00%	100.00%

Table 4.1.8: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)			
Penalties	10%	0.00%	0.00%
Disqualifiers		None	None
Blue Drop Score (2023)	**%**	**93.33%**	**96.48%**
Blue Drop Score (2014)	%	75.00%	70.50%
Blue Drop Score (2012)	%	95.20%	95.20%
Blue Drop Score (2011)	%	92.90%	92.90%
System Design Capacity	kl/d	29 100	72 000
System Available Capacity	kl/d	29 100	72 000
System Input Value	kl/d	12 810	2 050
Capacity utilization	%	51.55%	50.00%
Average Daily Consumption	l/p/d	177	228
Resource Abstracted From		Channel conveying water from the Voëlvlei Dam	Misverstand Weir on the Berg River
Microbiological Compliance	%	99.41%	99.35%
Chemical Health Compliance	%	99.90%	99.34%
Risk Defined Compliance	%	93.88%	96.86%
VROOM	Rand	R3 201 000	R2 160 000
BDRR 2023	%	26.55%	18.89%
BDRR 2022	%	30.00%	23.00%

The average residential daily consumption (l/p/d) for the last four financial years are summarised in the table below.

Table C.4.1.9: Average residential daily consumption (l/p/d) for the last four financial years.						
Distribution System	**2023/2024**			**2022/2023**		
	Estimated Permanent Population	**Aver. Daily Billed Metered Residential Consumption (kl)**	**Aver. Daily residential consumption (l/p/d)**	**Estimated Permanent Population**	**Aver. Daily Billed Metered Residential Consumption (kl)**	**Aver. Daily residential consumption (l/p/d)**
Koringberg	1 944	116.474	**59.915**	1 869	107.225	**57.370**
Riebeek Wes and Ongegund	9 266	396.071	**42.745**	8 742	377.515	**43.184**
Riebeek Kasteel	10 723	633.640	**59.092**	10 021	574.290	**57.309**
Yzerfontein *	1 825	472.706	**259.017**	1 755	587.408	**334.705**
Darling	13 215	936.471	**70.864**	12 956	882.468	**68.113**
Moorreesburg	20 616	1 143.948	**55.488**	19 824	1 113.184	**56.153**
Malmesbury	78 724	4 924.955	**62.560**	75 279	4 717.603	**62.668**
Total	**136 313**	**8 624.265**	**63.268**	**130 446**	**8 359.693**	**64.085**
Distribution System	**2021/2022**			**2020/2021**		
	Estimated Permanent Population	**Aver. Daily Billed Metered Residential Consumption (kl)**	**Aver. Daily residential consumption (l/p/d)**	**Estimated Permanent Population**	**Aver. Daily Billed Metered Residential Consumption (kl)**	**Aver. Daily residential consumption (l/p/d)**
Koringberg	1 797	102.531	**57.057**	1 728	111.175	**64.337**
Riebeek Wes and Ongegund	8 247	372.542	**45.173**	7 780	365.030	**46.919**
Riebeek Kasteel	9 366	513.926	**54.871**	8 753	470.800	**53.787**
Yzerfontein *	1 687	583.136	**345.664**	1 623	536.535	**330.582**
Darling	12 702	897.638	**70.669**	12 453	889.641	**71.440**
Moorreesburg	19 061	1 139.627	**59.788**	18 328	1 141.334	**62.273**
Malmesbury	71 987	4 524.843	**62.856**	68 841	4 213.471	**61.206**
Total	**124 847**	**7 790.455**	**62.400**	**119 506**	**7 789.477**	**65.181**

Note: * The average daily billed metered residential consumption for Yzerfontein were calculated from March-November (Excluding January, February and December). The high l/c/d is due to the small number of permanent residents in Yzerfontein and the large number of holiday homes.

The residential consumption for the last four financial years for all the systems were very low, which indicate very efficient water usage by the residential consumers. The drought situation in the Western Cape and the water restrictions and other WC/WDM measures implemented by the Swartland Municipality contributed to the very low water usage per person.

DWS's Green Drop Process

The DWS completed the new Green Drop assessment for the WSAs in 2021 and the results were received early in 2022. Green drop status is awarded to those WSAs that comply with 90% criteria on key selected indicators on wastewater quality management. The green drop performance of Swartland Municipality is summarised as follows in the DWS's 2022 Green Drop Report.

Table 4.1.10: Green Drop Performance of the Swartland Municipality (DWS's 2022 Green Drop Report)	
Average Green Drop Score	**2009 – 75.0%, 2011 – 73.0%, 2013 – 72.0%, 2021 – 89.0%**

Regulator's Comment: Swartland LM delivered a sterling performance and improved from its 2013 baseline of 72% to a 2021 GD score of 89%. The team was well prepared for the assessment and displayed enthusiasm in their approach towards the audit. The WSA was represented by a technical team and supported by their consulting engineers. Notably the aspect of financial management and an ability to reflect on cost of treatment is commendable, this aspect account to a lion share of the GD Criteria for the year under review. The WSA was able to get a full score on this aspect even though it is a new requirement. The WSA is also praised for presenting Water Services Audit, which raises the level of accountability and best practice in South Africa.

There are areas that need attention such as the effluent compliance, which also account for the highest percentage of the overall audit score. Improved performance in this aspect will be able to sustain the WSAs performance and take it into an upward trajectory. Environmental Management is one particular area where Swartland can improve substantially, in particular dedicated monitoring of sludge streams, as well as desludging schedules at the oxidation pond facilities. Sampling of control boreholes needs to be implemented in order to have a fit for purpose impact monitoring programme. With respect to Capacity Management, the adoption of automation and control is commended for advanced systems, however, need to be discussed with DWS to ensure that all the risk associated with such interventions are aligned with regulatory processes.

Swartland has three (3) potential Green Drop Certified systems, which regrettably cannot be confirmed as the microbiological and/or chemical compliance was below the 90% excellent mark – thereby reducing the audit score to 89% default. The Regulator trust that the municipality will achieve >90% for all the effluent quality criteria in future and earn its Green Drop status in 2023. Well done to the Swartland LM water and wastewater team on the excellent performance and management of wastewater services.

Green Drop findings:

1. Process control staff partially compliant, noting the aid of automation and telemetry.
2. External Service providers competency could not be verified.
3. W_2RAP is in place and implemented and further backed by compliance monitoring presented.
4. Financial information was largely available, including budgets and expenditure, evidence of contracts for external services.
5. Lack of calibrated flow meters for the inlet and outlet meters.
6. Good sewage inspection and process audit reports.
7. Updated bylaws and enforcement thereof with regular inspections of restaurants and commercial properties. WSA encouraged to keep enforcement records for future references.
8. 12 months of data uploaded on IRIS and supported by availability of general authorisation and Water Use Licenses.
9. Generic stormwater management plan and water demand management plan – but lacking wastewater balances.
10. No penalties and no directives were issued for any system.
11. Three of the seven plants are in high-risk positions.
12. Budget had been secured for capital projects for replacement, upgrades, and addition of new unit process at some of the WWTWs and associated infrastructure:
    - R5 000 000: Multiyear project at Chatsworth WWTWs
    - R22 740 000: Darling WWTW for a construction of a sludge handling facility.
    - R41 802 000: Construction of a new works at Moorreesburg WWTW.

The Riebeek Valley WWTW was inspected to verify the Green Drop audit findings (**Technical Site Assessment: Riebeek Valley WWTW 97%)**:

- The network and pump station was in good condition, routine maintenance was in place and response to sewage blockages and records were kept.
- Plant was in very good condition: equipped with an office on site, there was display of certificates, plans, and other certificates.

Table 4.1.10: Green Drop Performance of the Swartland Municipality (DWS's 2022 Green Drop Report)

- Operational monitoring, daily logbook or maintenance records were kept on site.
- The site was tidy and well kept.
- Flow meters were in place and correctly converted, but not calibrated.
- All process units were in working order with the exception of the scum withdrawal at the SST.
- The screens and the grit removal were automated and maintenance records were kept for verification.
- The WWTW employs high end technology, operated using SCADA controllers and HMI system – this functionality is maintained as result of highly competent Process Controllers.
- The belt presses were well maintained, flocculants were stored in a suitable area with all safety signs and MSDS.
- There was a proper facility for chemical disinfection - with safety signs, ventilation, and the required monitoring and management systems.

GREEN DROP REPORT CARD								
Key Performance Area	**Weight**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Moorreesburg**	**Riebeek Valley**	**Malmesbury**	**Koringberg**
A: Capacity Management	15%	77.5%	94.0%	77.5%	94.0%	98.0%	94.0%	80.0%
B: Environmental Management	15%	88.8%	89.0%	87.5%	81.0%	85.0%	85.0%	87.5%
C: Financial Management	20%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	87.5%
D: Technical Management	20%	82.4%	90.0%	88.2%	90.0%	90.0%	90.0%	88.2%
E: Effluent & Sludge Compliance	30%	37.5%	81.0%	37.5%	41.0%	81.0%	81.0%	26.3%
F: Bonus		58.0%	65.5%	28.0%	65.5%	35.5%	35.5%	28.0%
G. Penalties		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-50.0%
H: Disqualifiers		None	None	None	None	None	None	None
2021 Green Drop Score		**85%**	**95% - > 89%**	**83%**	**87%**	**92% - >89% %**	**92% - >89%**	**70%**
2013 Green Drop Score		**60%**	**71%**	**68%**	**69%**	**62%**	**76%**	**69%**
2011 Green Drop Score		**62%**	**73%**	**69%**	**71%**	**64%**	**74%**	**64%**
2009 Green Drop Score		**0%**	**75%**	**0%**	**73%**	**0%**	**77%**	**0%**
System Design Capacity (Ml/d)		0.270	1.500	0.157	1.500	1.900	10.000	0.030
Design Capacity Utilisation (%)		91%	83%	48%	73%	44%	53%	273%
Resource Discharged into		Swart River	Groen River	Non-discharge	Sand River	Krom River and irrigation	Diep River	Brak River
Microbiological Compliance (%)		17%	71%	NMR	Insufficient Data	81%	100%	Insufficient Data
Chemical Compliance (%)		0%	96%	NMR	Insufficient Data	95%	87%	Insufficient Data
Physical Compliance (%)		61%	98%	NMR	Insufficient Data	98%	100%	Insufficient Data
Wastewater Risk Rating (CRR% of CRRmax)								
CRR (2011)		**72.0%**	**72.0%**	**72.0%**	**61.0%**	**67.0%**	**83.0%**	**56.0%**
CRR (2013)		**59.0%**	**53.0%**	**35.0%**	**53.0%**	**59.0%**	**71.0%**	**53.0%**
CRR (2021)		**70.6%**	**29.4%**	**23.5%**	**76.5%**	**23.5%**	**36.4%**	**88.2%**

Swartland Municipality also received their 2023 Green Drop Risk Ratings, as calculated from the 2023 assessment done by the DWS.

Table C.4.1.11: Green Drop Risk Rating of Swartland Municipality (DWS's 2023 Green Drop Progress Report)	
Municipal CRR% 2023 (%CRR/CRRmax)	**51.2%**

Introduction:

Swartland Local Municipality (SLM) owns and operates seven (7) WWTWs which range in design capacity from 30 kl/day to 10 000 kl/day.

Regulator's Comment: The Swartland Local Municipality (SLM) has provided good information for the GD PAT in terms of the design capacities of the WWTWs and all the WWTWs are registered and approved. However, the operational flow at each works was not able to be verified as no flow data was provided to support the reported operational flows at the works, which represents a critical risk as these impacts on the CRR scores significantly. The WSA is encouraged to confirm the operational capacity of all works with accurate flow records as the lack of flow data increases the CRR risk rating. In addition, the WSA must ensure that inflow and outflow meters are installed if necessary or repaired if required and that daily flow readings are recorded. Annual flow meter calibration should also be performed to ensure that the operational capacity of the works does not exceed its design capacity.

The compliance of the final effluent is good at some sites (Darling, Malmesbury) and poor at the other sites including Chatsworth Kalbaskraal, Koringberg, Moorreesburg and Riebeek Valley.

Sufficient evidence exists for external maintenance teams to provide civil, electrical and mechanical assistance and organograms included relevant staff members at SLM. The competencies of the internal staff should be verified with their qualification as the availability of a preventative maintenance team is essential to ensure that routine preventative maintenance is performed regularly. In addition, the availability of supervisors and process controllers has a significant impact on the quality of final effluent discharged and the regulator notes that many sites have insufficient qualified and competent staff at the sites to operate and manage the WWTWs effectively. These impacts significantly on the CRR scores obtained for the different WWTWs.

The SLM has a good W_2RAP document for each site although outdated and therefore the WSA is encouraged to update the W_2RAP's as new risks may be present. The WSA is encouraged to review the W_2RAPs and implement the risk-based methodology of the W_2RAP as this ensures that the overall risk rating decreases with an improvement in effluent quality compliance. The WSA must also develop and implement a GDIP plan which identifies the shortcomings for all Green Drop criteria and allocates responsibility, budget and timeframes to address the gaps. A CAP was not required for SLM due to the previous scores awarded during the 2022 GD. There are some capital projects planned including a de-watering plant for Darling, a new macerator for Malmesbury and an upgrade for Moorreesburg WWTW which will assist in improving the effluent quality. The SLM is encouraged to prioritize the appointment of qualified competent process control staff and supervisors to ensure that the effluent quality is maintained within the regulatory limits.

Risk Assessment Areas	Weight	Chatsworth	Darling	Kalbaskraal	Moorreesburg	Riebeek Valley	Malmesbury	Koringberg
Class of Works		E: Approved	B: Approved	E: Approved	D: Approved	B: Approved	A: Approved	E: Approved
Treatment Technology		Oxidation Ponds	Activated Sludge	Oxidation Ponds	Activated Sludge	Activated Sludge	Activated Sludge	Oxidation Ponds
A: Total Design Capacity	Kl/d	270	1 500	157	1 500	1 900	10 000	30
B: Operational Capacity (% inflow/design)	%	90.7%	84.2%	49.0%	68.5%	45.3%	55.6%	276.7%
C: Effluent Quality Non-compliance	#	4	5	5	7	7	1	2

Table C.4.1.11: Green Drop Risk Rating of Swartland Municipality (DWS's 2023 Green Drop Progress Report)								
% Microbiological Compliance	%	30.0%	90.0%	10.0%	11.1%	9.1%	100.0%	0.0%
% Physical Compliance	%	73.3%	80.0%	10.0%	48.1%	78.8%	100.0%	50.0%
% Chemical Compliance	%	10.0%	60.0%	0.0%	22.2%	48.5%	93.3%	NMR
D: Technical Skills Compliance	%	33.3%	50.0%	33.3%	50.0%	33.3%	66.7%	33.3%
Process Controller Compliance	%	0%	50%	0%	50%	0%	100%	0%
Supervisor Compliance	%	0%	0%	0%	0%	0%	0%	0%
Maintenance Team Compliance	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CRR (2023)	%	**66.7%**	**64.7%**	**66.7%**	**76.5%**	**70.6%**	**40.9%**	**83.3%**
CRR (2021)	%	**70.6%**	**29.4%**	**23.5%**	**76.5%**	**23.5%**	**36.4%**	**88.2%**
CRR (2013)	%	**59.0%**	**53.0%**	**35.0%**	**53.0%**	**59.0%**	**71.0%**	**53.0%**
CRR (2011)	%	**72.0%**	**72.0%**	**72.0%**	**61.0%**	**67.0%**	**83.0%**	**56.0%**
W_2RAP Status: 2022 Green Drop Report		Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)
W_2RAP Status: 2023 Green Drop PAT		Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)	Draft document (unapproved by Council)
Capital and Refurbishment Projects (Rand)		0	R7 332 537	0	R54 716 114	0	R526 248	0
Description of Capital and Refurbishment Projects		Non-Available	De-watering plant for Darling WWTW.	Non-Available	Moorreesburg WWTW upgrading.	Non-Available	New Macerator	Non-Available
2022 GD Score	%	85.0%	89.0%	83.0%	87.0%	89.0%	89.0%	70.0%
GD Improvement Plan (GDIP)	Y/N	No	No	No	No	No	No	No
Corrective Action Plan (CAP)	Y/N	No	No	No	No	No	No	No

C.4.2. Water Quality Compliance

The table below gives an overview of the Swartland Municipality's water quality compliance, as taken from the DWS IRIS.

Table C.4.2.1: Overview of Water Quality Compliance

WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0 FY2023/24						Year -1 FY2022/23						Year -2 FY2021/22					
			MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D
	Results from Integrated Regulatory Information System																			
n/a	Analysis compliance	Total	425	85	764	952	1595	782	378	70	658	840	1428	700	393	85	733	888	1469	718
n/a		Nr Failures	2	0	1	0	62	695	6	0	0	1	65	678	0	0	1	3	63	636
n/a		Compliance %	100%	100%	100%	100%	96%	11%	98%	100%	100%	100%	95%	3%	100%	100%	100%	100%	96%	11%
n/a	Samples frequency	Total	387	17	387	387	387	387	350	14	350	350	350	350	355	17	355	355	355	355
n/a		Nr Failures	22	1	22	22	22	22	25	1	25	25	25	25	23	1	23	23	23	23
n/a		Compliance %	94%	94%	94%	94%	94%	94%	93%	93%	93%	93%	93%	93%	94%	94%	94%	94%	94%	94%
n/a	Sites compliance	Total	204	17	204	204	204	204	168	14	168	168	168	168	199	17	199	199	199	199
n/a		Nr Failures	12	1	12	12	12	12	12	1	12	12	12	12	12	1	12	12	12	12
n/a		Compliance %	94%	94%	94%	94%	94%	94%	93%	93%	93%	93%	93%	93%	94%	94%	94%	94%	94%	94%
6.3	**Water Supply and Quality**																			
6.3.6	Blue Drop Status	last year certified by DWS	2023 Blue Drop PAT still to be done						2022 Blue Drop Assessment						2021 Blue Drop PAT					
9.3	**Water Quality**																			
9.3.10	% Time (days) within SANS 241 standards per year	Average of analysis compliance %	84%						83%						84%					

Legend **MAH**: Microbiological Acute Health; **CAH**: Chemical Acute Health; **CCH**: Chemical Chronic Health; **CNA**: Chemical Non Health Aesthetic; **O**: Operational; **D**: Disinfectant

The Table below gives an overview of the number of compliance samples taken over the period July 2023 to June 2024 for the various water distribution networks.

Table C.4.2.2: Number of water quality compliance samples taken throughout the various water distribution systems over the period July 2023 to June 2024

Number of Sampling points within the distribution system (Swartland Mun)	2	1	5	2	1	1	1	1	1	1	1
Parameter Sampled	**Moorreesburg**	**Koringberg**	**Malmesbury**	**Darling**	**Riebeek Kasteel**	**Riebeek Wes**	**Yzerfontein**	**Riverlands**	**Abbotsdale**	**Chatsworth**	**Kalbaskraal**
pH (at 25°C)	47	47	155	74	50	28	49	26	26	28	26
Conductivity	47	47	146	72	48	26	47	26	24	26	24
Turbidity	47	47	155	74	50	28	49	26	26	28	26
Free Chlorine	47	46	153	74	50	28	49	26	26	28	26
Total Coliform Bacteria	47	52	160	78	56	28	55	26	27	29	28
E.Coli	47	51	160	78	52	28	53	26	26	29	27
Heterotrophic Plate Count	47	46	144	69	47	26	45	26	24	27	24
Total number of samples	**329**	**336**	**1 073**	**519**	**353**	**192**	**347**	**182**	**179**	**195**	**181**
Total number of samples taken for the previous four financial years											
2022/2023	**344**	**362**	**1 055**	**533**	**342**	**175**	**339**	**184**	**176**	**175**	**177**
2021/2022	**231**	**352**	**898**	**409**	**340**	**189**	**336**	**169**	**168**	**176**	**169**
2020/2021	**252**	**290**	**886**	**370**	**321**	**168**	**286**	**168**	**168**	**168**	**168**
2019/2020	**226**	**230**	**670**	**358**	**81**	**79**	**238**	**172**	**95**	**135**	**130**

Note: Full SANS241:2015 analysis was also done for each of the above systems during the last four financial years by Swartland Municipality, which include all the other parameters.

The water quality of all the water distribution systems in Swartland Municipality was either "Excellent" or "Good", according to the SANS0241 classification, except for Koringberg, Yzerfontein and Abbotsdale that were "Unacceptable" for Operational Efficiency, due to Turbidity, Total Coliform Count and pH failures. The water quality compliance sample results are included in Annexure D for each of the distribution systems. A full SANS0241 analyses was done during the 2023/2024 financial year. The overall percentage of compliance of the water quality samples taken over the period July to June for the last three financial years is summarised in the table below per distribution system (SANS 241: 2015 Limits).

Table C.4.2.3: Percentage compliance of the final water quality samples for the last three financial years

Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)			% Sample Compliance according to SANS241-2015 Limits			Number of Samples taken into account		
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
Moorreesburg									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	10	10	10
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	98.0%	100.0%	100.0%	51	53	37
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	93	95	79
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	118	122	90
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	97.4%	95.6%	96.4%	196	205	140
Koringberg									
Acute Health Chemical	No (Excellent	No (Excellent	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Good)	No (Excellent	No (Good)	96.2%	100.0%	96.4%	53	59	55
Chronic Health	No (Excellent	No (Excellent	No (Excellent)	100.0%	100.0%	100.0%	69	69	73
Aesthetic	No (Excellent	No (Excellent	No (Excellent)	100.0%	100.0%	100.0%	106	110	110
Operational Efficiency	Yes (Unacceptable)	No (Good)	No (Excellent)	87.8%	92.5%	97.1%	196	214	204
Malmesbury									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	35	33	28
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	99.4%	100.0%	98.6%	170	163	140
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	306	305	279
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	99.7%	99.7%	100.0%	384	383	334
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	98.1%	96.8%	97.4%	638	627	536
Darling									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	10	10	10
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	98.8%	97.6%	98.5%	82	82	65
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	99.2%	100.0%	100.0%	120	122	103
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	98.3%	100.0%	170	176	138
Operational Efficiency	No (Excellent)	No (Good)	No (Good)	96.4%	90.7%	91.3%	303	311	242
Riebeek Kasteel									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	54	51	51
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	73	72	71
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	110	110	108
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	95.7%	97.0%	95.5%	207	199	199
Riebeek Wes									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	10
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	30	27	31
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	98.6%	51	48	73
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	66	62	78
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	114	104	116
Yzerfontein									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	98.1%	100.0%	55	52	51
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	72	71	71
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	108	108	106
Operational Efficiency	Yes (Unacceptable)	Yes (Unacceptable)	Yes (Unacceptable)	85.1%	84.3%	88.3%	202	197	196
Riverlands									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Excellent)	Yes (Unacceptable)	No (Excellent)	100.0%	90.0%	100.0%	28	30	26
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	49	48	47
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	64	62	60
Operational Efficiency	No (Excellent)	No (Good)	No (Excellent)	95.4%	90.0%	96.0%	108	110	101

Table C.4.2.3: Percentage compliance of the final water quality samples for the last three financial years									
Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)			% Sample Compliance according to SANS241-2015 Limits			Number of Samples taken into account		
	23/24	22/23	21/22	23/24	22/23	21/22	23/24	22/23	21/22
Abbotsdale									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Good)	No (Excellent)	No (Excellent)	96.4%	100.0%	100.0%	28	27	26
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	49	48	47
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	62	62	60
Operational Efficiency	Yes (Unacceptable)	No (Excellent)	No (Excellent)	87.9%	93.3%	95.0%	107	105	100
Chatsworth									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Excellent)	Yes (Unacceptable	No (Excellent)	100.0%	89.7%	100.0%	31	29	27
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	51	47	50
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	66	60	63
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	97.4%	94.2%	95.3%	116	104	106
Kalbaskraal									
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	5	5	5
Acute Health Microbiological	No (Good)	No (Good)	No (Excellent)	96.6%	96.3%	100.0%	29	27	26
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	49	48	47
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.0%	100.0%	100.0%	62	62	60
Operational Efficiency	No (Good)	No (Excellent)	No (Excellent)	90.7%	94.3%	94.1%	108	106	101

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

Table C.4.2.4: Four Categories under which the risks posed by Micro-organism, Physical or Aesthetic Property or Chemical Substance of potable water is normally classified	
Category	**Risk**
Acute Health	Determinand that poses an immediate unacceptable health risk if present at concentration values exceeding the numerical limits specified in this part of SANS 241.
Aesthetic	Determinand that taints water with respect to taste, odour and colour and that does not pose an unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241.
Chronic Health	Determinand that poses an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241.
Operational	Determinand that is essential for assessing the efficient operation of treatment systems and risks from infrastructure

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

Table C.4.2.5: Overview of Wastewater Quality Compliance														
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0 FY2023/24				Year-1 FY2022/23				Year-2 FY2021/22			
			M	C	P	O	M	C	P	O	M	C	P	O
	Results from Integrated Regulatory Information System													
n/a	Regulatory compliance	Total	93	209	314	-	80	186	275	-	69	157	230	-
n/a		Nr Failures	64	97	94	-	55	104	84	-	38	73	65	-
n/a		Compliance %	31%	54%	70%	N/A	31%	44%	69%	N/A	45%	54%	72%	N/A
n/a	Operational compliance	Total	Not captured on IRIS, but recorded by Process Controllers at each of the WWTW											
n/a		Nr Failures												
n/a		Compliance %												
5.3.1	**Monitoring and Sample Failure**													
5.3.1.3 5.3.1.4 5.3.1.5	Average % of sample failure	Failure %	69%	46%	30%	N/A	69%	56%	31%	N/A	55%	46%	28%	N/A
6.3	**Water Supply and Quality**													
6.4.6	Green Drop Status	last year certified by DWS	2023 Green Drop Assessment still to be done				2022 Green Drop PAT				2021 Green Drop Assessment			

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

The final effluent quality compliance sample results are included in Annexure D for each of the WWTWs. The overall microbiological, chemical and physical compliance percentages of the final effluent samples taken over the last three financial years at the Malmesbury-, Darling-, Moorreesburg-, Koringberg-, Chatsworth-, Kalbaskraal- and Riebeek Valley WWTW are summarised in the tables below.

Table C.4.2.6: Percentage Microbiological (Faecal Coliforms) compliance of the compliance samples taken at the various WWTWs for the last three financial years

WWTW	2023/2024	2022/2023	2021/2022
Malmesbury	75.0%	100.0%	100.0%
Darling	91.7%	100.0%	75.0%
Moorreesburg	100.0%	8.3%	0.0%
Koringberg	8.3%	0.0%	0.0%
Chatsworth	8.3%	8.3%	25.0%
Kalbaskraal	100.0%	100.0%	100.0%
Riebeek Valley	58.3%	83.3%	75.0%
Total	**63.1%**	**57.1%**	**54.9%**

Table C.4.2.7: Percentage Chemical compliance of the compliance samples taken at the various WWTWs for the last three financial years

WWTW	2023/2024					2022/2023					2021/2022				
	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall
Malmesbury	0.0%	100.0%	91.7%	91.7%	**70.8%**	50.0%	66.7%	100.0%	100.0%	**79.2%**	91.7%	75.0%	100.0%	91.7%	**89.6%**
Darling	66.7%	100.0%	91.7%	100.0%	**89.6%**	50.0%	100.0%	83.3%	100.0%	**83.3%**	16.7%	100.0%	75.0%	91.7%	**70.8%**
Moorreesburg	75.0%	75.0%	75.0%	75.0%	**75.0%**	16.7%	100.0%	25.0%	41.7%	**45.8%**	0.0%	100.0%	0.0%	40.0%	**35.0%**
Koringberg	8.3%	100.0%	0.0%	8.3%	**29.2%**	0.0%	100.0%	0.0%	8.3%	**27.1%**	16.7%	91.7%	0.0%	16.7%	**31.3%**
Chatsworth	0.0%	100.0%	16.7%	33.3%	**37.5%**	0.0%	100.0%	8.3%	16.7%	**31.3%**	0.0%	100.0%	8.3%	25.0%	**33.3%**
Kalbaskraal	N/A	N/A	66.7%	N/A	**66.7%**	N/A	N/A	58.3%	N/A	**58.3%**	N/A	N/A	33.3%	N/A	**33.3%**
Riebeek Valley	91.7%	91.7%	100.0%	91.7%	**93.8%**	75.0%	100.0%	100.0%	83.3%	**89.6%**	100.0%	100.0%	100.0%	100.0%	**100.0%**
Total	**40.3%**	**94.4%**	**63.1%**	**66.7%**	**66.0%**	**31.9%**	**94.4%**	**53.6%**	**58.3%**	**59.3%**	**38.6%**	**94.3%**	**46.3%**	**61.4%**	**59.6%**

Table C.4.2.8: Percentage Physical compliance of the compliance samples taken at the various WWTWs for the last three financial years.

WWTW	2023/2024				2022/2023				2021/2022			
	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall
Malmesbury	50.0%	91.7%	58.3%	**66.7%**	66.7%	100.0%	91.7%	**86.1%**	83.3%	100.0%	100.0%	**94.4%**
Darling	100.0%	75.0%	83.3%	**86.1%**	100.0%	83.3%	66.7%	**83.3%**	100.0%	66.7%	66.7%	**77.8%**
Moorreesburg	100.0%	58.3%	75.0%	**77.8%**	100.0%	50.0%	33.3%	**60.0%**	100.0%	10.0%	10.0%	**40.0%**
Koringberg	91.7%	0.0%	0.0%	**30.6%**	100.0%	8.3%	0.0%	**36.1%**	100.0%	0.0%	0.0%	**33.3%**
Chatsworth	100.0%	66.7%	50.0%	**72.2%**	100.0%	66.7%	25.0%	**63.9%**	100.0%	83.3%	33.3%	**72.2%**
Kalbaskraal	91.7%	100.0%	N/A	**95.8%**	100.0%	100.0%	N/A	**100.0%**	100.0%	100.0%	N/A	**100.0%**
Riebeek Valley	100.0%	100.0%	100.0%	**100.0%**	100.0%	100.0%	100.0%	**100.0%**	100.0%	100.0%	100.0%	**100.0%**
Total	**90.5%**	**70.2%**	**61.1%**	**74.6%**	**95.2%**	**72.6%**	**52.8%**	**74.5%**	**97.6%**	**67.1%**	**52.9%**	**73.5%**

The Municipality is currently busy with detail WWTW Process Audits for all their plants.

C.4.3. Incident Management

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

A Water Safety Plan was drafted during the 2021/2022 financial year by the West Coast District Municipality for the Swartland bulk water distribution system. Swartland Municipality drafted a Water Safety Plan for their internal network distribution systems during 2022/2023. A detailed risk assessment was executed as part of the process and the existing control measures implemented by Swartland Municipality and the West Coast District Municipality were evaluated as part of the process. An Improvement / Upgrade Plan is also in place with relevant Water and Safety Management Procedures for implementation.

The graph below provides an overview of the medium residual risks for the Swartland bulk water distribution system.

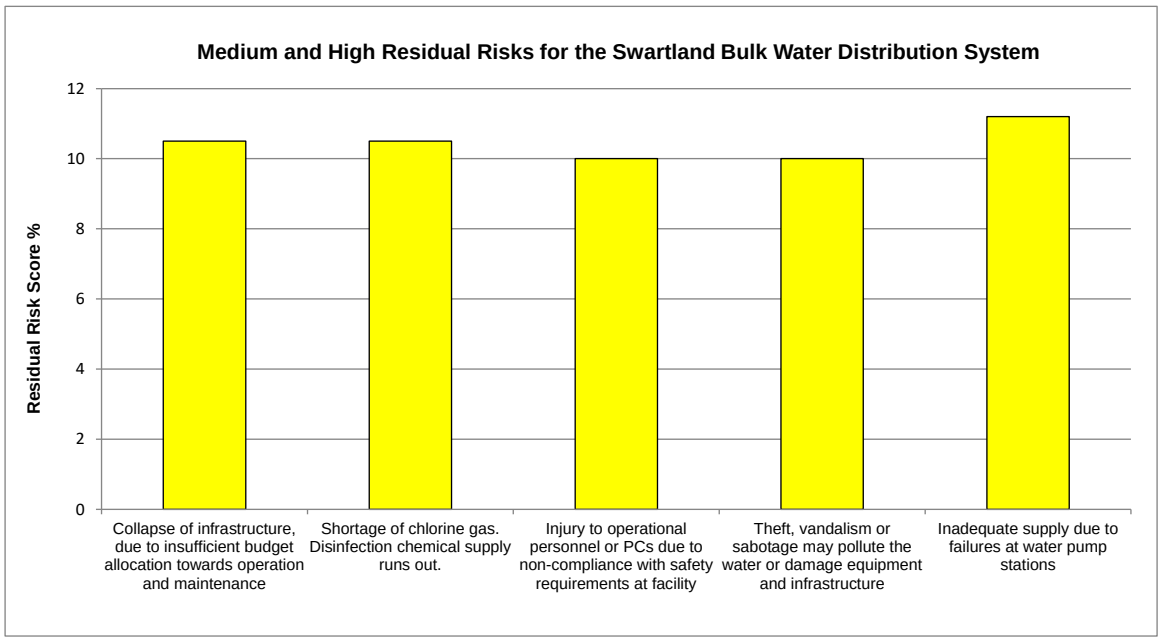


Figure C4.3.1: Medium residual risks for the Swartland Bulk water distribution system

The graph below provides an overview of the medium residual risks for the Withoogte bulk water distribution system.

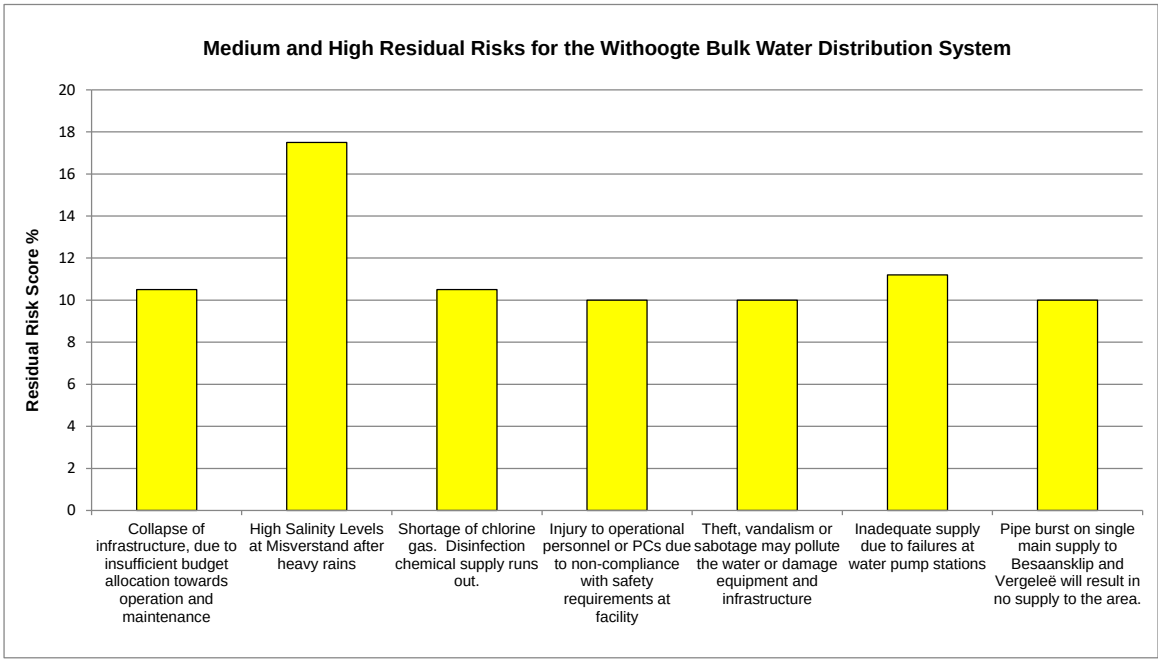


Figure C4.3.2: Medium residual risks for the Withoogte Bulk water distribution system

The graph below provides an overview of the medium residual risks for Swartland Municipality's internal water distribution systems.

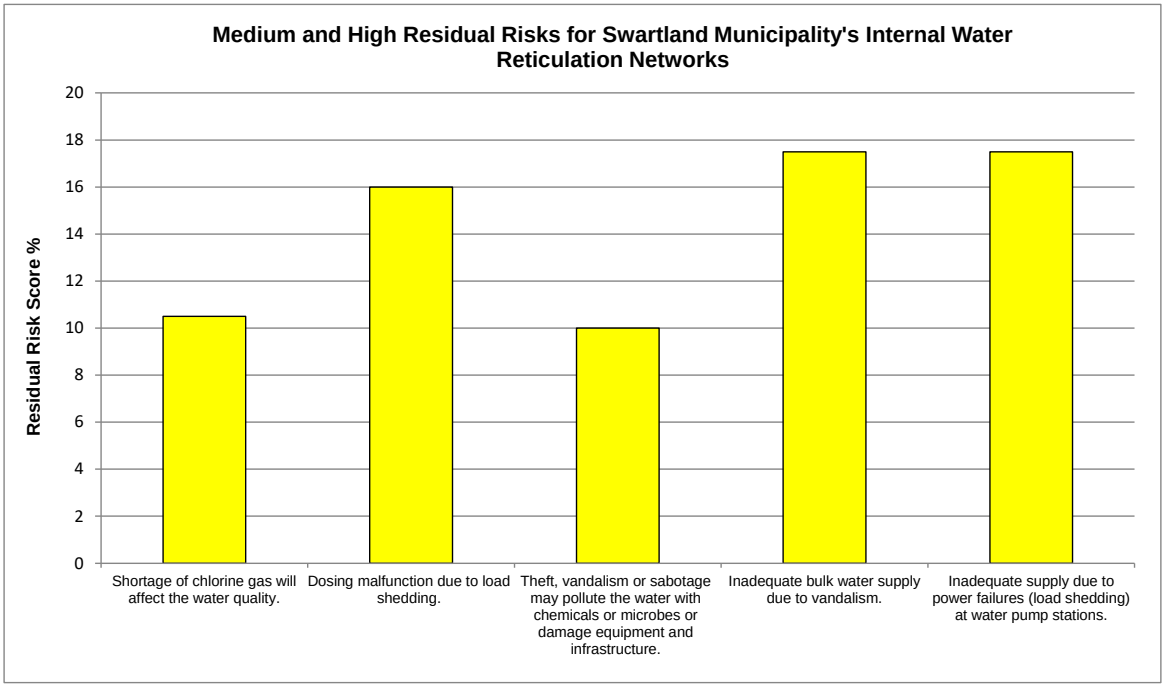


Figure C.4.3.3: Medium residual risks for Swartland Municipality's internal water distribution systems.

W_2RAPs for the various WWTWs and drainage networks are also in place (2018). The W_2RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater, are identified and rated (quantified). The identified risks can then be managed according to its potential impacts on the receiving environment / community / resource.

The Water Safety Plan and W_2RAP Teams of Swartland Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W_2RAPs to ensure that they are still accurate and to determine whether the field assessments need updates or modifications and whether the Incident Response Management Protocol is still adequate. In addition to the regular three-year review, the Water Safety Plan and W_2RAPs will also be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major incident.

An Incident Response Management Protocol is in place and forms part of the Water Safety Plans and W_2RAPs. The Incident Response Management Protocol entails that certain reactive procedures are followed when an incident occurs, such as when a malfunction of the treatment processes occurs due to power failures, faulty equipment, adverse weather conditions or human error.

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

Table C.4.3.1: Incident Management and Reporting Overview

WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2023/24	FY2022/23	FY2021/22
6.3	**Water Supply and Quality**				
6.3.1	Incident Management Protocol in place	yes/total schemes in %	Yes	Yes	Yes
6.3.5	Failure Response Management in place	yes/total schemes in %	Yes	Yes	Yes
6.4	**Waste Water Supply and Quality**				
6.4.1	Incident Management Protocol in place	yes/total schemes in %	Yes	Yes	Yes
6.4.5	Failure Response Management in place	yes/total schemes in %	Yes	Yes	Yes

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

Table C.4.3.2: Water Quality Incident Reporting Compliance (Health Oriented)

Measurable / Enabling Factor	Unit	Year 0 FY2023/24			Year -1 FY2022/23			Year-2 FY2021/22		
		Acute Health Chemical	Acute Health Microbiological	Chronic Health	Acute Health Chemical	Acute Health Microbiological	Chronic Health	Acute Health Chemical	Acute Health Microbiological	Chronic Health
Failures in terms of Analysis	Total nr	95	611	982	93	600	973	93	535	940
	Nr of failures	0	7	1	0	10	0	0	5	1
	Failure %	0%	1%	0%	0%	2%	0%	0%	1%	0%
	Nr reported	0	7	1	0	10	0	0	5	1
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%
Failures in terms of Samples	Total	95	611	982	93	600	973	93	535	940
	Nr of failures	0	7	1	0	10	0	0	5	1
	Failure %	0%	1%	0%	0%	2%	0%	0%	1%	0%
	Nr reported	0	7	1	0	10	0	0	5	1
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%
Failures in terms of Sites	Total	95	611	982	93	600	973	93	535	940
	Nr of failures	0	7	1	0	10	0	0	5	1
	Failure %	0%	1%	0%	0%	2%	0%	0%	1%	0%
	Nr reported	0	7	1	0	10	0	0	5	1
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%

C.5. Water Conservation and Water Demand Management

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

Table C.5.1: Overview of WC/WDM Activities

WSDP Ref. #	Regulations Ref. #	Description	Urban Settlements						Rural Settlements					
			Year 0		Year - 1		Year - 2		Year 0		Year - 1		Year - 2	
			2023/24		2022/23		2021/22		2023/24		2022/23		2021/22	
7.1.1	10.2.g.iii	**REDUCING UNACCOUNTED FOR WATER AND WATER INEFFICIENCIES**												
		Number of customers where the following activities have been pursued:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.1.1		Night flow metering	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.1.2		Day flow metering	23 449	100%	23 168	100%	22 488	100%	0	0%	0	0%	0	0%
7.1.1.3		Reticulation leaks fixed	360	100%	290	100%	317	100%	0	0%	0	0%	0	0%
7.1.1.4		Illegal connections formalized	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.1.5		Un-metered connections, metered	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.2	10.2.g.iii	**REDUCING HIGH PRESSURES FOR RESIDENTIAL CONSUMERS**												
		Number of residential consumers with water supply pressure of:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.2.1		< 300 kPa	5 031	23.0%	4 967	23.0%	4 816	23.0%	0	0%	0	0%	0	0%
7.1.2.2		300 kPa - 600 kPa	7 109	32.5%	7 019	32.5%	6 805	32.5%	0	0%	0	0%	0	0%
7.1.2.3		600 kPa - 900 kPa	8 749	40.0%	8 638	40.0%	8 375	40.0%	0	0%	0	0%	0	0%
7.1.2.4	10.2.b.iii	> 900 kPa	984	4.5%	972	4.5%	942	4.5%	0	0%	0	0%	0	0%
7.1.3	10.2.g.iii	**LEAK AND METER REPAIR PROGRAMMES**												
		Number of consumer units targeted by:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.3.1		Leak repair assistance programme	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.2	10.2.g.iv	Retro-fitting of water inefficient toilets	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.3		Meter repair programme	598	3%	224	1%	230	1%	0	0%	0	0%	0	0%
7.1.4	10.2.g.iii	**CONSUMER / END-USE DEMAND MANAGEMENT: PUBLIC INFO AND EDUCATION PROGRAMMES**												
			Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.4.1		Number of schools targeted by education programmes	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.4.2		Number of consumers (people) targeted by public information programmes	23 449	100%	23 168	100%	22 488	100%	0	0%	0	0%	0	0%

Quantity of water unaccounted for (Ml/year):

The implementation of Swartland Municipality's Water Demand Management Strategy has been extremely successful, and the Municipality was able to reduce the water requirements of the towns significantly. The average annual water requirement growth over the period 2001/2002 to 2023/2024 was 1.69 %/a. The table below gives a summary of the NRW, Water Losses and ILI for the various water distribution systems in Swartland Municipality's Management Area.

Table C.5.2: NRW, Water Losses and ILIs for the various water distribution systems

Description	Component	Unit	23/24	Record: Prior (Ml/a)				
				22/23	21/22	20/21	19/20	18/19
Koringberg	NRW	Volume	7.382	7.337	12.099	13.395	16.976	14.694
		Percentage	13.1%	13.5%	21.8%	23.7%	32.7%	31.5%
	Water Losses	Volume	5.649	5.608	10.368	12.634	16.224	13.953
		Percentage	10.0%	10.4%	18.7%	22.4%	31.3%	29.9%
	ILI		**0.79**	**0.83**	**1.51**	**1.80**	**1.59**	**1.41**
	The NRW and Water Losses are at excellent levels and stayed roughly the same for the last two financial years. The Municipality needs to continue with the implementation of their WC/WDM measures in order to keep the NRW and water losses percentages for Koringberg below 15%. The ILI of 0.79 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Ongegund	NRW	Volume	4.822	1.260	9.214	3.075	4.236	6.546
		Percentage	20.5%	5.9%	38.4%	17.4%	24.9%	36.4%
	Water Losses	Volume	4.595	1.037	8.986	2.968	4.130	6.438
		Percentage	19.5%	4.9%	37.4%	16.8%	24.2%	35.8%
	The NRW and Water Losses increased during the last financial year, but are still below DWS's NRW target of 30%. The Municipality needs to keep the NRW and water losses percentages for Ongegund less than 20%.							
Riebeek Wes	NRW	Volume	21.053	19.802	18.314	26.490	22.040	23.263
		Percentage	11.3%	11.2%	10.2%	15.5%	14.0%	16.6%
	Water Losses	Volume	8.982	7.749	6.255	21.468	17.044	18.302
		Percentage	4.8%	4.4%	3.5%	12.6%	10.8%	13.0%
	ILI		**0.33**	**0.29**	**0.23**	**0.80**	**0.82**	**1.09**
	The NRW and Water Losses are at excellent levels and stayed roughly the same for the last three financial years. The Municipality needs to keep the NRW below 15% and the water losses below 10%. The ILI of 0.33 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Riebeek Kasteel	NRW	Volume	146.401	153.504	98.088	52.790	47.762	25.377
		Percentage	35.9%	38.6%	29.6%	20.6%	21.4%	13.8%
	Water Losses	Volume	141.626	148.749	93.466	50.693	45.732	23.426
		Percentage	34.8%	37.4%	28.2%	19.8%	20.5%	12.8%
	ILI		**3.99**	**4.21**	**2.72**	**1.45**	**1.52**	**0.77**
	The NRW and Water Losses decreased slightly during the last financial year, which is good. The current NRW is however still above DWS's NRW target of 30%. The Municipality needs to work towards a target of 30% for the NRW and 25% for the water losses. The ILI value of 3.99 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Yzerfontein	NRW	Volume	65.361	24.725	40.333	60.201	47.109	15.977
		Percentage	19.2%	8.2%	13.1%	20.1%	19.8%	9.1%
	Water Losses	Volume	52.080	11.526	27.117	54.562	41.593	10.585
		Percentage	15.3%	3.8%	8.80%	18.2%	17.5%	6.0%
	ILI		**0.85**	**0.21**	**0.50**	**1.03**	**0.97**	**0.25**
	The NRW and Water Losses increased during the last financial year. The current percentages of NRW below 20% and Water Losses at approximately 15% are still good and below DWS's NRW target of 30%. The Municipality needs to keep the NRW below 20% and the water losses below 15%. The ILI of 0.85 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Darling	NRW	Volume	41.311	-6.984	150.430	150.505	138.078	127.003
		Percentage	7.8%	-1.5%	25.0%	26.4%	26.7%	25.8%
	Water Losses	Volume	33.229	-14.918	142.205	146.555	134.234	123.212
		Percentage	6.3%	-3.3%	23.6%	25.7%	25.9%	25.1%
	ILI		**0.72**	**2.82**	**3.09**	**3.20**	**2.08**	**1.90**
	The NRW and water losses for the last financial year are excellent. The Municipality needs to keep the NRW below 15% and the water losses below 10%. The ILI of 0.72 is excellent, with no immediate intervention required							

Table C.5.2: NRW, Water Losses and ILIs for the various water distribution systems								
Description	**Component**	**Unit**	**23/24**	**Record: Prior (Ml/a)**				
				22/23	**21/22**	**20/21**	**19/20**	**18/19**
	and the Municipality needs to keep the ILI level below 2.							
Moorreesburg	NRW	Volume	215.211	196.685	169.718	136.476	119.301	110.213
		Percentage	28.6%	27.4%	24.5%	20.3%	20.2%	20.7%
	Water Losses	Volume	198.765	180.308	153.392	129.156	112.145	103.172
		Percentage	26.4%	25.1%	22.1%	19.2%	19.0%	19.4%
	ILI		**2.64**	**2.40**	**2.06**	**1.74**	**1.36**	**1.25**
	The NRW and Water Losses increased slightly during the last financial year, but the NRW is still below DWS's NRW target of 30%. The Municipality needs to work towards a target of 25% for the NRW and 20% for the water losses. The ILI value of 2.64 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Malmesbury	NRW	Volume	668.245	459.356	755.496	595.795	379.300	308.070
		Percentage	20.1%	15.0%	23.4%	20.3%	15.0%	14.1%
	Water Losses	Volume	594.275	385.917	681.709	562.994	347.331	276.769
		Percentage	17.9%	12.6%	21.1%	19.2%	13.8%	12.7%
	ILI		**2.23**	**1.46**	**2.67**	**2.20**	**1.44**	**1.17**
	The NRW and Water Losses increased during the last financial year, but the NRW is still below DWS's NRW target of 30%. The Municipality needs to keep the NRW below 20% and needs to work towards a target of 15% for the water losses. The ILI value of 2.23 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
All Systems	**NRW**	**Volume**	**1 169.786**	**855.685**	**1 253.692**	**1 038.727**	**774.802**	**631.143**
		Percentage	**20.8%**	**16.5%**	**23.1%**	**20.9%**	**18.0%**	**16.7%**
	Water Losses	**Volume**	**1 039.201**	**725.976**	**1 123.498**	**981.030**	**718.433**	**575.857**
		Percentage	**18.5%**	**14.0%**	**20.7%**	**19.7%**	**16.6%**	**15.3%**
	ILI		**2.17**	**1.83**	**2.40**	**2.11**	**1.60**	**1.41**
	The overall NRW and Water Losses increased during the last financial year, mainly because of the increase in the NRW and Water Losses of Malmesbury. The Municipality needs to keep the NRW below 20% and needs to work towards a target of 15% for the water losses. The ILI value of 2.17 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							

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

Category A = No specific intervention required.

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

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

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

Swartland Municipality also received their 2023 No Drop Score, as calculated through the 2023 Assessment done by the DWS. The 2023 No Drop assessments were performed using a reduced set of No Drop Criteria. These criteria were selected to assess a WSA's understanding of their WC/WDM status, the plans, strategies, budgets, and implementation of remedial projects. Below is a brief description of the Criteria used for the 2023 assessment.

Table C.5.3: Description of No Drop Criteria	
Criteria 1	WC/WDM status quo, plans and strategies, budgets, and implementation of projects (Water Resource Diagram, Water Balance, Council approved WC/WDM strategies and budgets)
Criteria 2	Asset management as it relates to meter replacement. Monitoring, analysis, and action of high loss District Metered Areas (DMAs) in metropolitan municipalities
Criteria 3	Technical skills of WC/WDM team
Criteria 5	Compliance and Performance based on the water loss and efficiency Key Performance Indicators (KPI) and year on year improvement there-of

The purpose of the 2023 No Drop Assessments was twofold:

- To complete the consultative assessment of the 144 WSAs as per the No Drop Requirements based on the 2021/22 financial year.
- To update the water balance and water loss benchmarking for the 2022/23 financial year. This is reported on in the Status of Water Loss, Water Use Efficiency and Non-Revenue Water in South African Municipalities (2012/13 to 2022/23).

The No Drop results for Swartland Municipality are presented in the table below.

Table C.5.4: No Drop Performance of Swartland Municipality (DWS's 2023 No Drop Report)		
No Drop Score (2021/2022)		**91%**
Criteria	**Weight**	**Score**
1: WC/WDM Strategy, Planning and Implementation	45%	100% (Excellent)
2: Asset Management	10%	40% (Poor)
3: Technical Skills	10%	80% (Good)
5: Compliance and Performance	35%	69% (Average)
Weighted Sub-Total		**81%**
Bonus		10%
Score		**91% (Excellent)**
Penalty 1: No evidence of approved budget		0.0%
Penalty 2: Section 82 of the Water Servies Act		0.0%
Criteria 1 Sub-Items: WC/WDM Strategy, Planning and Implementation		
Item		**Score (Max = 1)**
1.1: Water Resources		1.0 (Excellent)
1.2: Water Balance		1.0 (Excellent)
1.2: WC/WDM Strategy and Business Plan		1.0 (Excellent)
Penalty 1: No evidence of approved budget		0.0
Criteria 5 Sub-Items: Compliance and Performance		
Item		**Score (Max = 1)**
5.1: Reticulation Leak Repair		1.0 (Excellent)
5.2: Physical Water Losses		0.6 (Average)
5.3: Commercial Water Losses		0.5 (Average)
5.4: Non-Revenue Water		0.7 (Average)
5.5: Water Use Efficiency		0.7 (Average)
Water Balance Integrity		**High (Excellent)**

Regulatory Impression: Swartland Municipality achieved an excellent score of 91% and should be congratulated on their WC/WDM efforts.

- The WSA is encouraged to ensure that the score is sustained. Swartland Municipality has demonstrated an excellent understanding of its water use situation and WC/WDM strategy.
- The IWA water balance included all the required components and covered the supply area. The integrity of the water balance was considered to be high.
- Proof of some consumer meter maintenance and replacements was provided, but an insufficient number of interventions were implemented during the 2021/22 audit period.
- There are staff at the WSA responsible for water loss management, but there were shortcomings in the team and/or the related documentation.
- The WSA provided evidence of a leak repair schedule for the audit period and the required percentage of incidents were addressed within the 48-hour response time.
- The regulator calculated the key performance indicators for physical water losses (ILI), commercial water losses, NRW, water use efficiencies based on the water balance.

The table below gives an overview of the System Input Volume, Average Billed Metered Consumption and Non-Revenue Water in litre per connection per day for the various water distribution systems for the 2023/2024 financial year.

Table C.5.5: System input volume, average billed metered consumption and non-revenue water in litre per connection per day for the various water distribution systems for 2023/2024

Water Balance Component	Koringberg	Ongegund	Riebeek Wes	Riebeek Kasteel	Yzerfontein	Darling	Moorreesburg	Malmesbury
System Input Volume	432	603	480	671	507	537	647	727
Average Billed Metered Cons.	376	479	426	430	410	496	462	581
Non-Revenue Water	56	123	55	241	97	42	185	146

Malmesbury is the town with the highest system input volume and average billed metered consumption per connection per day, because it is main town of Swartland Municipality and the town with the biggest commercial centre. Riebeek Kasteel is the town with the highest NRW per connection per day.

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 gives an overview of the length of water pipelines and the average head for the different water distribution zones.

Tables C.5.6: Length and average head of water pipelines

System	Zone	Length (km)	Average Head
Bulk Water Pipelines			
Malmesbury	Malmesbury - Chatsworth Supply	4.750	50.05
	Malmesbury - Kalbaskraal Reservoir	0.029	4.29
	Malmesbury - Kleindam Reservoir	0.029	5.00
	Malmesbury - Kleindam to Kalbaskraal	18.232	43.72
	Malmesbury - Riverlands Supply	9.153	30.55
	Malmesbury - Wesbank Reservoir	0.348	7.25
	Malmesbury - Wesbank Spoelpype	0.016	21.47
	Malmesbury - Wesbank Tower	0.024	14.51
Moorreesburg	Moorreesburg - WCDM bulk PS	4.028	128.15
Riebeek Wes	Riebeek Wes - HL Reservoir	0.356	17.53
Swartland	Swartland - Glen Lilly reservoir	8.352	37.18
	Swartland - Kasteelberg reservoir	0.645	16.35
Withoogte	Withoogte - Moorreesburg PS	0.012	139.55

Tables C.5.6: Length and average head of water pipelines			
System	**Zone**	**Length (km)**	**Average Head**
External Bulk Water Pipelines			
Swartland	Swartland - Darling town PS	0.933	57.99
	Swartland - Darling Yzerfontein PS	21.548	79.94
	Swartland - Glen Lilly reservoir	12.165	31.21
	Swartland - Gouda PS	6.842	70.72
	Swartland - Kamp reservoir	1.319	26.95
	Swartland - Kasteelberg reservoir	50.792	71.62
	Swartland - Malmesbury BPT	61.160	57.31
	Swartland - Rustfontein booster PS	8.719	27.59
	Swartland - Swavelberg booster PS	37.016	45.66
	Swartland - Voëlvlei PS	29.111	152.03
	Swartland - Voëlvlei WTP	0.060	2.03
	Swartland - Wildschutsvlei balancing reservoir	29.124	123.83
Withoogte	Withoogte - Byeneskop reservoir	25.235	97.14
	Withoogte - Misverstand dam	13.215	90.97
	Withoogte - Moorreesburg PS	7.767	153.04
	Withoogte - Withoogte reservoir	67.001	79.23
Reticulation Pipelines			
Darling	Darling Reservoir	20.715	41.26
	Darling Reservoir - Darling PRV	25.570	30.34
Koringberg	Koringberg - Koringberg PRV	4.936	29.27
	Koringberg - Koringberg Reservoir	5.417	38.60
Malmesbury	Malmesbury - Abbotsdale booster	0.497	35.54
	Malmesbury - Abbotsdale Reservoir	16.280	31.00
	Malmesbury - Chatsworth PRV1	25.333	53.79
	Malmesbury - Chatsworth PRV2	1.330	64.83
	Malmesbury - Chatsworth Reservoir	5.325	39.31
	Malmesbury - Glen Lily Booster PS	1.304	58.27
	Malmesbury - Kalbaskraal Booster PS	8.659	44.71
	Malmesbury - Kalbaskraal Reservoir	0.131	4.78
	Malmesbury - Kleindam Reservoir	19.337	30.86
	Malmesbury - Kleindam to Kalbaskraal	0.017	4.97
	Malmesbury - Mount Royal Booster PS	1.692	38.17
	Malmesbury - Mount Royal Reservoir	3.545	55.64
	Malmesbury - Old Golf Course PRV	15.330	43.77
	Malmesbury - Old Golf Course Reservoir	1.135	21.79
	Malmesbury - Panorama Booster	0.051	41.82
	Malmesbury - Panorama Booster 1	1.587	46.85
	Malmesbury - Panorama Booster 2	9.383	65.18
	Malmesbury - Panorama Res PRV1	14.297	45.51
	Malmesbury - Panorama Res PRV2	4.143	43.31
	Malmesbury - Panorama Reservoir	5.894	30.95
	Malmesbury - Prison Reservoir	5.014	48.56
	Malmesbury - Riverlands PRV	5.782	38.09
	Malmesbury - Wesbank Reservoir	38.443	35.88
	Malmesbury - Wesbank Reservoir booster	9.863	31.50
	Malmesbury - Wesbank Tower	11.200	31.60
Moorreesburg	Moorreesburg - Moorreesburg Reservoir	42.384	50.19
	Moorreesburg - Moorreesburg PRV	26.114	35.11
Ongegund	Ongegund - PPC Factory Direct	1.202	39.32
	Ongegund - PPC Riebeek Wes Reservoir	6.160	45.10

Tables C.5.6: Length and average head of water pipelines			
System	**Zone**	**Length (km)**	**Average Head**
Riebeek Kasteel	Riebeek Kasteel - Riebeek Kasteel PRV1	7.253	53.47
	Riebeek Kasteel - Riebeek Kasteel PRV2	2.821	45.17
	Riebeek Kasteel - Riebeek Kasteel PRV3	6.341	39.82
	Riebeek Kasteel - Riebeek Kasteel PRV4	0.177	24.55
	Riebeek Kasteel - Riebeek Kasteel Reservoir	6.494	45.35
Riebeek Wes	Riebeek Wes - HL Reservoir	5.993	53.18
	Riebeek Wes - LL Reservoir	15.314	47.25
Swartland	Swartland - Kasteelberg reservoir	0.006	14.71
Yzerfontein	Yzerfontein - Yzerfontein Booster	1.905	51.73
	Yzerfontein - Yzerfontein Reservoir	36.749	60.29
	Yzerfontein Reservoir	0.045	4.10
External Reticulation Pipelines			
Swartland	Swartland - Darling BPT	41.525	55.67
	Swartland - Darling Yzerfontein PS	0.022	31.74
	Swartland - Gouda PS	0.011	19.26
	Swartland - Kasteelberg reservoir	115.599	127.01
	Swartland - Riebeek Kasteel BPT	8.056	40.67
	Swartland - Voëlvlei PRVS	42.030	63.27
	Swartland - Wildschutsvlei balancing reservoir	0.011	64.85
Withoogte	Withoogte - Byeneskop BPT	26.584	60.34
	Withoogte - Byeneskop reservoir	105.068	87.70
	Withoogte - Koringberg BPT	14.221	34.38
	Withoogte - Koringberg reservoir	15.576	112.34
	Withoogte - WBK line PRV 1	9.738	80.47
	Withoogte - WBK line PRV 2	42.732	77.89
	Withoogte - Withoogte reservoir	95.088	75.88

Average Head: 0m - 30m; 31m – 60m; 61m – 90m; > 90m

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

Table C.5.7: 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	In the 24m to 90m range under peak hour

Table C.5.7: 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
			exceed 90m.	demand conditions, except for the low-cost residential area where the pressures are as low as 20m, which is marginally less than the adopted design criteria.
Malmesbury	-	Medium	No areas where pressures exceed 90m. One PRV in the system.	The following areas could experience low residual pressures • Higher lying areas in Wesbank which is currently fed from the Wesbank reservoirs and not the tower. • Small area in the central part of Malmesbury, which is fed from the Kleindam reservoir.
Abbotsdale, Chatsworth, Kalbaskraal and Riverlands	9%	Medium	No areas where pressures exceed 90m. Four PRVs in the system (3 in Chatsworth and 1 in Riverlands)	In the 24m to 90m range under peak hour demand conditions

A **pressure reduction study** was completed for all the towns in Swartland Municipality's Management Area during the 2017/2018 financial year. The table below gives an overview of the existing PRV and the proposed future PRV zones.

Table C.5.8: Existing and proposed PRV zones						
Zone	Description	Average Static Head (m)		Current AADD (kl/d)	Estimated Cost	Priority
		Current	Future			
Existing PRV zones						
Chatsworth PRV1	Chatsworth pressure management	54.1	54.1	374.8	-	-
Chatsworth PRV2		40.0	40.0		-	-
Chatsworth PRV3		40.0	40.0		-	-
Riverlands PRV	Riverlands pressure management	38.6	38.6	132.9	-	-
Panorama PRV1	Malmesbury pressure management: Panorama PRV1	45.2	35.2	348.2	-	7
Riebeek Kasteel PRV1	Riebeek Kasteel pressure management	50.9	39.5	195.36	-	-
Riebeek Kasteel PRV2		46.3	31.8	50.02	-	-
Riebeek Kasteel PRV3		29.5	26.5	275.5	-	-
Total Existing PRV zones				**1 376.78**	**-**	
Proposed PRV zones						
Darling PRV	Darling pressure management	74.60	33.28	1 118.3	R337 540	1
Koringberg PRV	Koringberg pressure management	65.40	33.80	86.4	R222 600	8
Moorreesburg PRV	Moorreesburg pressure management	68.10	36.90	744.8	R595 000	3
Old Golf Course PRV	Malmesbury pressure management: Old Golf Course PRV	60.60	44.80	385.0	R278 600	6
Panorama PRV2	Malmesbury pressure management: Panorama PRV 2&3	77.40	43.40	836.8	R462 000	2
PPC Riebeek	Ongegund pressure management	63.35	37.30	62.1	R140 000	
Prison PRV	Malmesbury pressure management: Prison PRV	72.20	31.30	60.8	R140 000	9
Riebeek Wes PRV	Riebeek Wes pressure management	74.30	33.30	276.5	R434 000	4
					R930 860	
Yzerfontein PRV	Yzerfontein pressure management	63.00	36.75	427.5	R1 451 380	5
Total Proposed PRV zones				**3 998.2**	**R4 991 980**	

The following PRVs were installed and refurbished during the 2017/2018 financial year.

- New PRV installations: 1 x Darling, 1 x Koringberg, 2 x Moorreesburg, 4 x Malmesbury, 2 x Riebeek Valley and 1 x Yzerfontein,
- Refurbishment of existing PRVs: 4 x Chatsworth, 1 x Malmesbury and 6 x Riebeek Valley.

No further PRVs were installed or refurbished during the last number of financial years.

Demand management activities undertaken:

The main water demand management interventions undertaken by Swartland Municipality over the last few years, as included in the **WDM Strategy** of September 2019, are summarised in the table below.

Table C.5.9: WDM activities implemented by Swartland Municipality
Reduce water losses and non-revenue water
• Metering of all water usage – households, standpipes, municipal parks, industrial, commercial and institutional. • Monthly reading and billing of all meters. • Inspection for illegal connections on an ongoing basis; • Formalising all illegal and/or unmetered connections immediately upon coming to attention; • Metering and billing of temporary consumption, typically by construction companies; • Annual audit of all meters 50mm and larger and replacement of the meters where necessary; • Monthly monitoring of all wet industries and large volume water users for deviations together with appropriate actions in the event of a deviation. • Monthly monitoring and inspection of zero usage consumers; • Repair of burst pipes within 3 hours; • Accurate calculation of water losses and record keeping; • Zone metering; • Day flow metering; • Re-use of treated effluent for the irrigation of sport fields in Moorreesburg, Malmesbury, Darling and Riebeek Kasteel; • Watering of municipal parks during cooler early morning hours; and • Re-Use of treated effluent during construction projects instead of potable water, where possible.
Pressure Management
• Pressure control at high pressure zones in each of the towns in the Municipal Area.
Leak and Meter Repairs
• Leak repairs assistance programme for indigent households; • Meter replacement programme for all connections; • Annual fire hydrant inspection for leaks and functioning; • Retrofitting of municipal buildings with water efficient equipment; • Immediate leak repair in municipal buildings; and • Meter audits to determine the accuracy of meter readings.
Consumer / End User Demand Management
• Block tariffs to discourage inefficient and wasteful use of water; • Drought tariffs applicable during times of severe drought; • Central customer care service where leaks are reported by the public; • Incremental levels of stringency for water restrictions, to manage demand during periods of drought and water shortages; • Notices and communication media on billboards and municipal website raising awareness pertaining water conservation; and • Communicating information on municipal bills pertaining water use and target volume savings.
Infrastructure Management
• Operations and maintenance schedule; • Regular inspections of water distribution networks, pump stations and reservoirs; and • Current Water- and Sewer Masterplan based on current available growth projections.
Reduction in Municipal Water Demand
• Municipal parks have been re-landscaped to be less water intensive. Watering has been limited to before 08:00 am, in order to limit water losses through evaporation.
Alternative Resources
• Funding was secured for the development of groundwater as an alternative resource. Boreholes were drilled as an alternative water source and have yielded reasonable volumes.

The WDM Strategy also include the following future WDM measures that will be implemented by Swartland Municipality.

- Pressure Management
- Leak Repair and Assistance Programme
- Residential Measures
- Re-use of treated effluent
- Meter replacement
- Night Flow Analyses
- Leakage Detection
- Zone Metering
- Alternative water resources

DWS's scorecard for assessing the potential for WC/WDM efforts, as completed for Swartland Municipality, is included in Annexure E. The aim of the scorecard was to establish areas where the municipality has made good progress in relation to WC/WDM and where there is still room for improvement. It can be seen from the Scorecard that there are 25 questions each of which carries a maximum of 4 points providing a possible maximum score of 100. If the Municipality has the specific item completely under control, it receives the maximum points and if it is neglecting the item completely it receives no points. There are various levels between the maximum and the minimum number of points assigned to the municipality for each item depending on the level of completeness or lack thereof. **The status quo score for Swartland Municipality is 83 out of 100 suggesting that the Municipality is making good progress with regard to the implementation of specific WC/WDM activities.**

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

Table C.5.10: The independent factors and the weight factors used to determine the pipe replacement potential

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

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

PRP = LF x CF (In the range of 1 to 25)

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

Progress made with the installation of water efficient devices:

Swartland Municipality has investigated the possibility to replace all existing star pillar taps in all public ablution facilities throughout its whole jurisdiction and is considering committing to this proposal by including the replacement costs in its budget for the coming financial years. It should be noted that the replacement of taps will be done over a five-year period to allow Municipal staff capacity to execute the task themselves. No flow restrictors were installed during the last four financial years.

C.6. Water Services Asset Management

The tables below give an overview of the water and sewerage assets included in Swartland Municipality's Asset Register. The Opening Cost and Book Value of the water and sewerage infrastructure is summarised in the table below (June 2024).

Table C.6.1: Opening Cost (OC) and Book Value (BV) of the water and sewerage infrastructure

Asset Type	GIS ID	Opening Cost (OC)	Book Value (BV)	% BV / OC
WATER				
Boreholes	BH	R6 169 524	R5 562 800	90%
Pump Stations	WPS	R18 210 897	R20 002 623	110%
Reservoirs	RES	R135 231 874	R59 430 068	44%
Reticulation Pipelines	WRP	R352 019 361	R183 508 488	52%
Bulk Water Pipelines	BWP	R174 373 016	R89 501 812	51%
Dams	DAM	R35 383 870	R3 528 823	10%
Water Consumer Connections	WCC	R148 476 673	R27 180 472	18%
Electrical	ELEC	R997 031	R592 193	59%
Other Assets	OTH	R41 665 963	R31 392 032	75%
Totals		**R912 528 209**	**R420 699 311**	**46%**
SEWERAGE				
Sewer Pump Stations	SPS	R16 649 511	R6 559 159	39%
Sewage Treatment Works	STW	R250 720 786	R296 897 724	118%
Sewer Reticulation Pipelines	SRP	R279 339 736	R108 128 041	39%
Bulk Sewer Pipelines	BSP	R60 769 892	R33 771 700	56%
Sewer Consumer Connections	SCC	R106 390 949	R18 390 761	17%
Other Assets	OTH	R13 087 594	R13 603 040	104%
Totals		**R726 958 468**	**R477 350 425**	**66%**

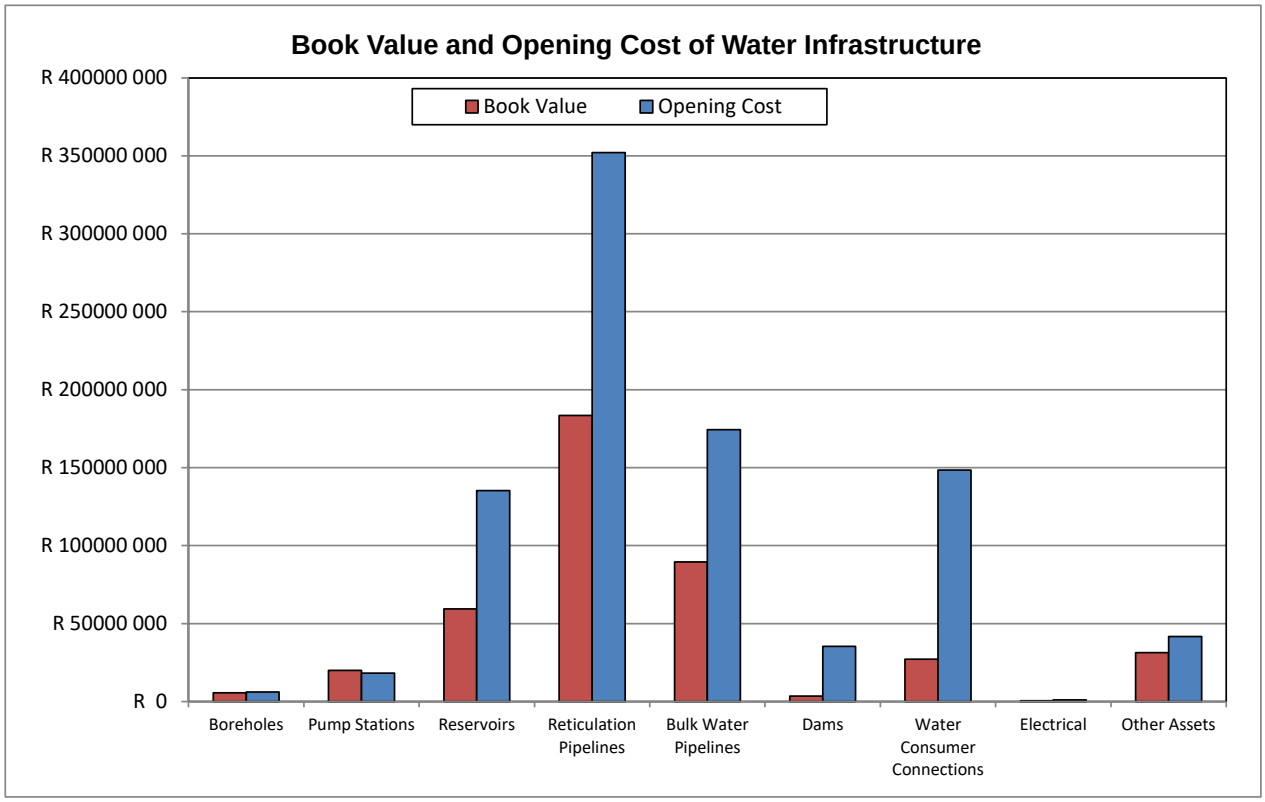


Figure C.6.1: Book Value and Opening Cost of the water infrastructure

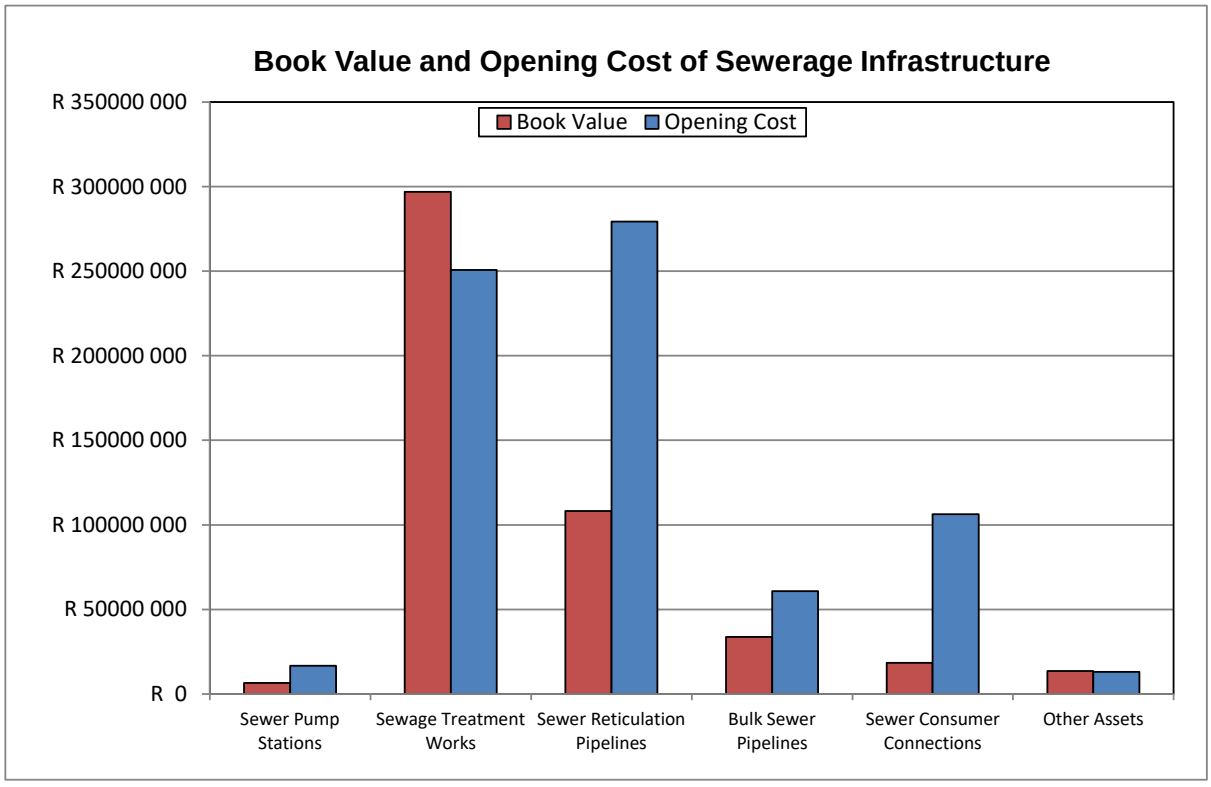


Figure C.6.2: Book Value and Opening Cost of the sewerage infrastructure

The above implies that about 54% of the value of the water infrastructure and 34% of the value of the sewerage infrastructure has been consumed.

The table below gives an overview of the RUL per facility type for the water and sewerage infrastructure (June 2024).

Table C.6.2: Overview of the RUL by facility type for water and sewerage infrastructure (OC)						
Asset Type	**GIS ID**	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
WATER						
Boreholes	BH	R10 000	R90 320	R170 044	R114 107	R5 785 053
Pump Stations	WPS	R2 749 897	R1 557 578	R2 262 436	R7 446	R11 633 540
Reservoirs	RES	R1 247 062	R0	R3 800 395	R1 376 342	R128 808 075
Reticulation Pipelines	WRP	R4 843 172	R0	R73 295 223	R11 733 123	R262 147 843
Bulk Water Pipelines	BWP	R563 639	R0	R14 487 984	R4 898 353	R154 423 040
Dams	DAM	R464 427	R0	R529 785	R1 165 363	R33 224 295
Water Consumer Connections	WCC	R0	R0	R0	R0	R148 476 673
Electrical	ELEC	R0	R0	R6 581	R0	R990 450
Other Assets	OTH	R19 134 837	R3 842 617	R4 396 101	R7 948 553	R6 343 855
TOTALS		**R29 013 034**	**R5 490 515**	**R98 948 549**	**R27 243 287**	**R751 832 824**
SEWERAGE						
Sewer Pump Stations	SPS	R4 649 982	R183 717	R2 137 131	R1 967 284	R7 711 397
Sewage Treatment Works	STW	R1 220 199	R2 266 340	R73 540 106	R10 496 545	R163 197 596
Sewer Reticulation Pipelines	SRP	R25 066 217	R0	R0	R13 019 068	R241 254 451
Bulk Sewer Pipelines	BSP	R2 614 964	R0	R0	R0	R58 154 928
Sewer Consumer Connections	SCC	R0	R6 845 000	R0	R422 949	R99 123 000
Other Assets	OTH	R5 435 824	R6 260 642	R0	R159 272	R1 231 856
TOTALS		**R38 987 186**	**R15 555 699**	**R75 677 237**	**R26 065 118**	**R570 673 228**

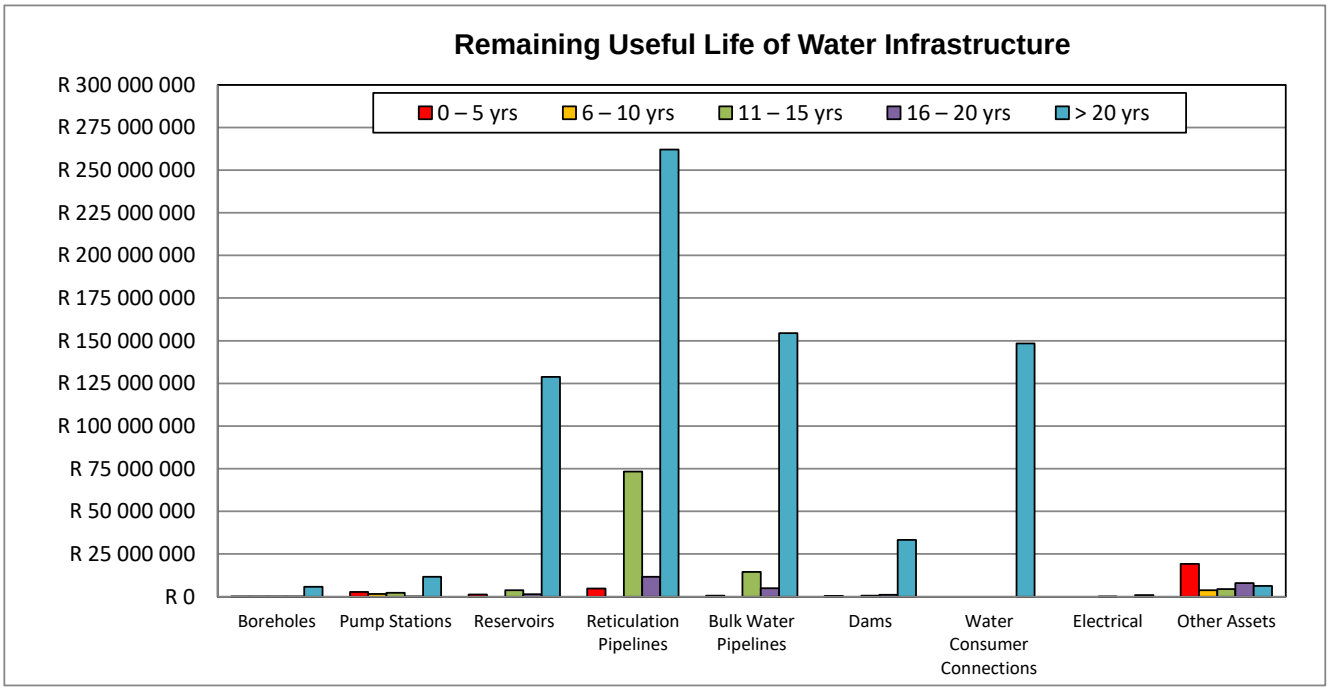


Figure C.6.3: Remaining Useful Life of the water infrastructure

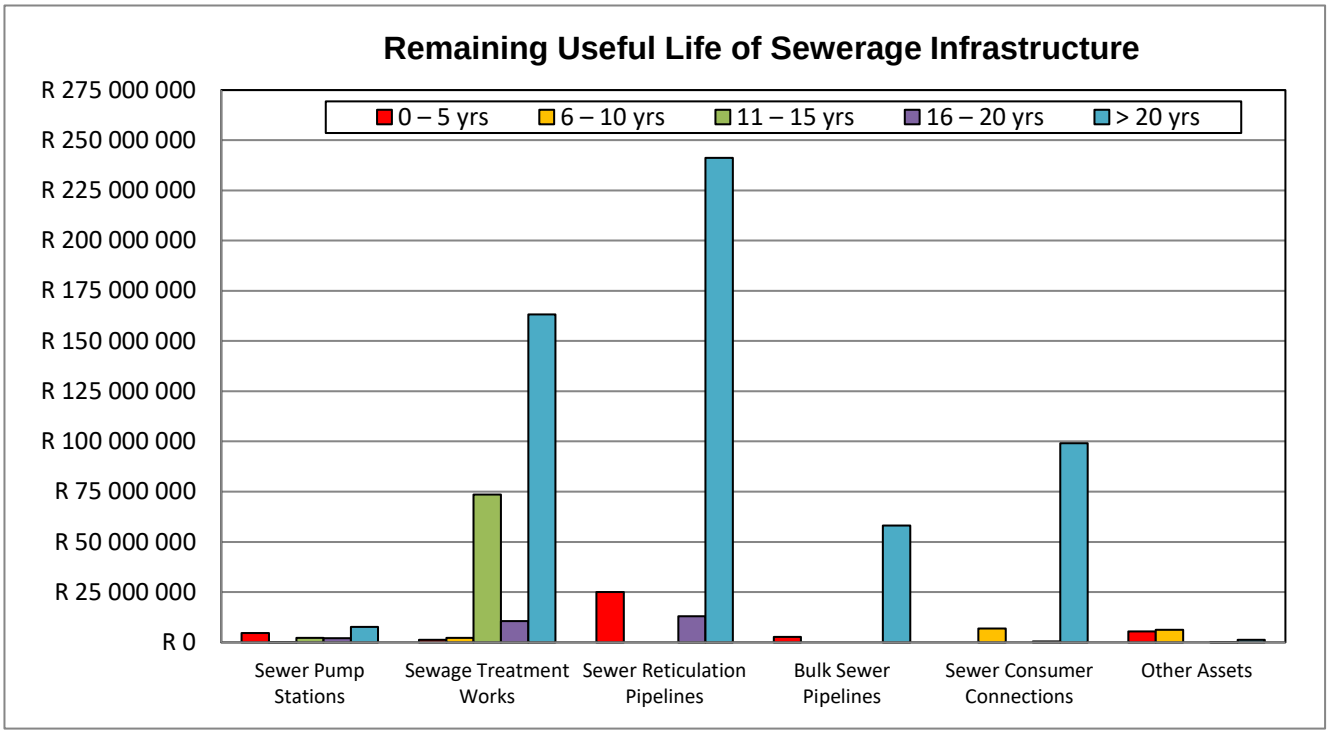


Figure C.6.4: Remaining Useful Life of the sewerage infrastructure

The table below gives an overview of the age distribution per facility for the water and sewerage infrastructure (June 2024).

Table C.6.3: Overview of the age distribution by facility type for water and sewerage infrastructure (OC)

Asset Type	GIS ID	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
WATER						
Boreholes	BH	R5 813 881	R0	R205 643	R0	R150 000
Pump Stations	WPS	R2 785 598	R430 923	R2 795 846	R4 812 758	R7 385 772
Reservoirs	RES	R1 021 422	R4 698 042	R16 590 784	R43 635 533	R69 286 093
Reticulation Pipelines	WRP	R31 298 066	R20 269 425	R20 389 499	R96 377 224	R183 685 147
Bulk Water Pipelines	BWP	R32 591 181	R15 013 616	R7 693 711	R11 338 524	R107 735 984
Dams	DAM	R0	R780 357	R829 336	R3 352 740	R30 421 437
Water Consumer Connections	WCC	R0	R0	R27 842	R11 494 000	R136 954 831
Electrical	ELEC	R6 581	R524 930	R9 736	R455 784	R0
Other Assets	OTH	R13 248 766	R17 676 009	R5 590 331	R2 177 252	R2 973 605
TOTALS		**R86 765 495**	**R59 393 302**	**R54 132 728**	**R173 643 815**	**R538 592 869**
SEWERAGE						
Sewer Pump Stations	SPS	R3 916 854	R1 034 823	R2 913 735	R4 788 557	R3 995 542
Sewage Treatment Works	STW	R1 288 982	R197 586 213	R8 283 855	R26 949 579	R16 612 157
Sewer Reticulation Pipelines	SRP	R20 791 785	R10 513 613	R16 255 965	R35 893 490	R195 884 883
Bulk Sewer Pipelines	BSP	R16 325 339	R0	R0	R8 950 449	R35 494 104
Sewer Consumer Connections	SCC	R0	R0	R580 949	R410 000	R105 400 000
Other Assets	OTH	R3 611 401	R3 739 442	R3 424 466	R1 125 784	R1 186 501
TOTALS		**R45 934 361**	**R212 874 091**	**R31 458 970**	**R78 117 859**	**R358 573 187**

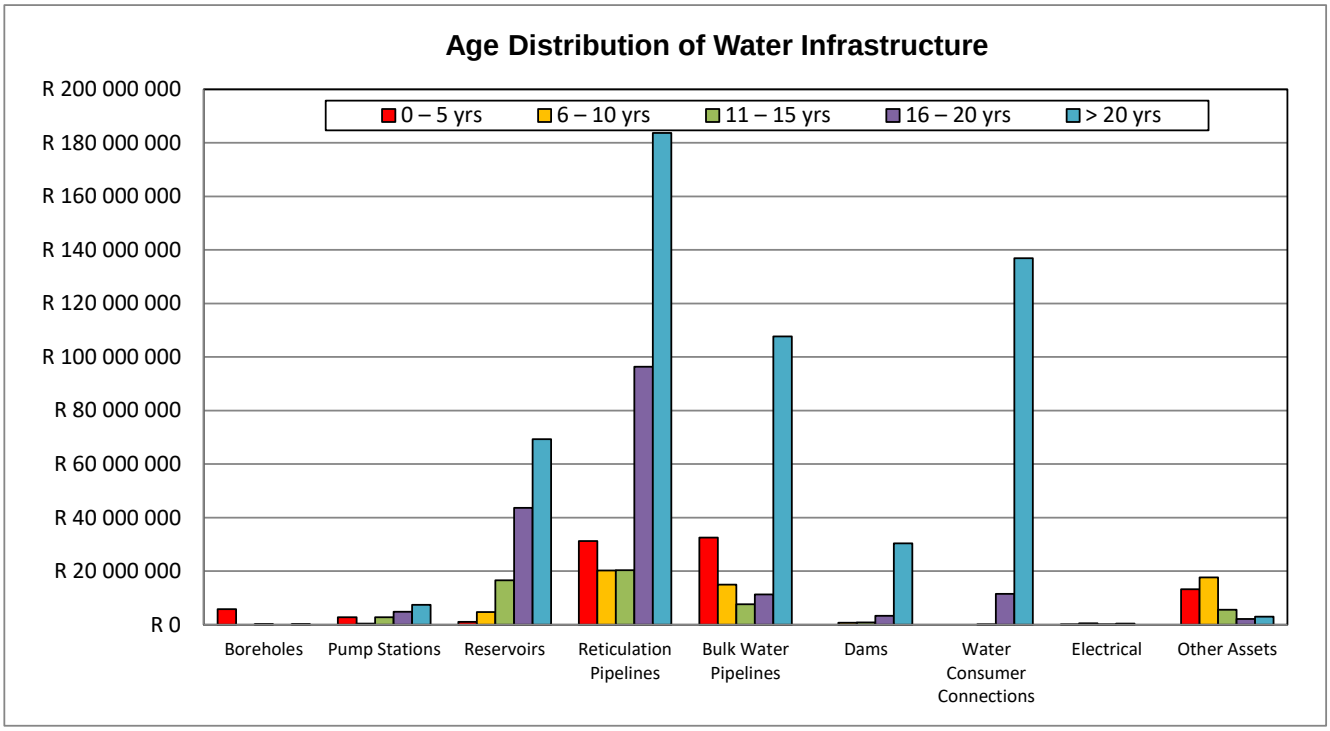


Figure C.6.5: Age distribution of the water infrastructure

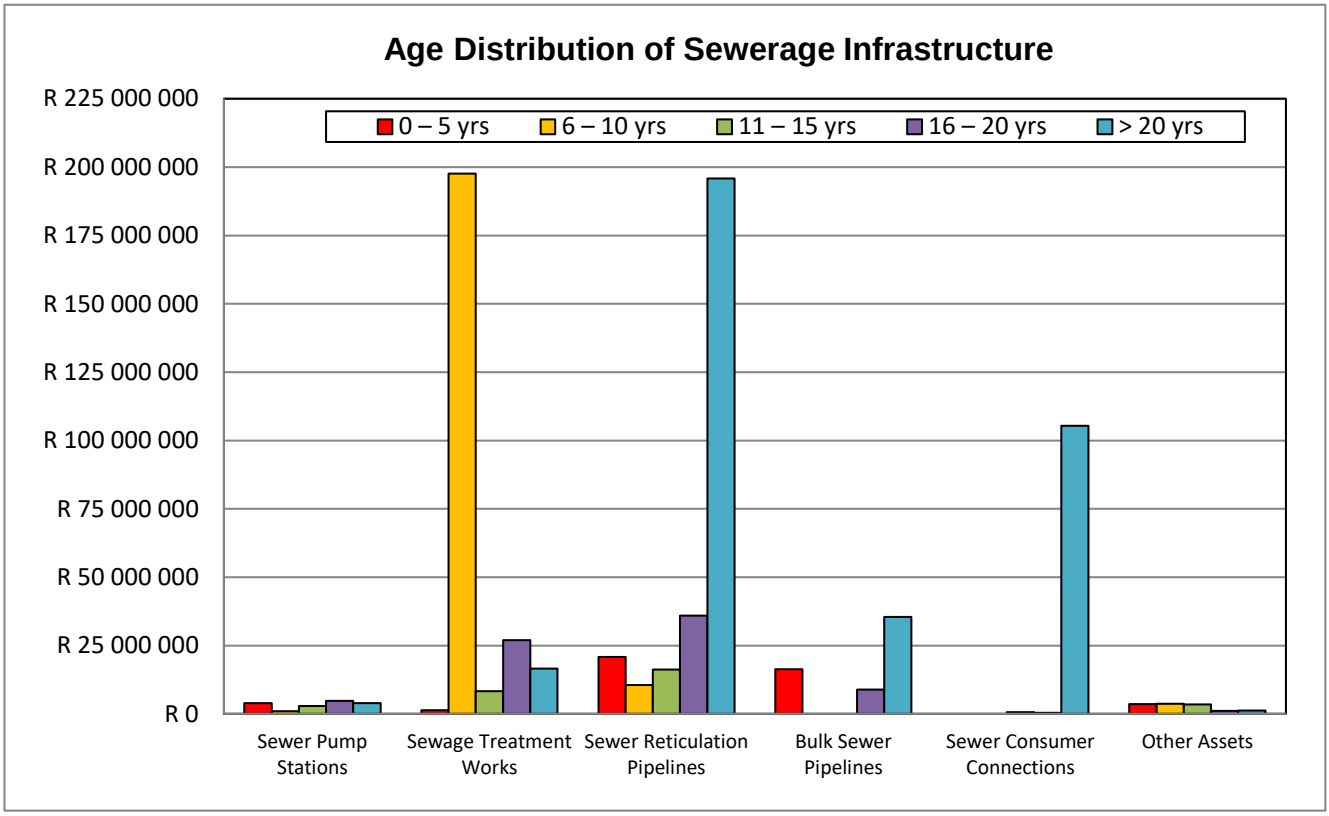


Figure C.6.6: Age distribution of the sewerage infrastructure

The Opening Cost of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL < 5 yrs) is R68.000 million. The asset renewal needs for the water infrastructure assets over the next ten years is R3.450 million per year. The reinvestment required is R29.013 million in the first five years and R5.491 million in the second five-year period. The age of 59.02% of the water infrastructure assets is greater than twenty years. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R5.454 million per year. The reinvestment required is R38.987 million in the first five years and R15.556 million in the second five-year period. The age of 49.33% of the sewerage infrastructure assets is greater than twenty years.

The tables below give an overview of the water infrastructure assets for the Swartland bulk water distribution system, which is owned by the Swartland Municipality, but operated and maintained by the West Coast District Municipality. The Opening Cost and Book Value of the water infrastructure is summarised in the table below (June 2024).

Table C.6.4: Opening Cost and Book Value of the bulk water infrastructure

Asset Type	Opening Cost (OC)	Book Value (BV)	% OC / BV
Pump Stations	R5 915 847	R3 736 571	63%
Reservoirs	R48 884 416	R31 876 709	65%
Reticulation Pipelines	R69 750 948	R37 190 638	53%
Water Meters	R413 987	R285 964	69%
WTW	R24 162 467	R15 001 666	62%
Electrical	R1 028 455	R601 490	58%
Totals	**R150 156 120**	**R88 693 038**	**59%**

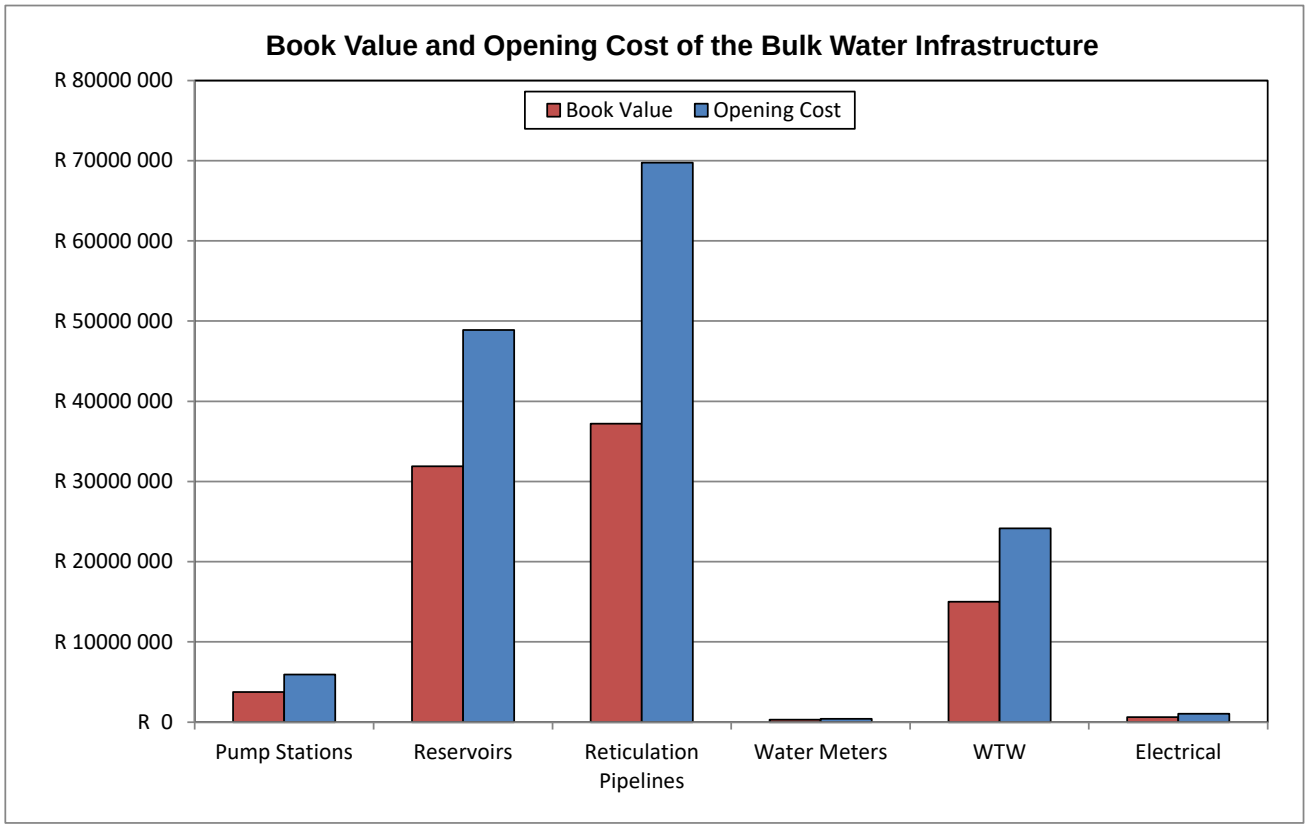


Figure C.6.7: Book Value and Opening Cost of the bulk water infrastructure

Table C.6.5: Overview of the RUL by facility type for the bulk water infrastructure (OC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Pump Stations	R476 699	R31 326	R0	R0	R5 407 822
Reservoirs	R161 199	R269 719	R125 958	R0	R48 327 540
Reticulation Pipelines	R13 513	R2 895 340	R119 681	R38 335 747	R28 386 667
Water Meters	R27 808	R51 470	R313 460	R0	R21 249
WTW	R627 514	R53 224	R970 500	R269 216	R22 242 013
Electrical	R0	R0	R50 156	R0	R978 299
Totals	**R1 306 733**	**R3 301 079**	**R1 579 755**	**R38 604 963**	**R105 363 590**

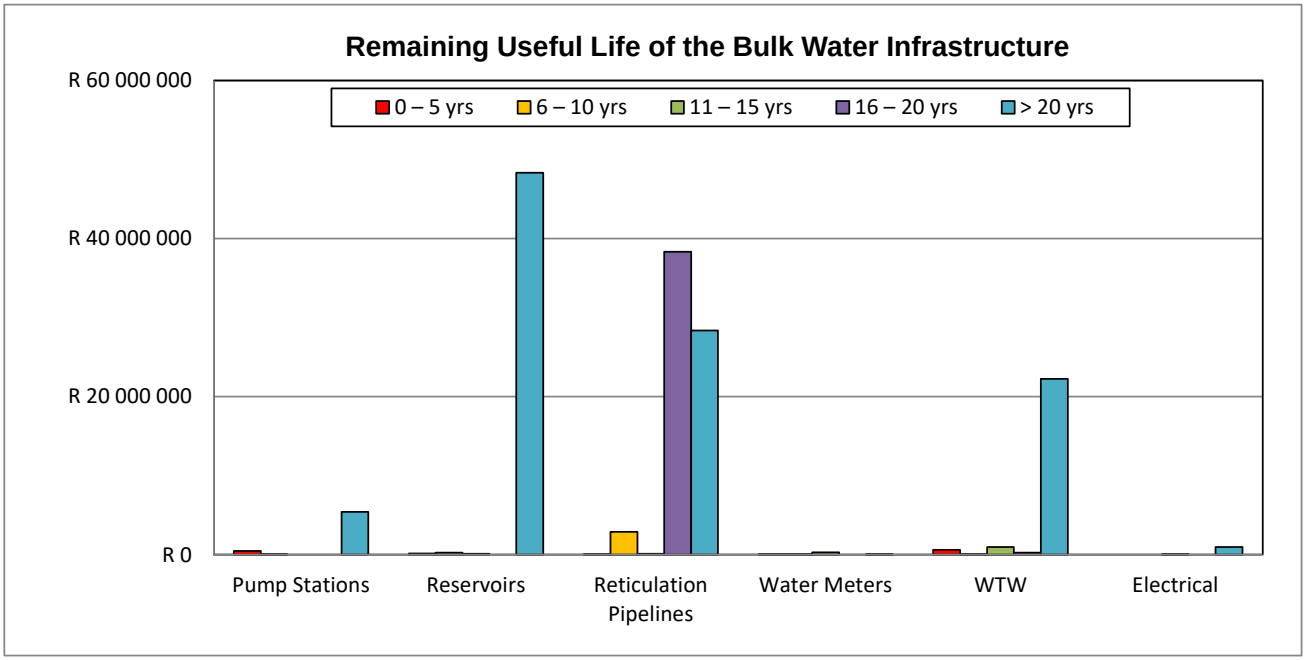


Figure C.6.8: Remaining Useful Life of the bulk water infrastructure

Table C.6.6: Overview of the age distribution by facility type for the bulk water infrastructure (OC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Pump Stations	R0	R2 255 166	R1 446 226	R2 214 455	R0
Reservoirs	R0	R0	R17 889 029	R30 995 387	R0
Reticulation Pipelines	R0	R8 470 911	R22 838 115	R38 441 922	R0
Water Meters	R229 988	R122 213	R0	R61 786	R0
WTW	R173 009	R1 968 183	R1 059 441	R20 524 567	R437 267
Electrical	R0	R0	R24 147	R1 004 308	R0
Totals	**R402 997**	**R12 816 473**	**R43 256 958**	**R93 242 425**	**R437 267**

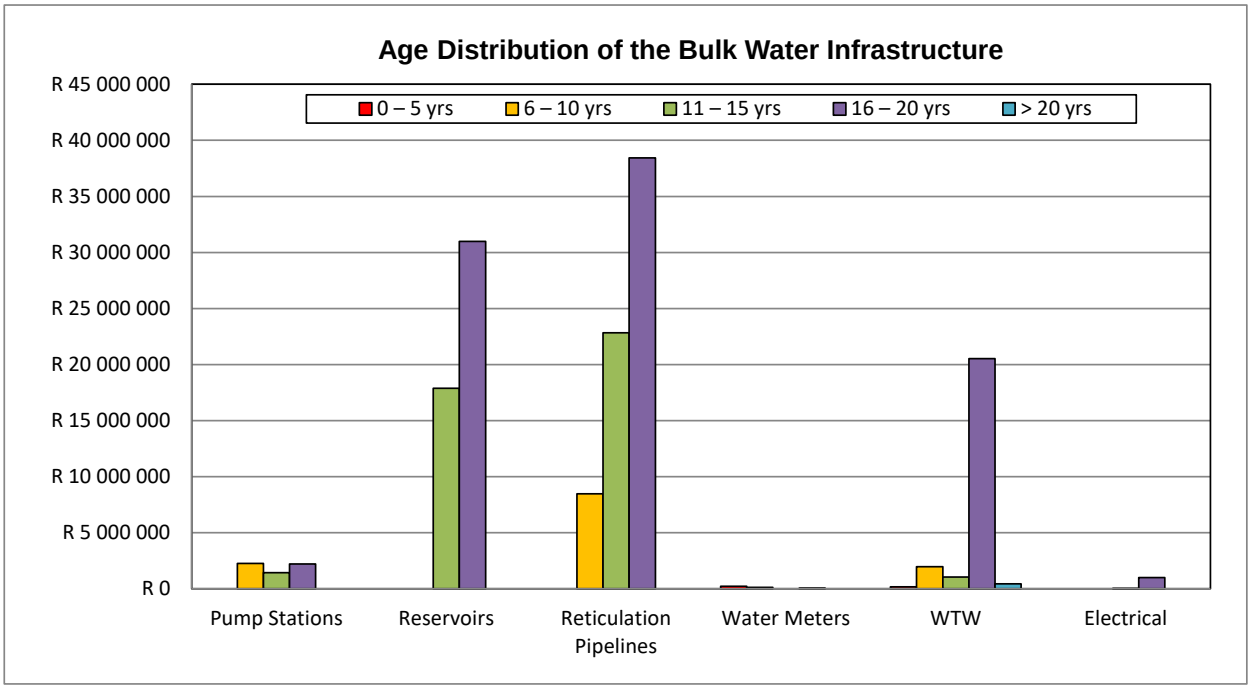


Figure C.6.9: Age distribution of the bulk water infrastructure

Most of the maintenance work currently carried out on the water and sewerage infrastructure are re-active and it is critical for the Municipality to increase their maintenance budget for water and sewerage infrastructure in order to ensure that the required preventative maintenance work is also carried out. The Asset Management Plan needs to indicate the risks associated with the inadequate refurbishment and maintenance of the various water and sewerage infrastructure.

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

C.7. Water Services Operation and Maintenance

Swartland Municipality implements the following planned and unplanned preventative and corrective maintenance, as summarised in the table below.

Table C.7.1: Types of Planned and Unplanned Preventative and Corrective Maintenance implemented by Swartland Municipality	
Design-out Maintenance: Design-out Maintenance originates on the drawing board and is aimed at improving the operation, reliability or capacity of equipment. The engineer follows a life cycle approach to infrastructure development.	
Preventative Maintenance: Preventative maintenance is based on planning. For example, breakdowns at a plant can be reduced to a minimum if it is planned that all wearing parts are to be replaced before they fail.	Systematic (Periodic Maintenance): Systematic maintenance is periodic maintenance where the servicing of equipment takes place at regular intervals, either in accordance with a time schedule or on the basis of predetermined units of use, to eliminate possible causes of failure before a breakdown occurs. Systematic maintenance requires a servicing schedule, which is based on the manufacturer's guidelines for equipment. Condition-based (Predictive) Maintenance: Condition-based maintenance is predictive maintenance based on regularly inspecting equipment and infrastructure in order to assess the state of wear and tear. Any failures that are observed, complemented by the findings of the programmed inspections and checks, are then dealt with through corrective action, so as to avoid breakdowns or the deterioration of a condition that could pose a safety hazard.

Table C.7.1: Types of Planned and Unplanned Preventative and Corrective Maintenance implemented by Swartland Municipality	
Corrective or Breakdown Maintenance: It is important to work methodically to keep repair time as short as possible. Good work preparation, use of correct (and well maintained) tools and equipment, and gathering and processing of all data relevant to the repairs helps to avoid downtime, eliminate mistakes and improve operational conditions.	Planned (Scheduled Repairs) Unplanned repairs guided by Troubleshooting: Troubleshooting is used when poor condition causes either total or partial stoppages, or when operations take place under intolerable conditions.

Swartland Municipality's operation and maintenance assessments and plans for their water and sewerage infrastructure are indicated in the table below.

Table C.7.2: Swartland Municipality's Operation and Maintenance Assessments and Plans		
Element	**Assessment Criteria**	**Status Quo**
Resources		
Staff	Sufficient staff numbers. Competency level of staff at all levels. Level of service provided by staff. Empowerment and training (Adequately trained for position, Safety regulation and Commitment). Responsibility allocation (organisational structure) and acceptance thereof.	Below minimum requirement: Additional Process Controllers need to be appointed to comply with the new Regulation 3630 requirements with regard to the number and Class of Process Controller per shift per WWTW. Alternatively, the Municipality can apply for exemption from the DWS, w.r.t the number of Process Controllers per shift per plant, if the plants are automated. Workplace Skills Programme is compiled annually to ensure adequate training of staff.
External Resources	Need for external resource providers. Competency level and value for money. Management and control over these providers.	Adequate: The operation and maintenance of the bulk water pipelines and the Swartland WTW are done by the West Coast District Municipality, with adequate personnel. A Service Level Agreement is in place between the West Coast District Municipality and Swartland Municipality.
Spare Parts	Adequate materials provisioning. Store management (Sufficient stock kept, stock control and delivery time).	Adequate: Municipality ensures adequate spare parts are available in their stores for possible failures or breakdowns. Monitored by the Civil Engineering Services Directorate.
Tools and Equipment	Adequate tools and equipment provided. Control and maintenance.	Adequate: Municipality ensures adequate tools and equipment are available. Monitored by the Civil Engineering Services Directorate.
Budget	Adequate budget provided. Budget control. Identification and documentation of needs. Budget preparation and motivation.	Adequate: Required Financial Strategies, Policies and Systems are in place to ensure proper budget control.
Information		
Manuals	Existence of manuals (operation / maintenance or manufacturer). Record keeping / safekeeping and control. Utilisation of manuals by staff.	Adequate: O&M Manuals are in place for the bulk water and sewerage infrastructure and the WWTWs. These Manuals are also used by the Process Controllers at the plants.
Asset Register	Existence of an asset register. Maintenance / updating of asset register. Accessibility of information. Control over assets. Stock taking.	Adequate: An up-to-date Asset Register is in place, which include all the water and sewerage infrastructure. CRC, DRC, RUL and Age of infrastructure are included in the Asset Register. The Asset Register is updated annually.
As-built Information	Existence of as-built drawings. Existence of important reports e.g. design reports etc. Record keeping / safekeeping and control. Accessibility of information. Updating of records.	Adequate: As-built information is available for all water and sewerage infrastructure. The information is also included in the IMQS of the Municipality. The information is regularly updated when the Water and Sewer Master Plans are updated.
Tools and Equipment	Existence of information on tools and equipment. Record keeping / safekeeping and control. Accessibility of information.	Adequate: Managed by the Operational Personnel at the various Municipal stores, with the required control forms that are in place. Monitored by the Civil Engineering Services Directorate.
Contingency and Safety Plans	Compliance to safety requirements. Safety equipment and maintenance thereof. Existence of safety plan where required.	Adequate: A Water Safety Plan and W_2RAPs are in place for all the areas. The WWTW Process Audits are currently being updated. Incident Management Protocols,

Table C.7.2: Swartland Municipality's Operation and Maintenance Assessments and Plans		
Element	**Assessment Criteria**	**Status Quo**
	Existence of contingency plan where required.	as included in the Water Safety Plan and W_2RAPs, are followed by the personnel.
Activity Control and Management		
Procedures	Existence of procedures for all activities. Existence of policies – standardisation, quality, operational and maintenance, etc. Correctness of procedures – if in place.	Adequate: Required Procedures and Policies are in place. Procedures and Policies with regard to the water and sewerage infrastructure are managed by the Civil Engineering Services Directorate.
Record Keeping	Existence of record keeping system. Process of data. Actions activated.	Adequate, but can be improved further: Record keeping of information required for the Monthly Reports are kept up to date. The record keeping of certain information is also linked to specific water and sanitation KPIs in the SDBIP. Municipality to implement recommended O&M Control Sheets for groundwater, surface water, bulk water and reticulation networks and fittings, WTWs, WWTWs, water and sewer PSs, reservoirs, remote monitoring and control systems and bulk and sewer drainage networks.
Quality Controls	Quality management plan. Quality assurance. Quality control (Inspections, Control charts, trend analysis). Process adjustment and rework. Quality improvement.	Adequate: Required quality control mechanisms are in place to ensure high quality of materials and to ensure that all work carried out on the water and sewerage infrastructure is of a high quality. The Civil Engineering Services Directorate monitors all work carried out by Consultants and Contractors.
Risk Management	Risk management planning. Risk identification. Risk probability and impact assessment. Risk response planning. Risk monitoring and control.	Adequate: Required Risk Management Protocols are in place, which is followed by the personnel. Potential risks/incidents and control measure to reduce or manage these risks were identified as part of the Water Safety Plan and W_2RAP processes.
Reporting	Production and activity reporting (Completeness, evaluation and action activation). Management reporting (Completeness and evaluation and action activation). Performance monitoring.	Adequate: The Director Civil Engineering Services report on a monthly basis to Council on all the required water and sanitation information. A SDBIP is also in place, linked to specific water and sanitation KPIs, which allows for proper performance monitoring.

Pipe bursts and other serious damage to pipes immediately interrupts services to the affected area and is rapidly addressed by Swartland Municipality. O&M is a continuous process for Swartland Municipality involving various activities, with the ultimate purpose of delivering good quality services to all customers at all times and keeping the percentage of water lost through pipe bursts and other serious damage to pipes as low as possible. Swartland Municipality's O&M Plan depends on a range of factors such as the age and condition of the water supply system, requirements of the Municipality and DWS as the regulating authority, the availability of staff, plant, equipment, spares, money and other resources.

Swartland Municipality have standby teams available after hours and over weekends, besides the planned and scheduled O&M activities, in order to allow for unscheduled responses to service breakdowns due to mal-functioning equipment, vandalism, emergency situations, etc. This allows Swartland Municipality to be able to quickly assess service breakdowns and re-allocate staff and resources to do unscheduled repairs, and then quickly return to the regular and scheduled O&M activities. The Municipality also ensure that sufficient repair materials, consumables and back-up equipment are also readily available for any potential breakdowns.

A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of existing infrastructure. In the case of the operations and maintenance of the systems, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the systems remain in good condition.

The table below gives an overview of the Opening Cost and Book Value of the water and sewerage infrastructure included in Swartland Municipality's Asset Register (June 2024). The recommended budgets for the replacement of the existing infrastructure and the operation and maintenance of the existing infrastructure, based on the CRC, are also indicated.

Table C.7.3: Recommended budgets for the replacement and the operation and maintenance of the existing water and sewerage infrastructure.

Asset Type	Asset Register June 2024		WSDP CRC	Recommended Annual Replacement Budget (Best Practice)	Recommended Annual O&M Budget (Best Practice)	Depreciation, Property, Plant and Equipment: Actual Expenditure
	Opening Cost	Book Value		2.0% of CRC	1.5% of CRC	2023/2024
Borehole	R6 169 524	R5 562 800	R3 000 000	R60 000	R45 000	R17 035 022
Pump Station	R18 210 897	R20 002 623	R77 530 000	R1 550 600	R1 162 950	
Reservoir	R135 231 874	R59 430 068	R411 407 000	R8 228 140	R6 171 105	
Reticulation Pipeline	R352 019 361	R183 508 488	Included under Bulk Water Pipeline	-	-	
Bulk Water Pipeline	R174 373 016	R89 501 812	R1 526 921 000	R30 538 420	R22 903 815	
Dam	R35 383 870	R3 528 823	-	-	-	
Water Consumer Connections	R148 476 673	R27 180 472	Included under Bulk Water Pipeline	-	-	
Electrical	R997 031	R592 193	-	-	-	
Other Assets	R41 665 963	R31 392 032	-	-	-	
WTWs	-	-	R309 192 000	R6 183 840	R4 637 880	
Sub Total Water	**R912 528 209**	**R420 699 311**	**R2 328 050 000**	**R46 561 000**	**R34 920 750**	**R17 035 022**
Sewer Pump Station	R16 649 511	R6 559 159	R38 037 000	R760 740	R570 555	R20 366 214
Sewage Treatment Works	R250 720 786	R296 897 724	R583 000 000	R11 660 000	R8 745 000	
Sewer Reticulation Pipeline	R279 339 736	R108 128 041	Included under Bulk Sewer Pipeline	-	-	
Bulk Sewer Pipeline	R60 769 892	R33 771 700	R911 192 000	R18 223 840	R13 667 880	
Sewer Consumer Connections	R106 390 949	R18 390 761	Included under Bulk Sewer Pipeline	-	-	
Other Assets	R13 087 594	R13 603 040	-	-	-	
Sub Total Sewerage	**R726 958 468**	**R477 350 425**	**R1 532 229 000**	**R30 644 580**	**R22 983 435**	**R20 366 214**
Total Water and Sewerage	**R1 639 486 677**	**R898 049 736**	**R3 860 279 000**	**R77 205 580**	**R57 904 185**	**R37 401 236**

The table below gives an overview of the Opening Cost and Book Value of the bulk water infrastructure included in Swartland Municipality's Asset Register for infrastructure operated and maintained by the West Coast District (June 2024).

Table C.7.4: Recommended budgets for the replacement and the operation and maintenance of the existing bulk water infrastructure.

Asset Type	Asset Register June 2024		Recommended Annual Replacement Budget (Best Practice)	Recommended Annual O&M Budget (Best Practice)	Depreciation, Property, Plant and Equipment: Actual Expenditure
	Opening Cost	Book Value	2.0%	1.5%	2023/2024
Pump Station	R5 915 847	R3 736 571	R118 317	R88 738	Included in previous Table C.7.3
Reservoir	R48 884 416	R31 876 709	R977 688	R733 266	
Reticulation Pipeline	R69 750 948	R37 190 638	R1 395 019	R1 046 264	
Water Meter	R413 987	R285 964	R8 280	R6 210	
WTW	R24 162 467	R15 001 666	R483 249	R362 437	
Electrical	R1 028 455	R601 490	R20 569	R15 427	
Total Water	**R150 156 120**	**R88 693 038**	**R3 003 122**	**R2 252 342**	

Most of the major replacement of old water and sewerage infrastructure in Swartland Municipality is done through the Municipality's annual capital budget. The capital budget however also includes new infrastructure.

The table below gives an overview of the total historical water and sewerage capital expenditure for the last six financial years.

Table C.7.5: Historical water and sewerage capital expenditure						
Infrastructure	**23/24**	**22/23**	**21/22**	**20/21**	**19/20**	**18/19**
Water	R20 677 630	R29 401 179	R9 323 980	R64 161 385	R9 658 726	R14 797 042
Sewerage	R12 379 438	R14 952 473	R63 296 662	R2 353 219	R14 507 999	R8 976 513
Total	**R33 057 068**	**R44 353 652**	**R72 620 642**	**R66 514 604**	**R24 166 725**	**R23 773 555**

C.8. Water Resources

The Western Cape experienced a severe drought over the period 2015 to 2017, with some relief during the winter months of the following years. This drought over the period 2015 to 2017 impacted severely on the assurance of bulk water supply by the West Coast District Municipality to Swartland Municipality from the WCWSS and the yield of the Municipality's own existing surface and groundwater sources. WC/WDM measures to lower the current water requirements and the augmentation of the West Coast District Municipality's existing water sources, as well as the augmentation of Swartland Municipality's own water resources with groundwater were therefore critical over this period.

Future water requirement projection models were developed for each of the towns within Swartland Municipality's Management Area, which are included in Annexure C. IWA Water Balance models with graphs of the total water requirements (System Input Volume and billed metered consumption), peak month factors, annual NRW and water losses and water usage per sector are included in Annexure A for each of the systems.

The West Coast District Municipality applied to the DWS in December 2013 to increase the allocation from the System to initially 18.087 million m^3/a for the Withoogte supply area, which is to be increased to 30.3 million m^3/a by 2033, and to 6.39 million m^3/a for the Swartland supply area (to be increased to 11.1 million m^3/a by 2033).

The current raw water abstraction Licence No. 01/G10F/A/5903 of October 2017 list the following volumes allocated to the respective WSAs, which include operational, treatment and bulk conveyance losses.

Table C.8.1: Volumes allocated to the respective WSAs in Licence No. 01/G10F/A/5903			
Name	**Resource Name**	**WSA**	**Maximum Volume (Ml/a)**
Withoogte from Misverstand Weir	Berg River	Saldanha LM	20 427.000
		Swartland LM	1 573.600
		Berg River LM	1 439.400
Swartland from Voëlvlei Dam	Berg River	Swartland LM	7 900.000
		Drakenstein LM	300.000
Langebaan Aquifer Boreholes 1 & 2	Langebaan Aquifer	Saldanha Bay LM	675.000
Langebaan Aquifer Boreholes 3 & 4		Saldanha Bay LM	675.000
Total Allocation for the West Coast District Municipality			**32 990.000**
Total Allocation for the West Coast District Municipality from the WCWSS			**31 640.000**

The DWS is currently busy with the updating of the All Towns Reconciliation Strategies for the Western Cape, but updated strategies for Swartland Municipality are not yet available. The table below gives an overview of the recommended potential future water resources, as included in the 2016 All Towns Reconciliation Strategies, for the towns in Swartland Municipality.

Table C.8.2: Potential future water resources for the various towns (Recommended summary options of DWS's All Towns Reconciliation Strategies, March 2016)

Distribution System	Recommended Summary Options
Koringberg	**The current water sources do not have adequate supply to cater for the projected future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the full implementation of the existing WC/WDM Strategy. • Increase the allocation from the Berg River for the Withoogte Regional Water Supply Scheme • Groundwater development.
Riebeek Wes and Ongegund	**The current water sources do not have adequate supply to cater for the current and longer-term future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the implementation of the existing WC/WDM Strategy in order to reduce water losses and NRW and achieve savings in water consumption. • Increase the allocation from the Voëlvlei Dam for the Swartland Regional Water Supply Scheme. • Groundwater development.
Riebeek Kasteel	**The current water sources do not have adequate yields available to cater for the current and longer-term future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the implementation of the existing WC/WDM Strategy. • Increased allocation for the Swartland Regional Water Supply Scheme from the Voëlvlei Dam (WCWSS). • Groundwater development • Re-use of water • Rainwater harvesting.
Yzerfontein	**The current water sources do not have adequate supply to cater for the current and longer-term future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the implementation of the existing WC/WDM Strategy. • Increased allocation for the Swartland Regional Water Supply Scheme from the Voëlvlei Dam (WCWSS). • Desalination of seawater for Saldanha and environs to make more water available for Yzerfontein from the Voëlvlei Dam.
Darling	**The current water sources do not have adequate supply to cater for the projected future water requirements of Darling. The following sources are identified as potential sources to augment the water supply:** • Continue with the implementation of the existing WC/WDM Strategy. • Increased allocation for the Swartland Regional Water Supply Scheme from the Voëlvlei Dam (WCWSS). • Consider re-use of water. • Groundwater development.
Moorreesburg	**The current water sources do not have adequate supply to cater for the longer-term future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the implementation of the existing WC/WDM Strategy. • An increased allocation from the Berg River for the Withoogte Regional Water Supply Scheme. • Groundwater development. • Re-use of water. • Rainwater harvesting
Malmesbury and Abbotsdale	**The current water sources do not have adequate supply to cater for the current and longer-term future water requirements. The following sources are identified as potential sources to augment the water supply:** • Continue with the full implementation of the existing WC/WDM Strategy in order to keep the water losses and NRW as low as possible and achieve savings in water consumption. • Increased allocation for the Swartland Regional Water Supply Scheme from the Voëlvlei Dam (WCWSS). • Water re-use. • Groundwater development for smaller communities.

Detailed future water requirement projection models were developed for each of the water distribution systems. The future water requirements are indicated in the table below per system. These models include the future projections up to 2048 and were calibrated by using historic billed metered consumption data and bulk abstraction data. The percentage of NRW was determined for each of the distribution systems and growth in future water requirement was based on agreed population and growth figures.

Table C.8.3: Projected future water requirements of towns

Distribution System	Model	PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)				
		2028	2033	2038	2043	2048
Moorreesburg	2% Annual Growth	831.211	917.724	1 013.241	1 118.700	1 235.135
	4% Annual Growth	915.961	1 114.406	1 355.846	1 649.594	2 006.983
	WSDP Model	786.185	890.427	1 012.023	1 154.086	1 320.318
Koringberg	2% Annual Growth	62.386	68.879	76.048	83.963	92.702
	4% Annual Growth	68.747	83.641	101.762	123.809	150.633
	WSDP Model	64.271	75.199	88.164	103.567	121.895
Total for Withoogte System	**Low Projection**	**893.597**	**986.603**	**1 089.289**	**1 202.663**	**1 327.837**
	High Projection	**984.708**	**1 198.047**	**1 457.608**	**1 773.403**	**2 157.616**
	WSDP Model	**850.456**	**965.626**	**1 100.187**	**1 257.653**	**1 442.213**
Malmesbury	2% Annual Growth	3 670.310	4 052.319	4 474.088	4 939.754	5 453.888
	4% Annual Growth	4 044.535	4 920.795	5 986.900	7 283.979	8 862.074
	WSDP Model	3 747.823	4 425.025	5 245.415	6 241.970	7 455.684
Darling	2% Annual Growth	586.302	647.325	714.699	789.086	871.214
	4% Annual Growth	646.082	786.057	956.359	1 163.557	1 415.644
	WSDP Model	616.177	696.213	788.711	895.896	1 020.432
Riebeek Kasteel	2% Annual Growth	449.679	496.482	548.156	605.209	668.199
	4% Annual Growth	495.528	602.886	733.503	892.418	1 085.763
	WSDP Model	494.918	624.992	797.376	1026.605	1 332.380
Riebeek Wes	2% Annual Growth	204.857	226.178	249.719	275.710	304.406
	4% Annual Growth	225.744	274.652	334.156	406.552	494.633
	WSDP Model	220.778	269.110	330.946	410.497	513.350
Ongegund (PPC)	2% Annual Growth	25.983	28.688	31.674	34.970	38.610
	4% Annual Growth	28.633	34.836	42.383	51.566	62.738
	WSDP Model	24.771	27.565	30.763	34.428	38.636
Yzerfontein	2% Annual Growth	376.099	415.243	458.462	506.179	558.863
	4% Annual Growth	414.446	504.236	613.481	746.393	908.101
	WSDP Model	372.527	424.169	484.481	555.075	637.874
Total for Swartland System	**Low Projection**	**5 313.230**	**5 866.235**	**6 476.798**	**7 150.908**	**7 895.180**
	High Projection	**5 854.968**	**7 123.462**	**8 666.782**	**10 544.465**	**12 828.953**
	WSDP Model	**5 476.994**	**6 467.074**	**7 677.692**	**9 164.471**	**10 998.356**
All towns in Swartland Municipality's Management Area	2% Annual Growth	**6 206.827**	**6 852.839**	**7 566.087**	**8 353.571**	**9 223.017**
	4% Annual Growth	**6 839.676**	**8 321.514**	**10 124.390**	**12 317.868**	**14 986.569**
	WSDP Model	**6 327.447**	**7 432.700**	**8 777.879**	**10 422.124**	**12 440.569**

The table below gives an overview of the years in which the annual water requirements are likely to exceed the licence volumes from the WCWSS.

Table C.8.4: Years in which the annual water requirements are likely to exceed the total licence volumes for Swartland Municipality from the WCWSS

Distribution System	Total Licence Volume for Swartland Municipality (Ml/a)	Annual Growth on 2023/2024 Demand (Low Growth)	Annual Growth on 2022/2023 Demand (High Growth)	WSDP Projection Model
Withoogte System	1 573.600	>2048	2037	2047
Swartland System	7 900.000	2024	2024	2024

Note: The severe drought in the Western Cape, over the period 2015 to 2017, impacted on the assurance of supply from the WCWSS, which resulted in severe water restrictions implemented by the Swartland Municipality in order to lower the current water requirements and to ensure that the systems don't "run dry" during the drought period.

A number of resource augmentation studies were previously completed by the DWS for the WCWSS, by the West Coast District Municipality for the West Coast Region and by Swartland Municipality for the towns in their Management Area. A desktop study of these previous augmentation studies was completed during the last financial year. The Conclusions and the Recommendations from the desktop study are indicated below.

Resource Augmentation Desktop Study Conclusions: The overall water requirements of the towns in Swartland Municipality in 2015/2016 was 5 483 Ml/a (15.025 Ml/d), which came down to a low of 3 442 Ml/a (9.431 Ml/d) in 2017/2018, due to the drought and the water restrictions and WC/WDM measures implemented by the Municipality. This is a reduction of 37.2% over a two-year period. There was a steady increase in water requirements again over the period 2018/2019 and 2019/2020. The likely "bounce back" after the drought is uncertain, but it is estimated that it would probably take about four to six years after 2017/2018 to reach the same water requirements as the period before the drought (2015/2016).

The future water requirements for the Swartland Voëlvlei and the Swartland Withoogte (Only Moorreesburg and Koringberg) bulk water distribution systems are expected to increase to 5 945 Ml/a and 1 180 Ml/a (High growth) by 2029. These volumes are still less than the new licence volumes of 7 900 Ml/a and 1 573.6 Ml/a that were issued in 2017.

Comprehensive historical metered data of the water requirements for the two bulk water distribution systems and the towns in Swartland Municipality's Management Area are available, which assist with the future requirement projections for the systems.

Various water resource augmentation studies/investigations were done over the last number of years for the West Coast Region, the WCWSS and the towns in Swartland Municipality's Management Area. These studies recommended various augmentation projects for the various systems. Most of the studies were done in the period before the drought in the Western Cape.

WC/WDM: The Withoogte and Swartland Voëlvlei bulk water distribution systems are already well managed with regard to reducing treatment losses and bulk water distribution losses. The scope to make additional water available through the implementation of specific WC/WDM measures is very limited. Swartland Municipality's NRW and Water Losses for their internal distribution systems (towns) for 2019/2020 was 15.93% and 15.73% respectively, which is also very low. A comprehensive WC/WDM Strategy is in place for the Municipality and the estimated volume of water saved on System Input Volume for the next five and ten years, with the implementation of the additional WC/WDM measures, is 342.098 Ml/a for 2024 and 441.191 Ml/a for 2029 respectively. Swartland Municipality is committed to continue with the implementation of their WC/WDM Strategy.

Reliability of Supply from the WCWSS: The towns in Swartland Municipality nearly ran out of water in 2018, due to the limited supply from the WCWSS and the low levels of the Voëlvlei dam. A combined effort by the Municipality, residents, business and government helped avoid a potential catastrophe through dramatic reduction of water use. Exclusive reliance on rainfall fed dams (WCWSS) is no longer wise over the longer term and Swartland Municipality must adopt a precautionary approach to water resource management in dealing with climate uncertainty and the future supply from the system.

WCWSS Augmentation Options: Various studies for the augmentation of the WCWSS were completed by the DWS over the last number of years. The Berg River to Voëlvlei Augmentation Scheme (BRVAS) was identified as the next surface water scheme in 2015 by the National DWS. It will form an integral part of the WCWSS and is being implemented by the TCTA. The URV of the proposed scheme was estimated at R1-31/kl in 2012. Assuming that the construction costs have escalated at 6% per annum in real terms then the 2021 URV would be R3-71/kl, including R1-50/kl for treatment costs. The growth in the West Coast's requirements could also be supplied from the BRVAS, depending on the actual growth in water requirements. The TCTA is currently in discussion with water users to formulate an institutional approach and to make a decision on a funding model. Indications are that water users from the WCWSS, including the CCT, are supportive of the project, currently scheduled for completion by mid-2023.

Supply from the CCT at their Bulk Tariff: One of the augmentation options available to Swartland Municipality is to purchase treated water from the CCT, for supply from Atlantis to Chatsworth and Riverlands. The estimated cost of a pipeline from Atlantis to Chatsworth and Riverlands is R15.320 million and the annual purchase cost of the potable water will be roughly R1.5 million per year, against the current bulk purchase tariff of R8-13/kl of the CCT.

One of the CCT's current resource augmentation projects is the Atlantis Managed Aquifer Recharge Scheme Refurbishment project, with which the City is currently busy, and this scheme will therefore be independent from the WCWSS. The benefits of supplying Chatsworth and Riverlands with potable water from Atlantis are as follows:

- The Atlantis scheme is a groundwater scheme and the risk associated with surface water sources and the impact of less rainfall on the yield of the system (WCWSS) will therefore not be applicable for the supply to Chatsworth and Riverlands.
- More water will be available for Swartland Municipality's other towns, that are still dependent on supply from the WCWSS, if Chatsworth and Riverlands are supplied from the CCT.
- It will not be necessary to supply potable water from Kalbaskraal to Chatsworth and Riverlands anymore.

Surface Water Source Options: There are no other surface water sources located in close proximity to the various towns in Swartland Municipality's Management Area. The current supply from the WCWSS (from the Misverstand weir and the Voëlvlei dam) is the only real surface water sources available to the Municipality and where the required bulk water infrastructure is already in place.

Groundwater Options: The Pre-Feasibility Study of Potential Water Sources for the Area Served by the West Coast District Municipality Phase 1: Assessment of Development Potential of Groundwater Resources identified various target areas that can be investigated further by Swartland Municipality for possible groundwater augmentation schemes. The URVs of developing groundwater within the various proposed exploration target areas varies from R3-07/m^3 to R12-73/m^3.

Three existing production boreholes are already utilised in Riverlands and there is a possibility that the two newly drilled boreholes can also be commissioned and connected to the system. Koringberg and Riebeek Wes are the only other towns where the yields of the newly drilled boreholes are adequate to provide a high percentage of the town's existing demand. The groundwater will however require additional treatment and blending options will need to be considered.

The Desktop Feasibility Study into water supply to Yzerfontein from the Grootwater Aquifer indicated a URV of R25-39/kl for a groundwater supply scheme for Yzerfontein for water supply. The Study also indicated that a separate investigation has to be carried out into the Colenso Fault Zone close to Darling, based on boreholes with depths of between 100m and 150m, if the Municipality considers supplying Darling with groundwater.

Water reuse Options: Adequate treated effluent needs to be available for any water reuse scheme to be sustainable. The effluent quality from the respective WWTWs and the design of the necessary barriers to ensure the health and safety of the public are some of the most important considerations.

53.3% Of the total treated effluent discharged from the WWTW in 2019/2020 was already reused by end-users for irrigation and agricultural purposes. Therefore, there is limited scope for additional reuse options to be implemented at the Darling-, Moorreesburg-, Riebeek Valley- and Malmesbury WWTW. Swartland Municipality will continue to reuse treated effluent from the four main WWTWs for irrigation purposes and options of "indirect use" and "direct use" are only seen as long-term possible interventions.

Desalination Options: The West Coast District Municipality previously proposed to construct and operate a sea water desalination plant in the Saldanha Bay area using sea water reverse osmosis (SWRO) technology. The proposed desalination plant and bulk infrastructure will cost an estimated R500 million, R300 million more than the original cost estimate. This project is however currently on hold, due to inadequate funding.

Yzerfontein is the only town in Swartland Municipality's Management Area where desalination is an option for future water supply. The town's 2019/2020 PDD was 1.552 Ml/d and it is expected to increase to a PDD of 1.887 Ml/d by 2029. The estimated capital cost for a desalination plant at Yzerfontein, with the marine infrastructure included, is roughly R35 million/Ml. It will also be very difficult to obtain environmental authorisation for the construction of a desalination plant at Yzerfontein due to the sensitivity of the coastal area.

Resource Augmentation Desktop Study Recommendations: The following recommendations with regard to water resource augmentation options available to Swartland Municipality were made based on the findings and conclusions contained in this desktop study:

- Swartland Municipality should continue to implement their WC/WDM Strategy for both the bulk water distribution systems and the internal water reticulation systems of the towns. Treatment Losses, NRW and Water Losses need to be monitored on a monthly basis.

- Investigate the cost of small groundwater schemes for Koringberg and Riebeek Wes. These are the only two towns where the yields of the newly drilled boreholes are adequate to provide a high percentage of the town's existing demand. The groundwater will require additional treatment and blending options will need to be considered.

- Compile a Feasibility Study for a bulk groundwater augmentation scheme for the Swartland Voëlvlei bulk water distribution system from the target areas included in the "Pre-Feasibility Study of Potential Water Sources for the Area Served by the West Coast District Municipality Phase 1: Assessment of Development Potential of Groundwater Resources" Report.

- The URV of R25-39/kl for a groundwater supply scheme for Yzerfontein from the Grootwater Aquifer is high and should be seen as a possible medium- to long-term possible intervention.

- An investigation has to be carried out into the Colenso Fault Zone close to Darling if the Municipality considers supplying Darling with groundwater. A possible groundwater scheme for Darling should be seen as a possible medium- to long-term possible intervention.

- Continue to reuse treated effluent from the four main WWTWs for irrigation purposes in order to reduce the demand for potable water used for irrigation purposes (Parks, Sport Fields, etc.). The options of "indirect potable reuse" and "direct potable reuse" of treated effluent should be seen as long-term possible interventions.

- Swartland Municipality should engage with the CCT with regard to the following:
  - The CCT's programme for implementing the additional infrastructure to provide the proposed 1 in 200 year level of assurance of supply (Atlantis Managed Aquifer Recharge Scheme Refurbishment Project).
  - The possibility of supplying the towns of Chatsworth and Riverlands with potable water from Atlantis.
  - The other options available to Swartland Municipality to purchase bulk potable water from the CCT, which include the following.
    (1) Purchase potable water from the CCT through their Voëlvlei bulk water pipeline, which supply the Plattekloof reservoir.
    (2) The possibility for the CCT to take over the Swartland WTW and to provide potable water to Gouda and the Swartland Municipality from the WTW.
    (3) Any possible other arrangements with the CCT.

- Swartland Municipality should engage with DWS and the TCTA to discuss the options available for an increased future allocation from the WCWSS for Swartland Municipality, through the implementation of the Berg River Voëlvlei Augmentation Scheme (BRVAS) project or the other future augmentation projects.

- Engage with Saldanha Bay Municipality and the West Coast District Municipality if the proposed Saldanha Bay desalination plant project is started. A possible desalination plant for Yzerfontein should only be seen as a long-term possible intervention.

Industrial Effluent: Special application must be made to discharge industrial effluent into the sewage disposal system including detailed information to ensure the composition of the effluent meets the standards and criteria of the Municipality. The Municipality's Water Services By-laws, with regard to the discharge of industrial effluent into the sewer system, were promulgated and all industrial consumers formally apply for the discharge of industrial effluent into the sewer system. An external accredited laboratory monitors the industrial effluent of the industrial consumers in Darling, Moorreesburg and Malmesbury on a weekly basis. The industrial effluent sample results and graphs indicating the pH and COD compliances are included in Annexure D. The compliance percentages for the quality of industrial effluent discharged into the municipality's sewer system are summarised in the table below for the last three financial years.

Table C.8.5: Compliance percentages of industrial effluent discharged by industrial consumers per parameter

Town	Industrial Consumer	pH Compliance			COD Compliance		
		2023/2024	2022/2023	2021/2022	2023/2024	2022/2023	2021/2022
Darling	Consumer No.1	55.6%	84.0%	84.9%	88.9%	92.0%	84.9%
	Consumer No.2	10.0%	51.0%	40.4%	56.7%	80.4%	63.5%
	Consumer No.3	100.0%	84.3%	90.6%	100.0%	100.0%	92.5%
Moorreesburg	Consumer No.4	88.5%	84.4%	98.0%	96.2%	100.0%	100.0%
Malmesbury	Consumer No.5	-	100.0%	100.0%	-	95.7%	90.6%
	Consumer No.6	87.2%	100.0%	98.1%	92.5%	100.0%	96.2%
	Consumer No.7	0.0%	1.9%	0.0%	3.3%	3.8%	16.0%
	Consumer No.8	6.7%	17.6%	34.6%	83.3%	100.0%	98.1%
	Consumer No.9	50.0%	7.1%	17.0%	96.7%	73.2%	77.4%

C.9. Water Services Institutional Arrangements and Customer Services

Swartland Municipality is the WSA for the entire Municipal Management Area. A Service Level Agreement is in place with the West Coast District Municipality for the provision of bulk potable water to most of the towns in Swartland Municipality's Management Area. The West Coast District Municipality operate and maintain the Withoogte and Swartland bulk water distribution systems.

The DWS also approved the additional requested allocation of 1 000 Ml/a over and above the initial allocation of 660 Ml/a from the planned Berg River Voëlvlei Augmentation Scheme (BRVAS), which gives Swartland Local Municipality a total allocation of 1 660 Ml/a from the planned scheme.

The 2022-2027 WSDP was approved by the Swartland Municipality's Council on the 25th of July 2024. The WSDP Performance- and Water Services Audit Report is compiled annually and taken to Council with the Municipality's Annual Report.

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

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

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

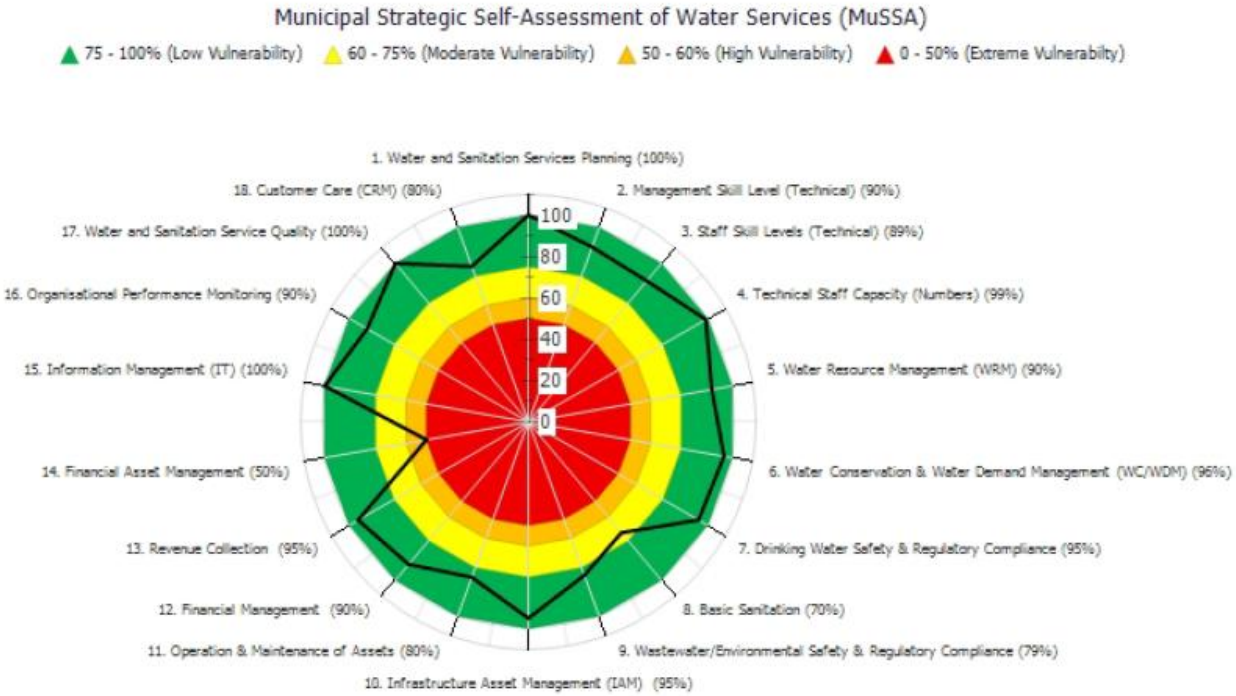


Figure C.9.1: Spider Diagram of the vulnerability levels of Swartland Municipality for 2023

Swartland Municipality's Vulnerability Index for 2023 was indicated as 0.19 "Low Vulnerability". The only one area of concern evident from the 2023 assessment is Financial Asset Management, which obtained a score of 50% (High Vulnerability). The vulnerability of all the other key service areas are low, except basic sanitation that is moderate.

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality

Section	Vulnerability
Water and Sanitation Service Quality • Critical business databases and documents (e.g. as-built drawings, records, manuals, agreements, billing/revenue collection, project and scheme management data, etc.) are current, maintained and stored in secure locations (on-site and off-site, both paper and electronic). • Customers have a functional, reliable and safe water supply system with sufficient quantity and flow, good quality and minimal interruptions. • All consumers served experience interruptions of less than 48 hours (at any given time) and a cumulative interruption time during the year of less than 15 days. • Households in your WSA experience water pressure problems (no flow/partial flow less than 10 litres / minute) (not to be confused with interruption to supply). • Customers have a functional, reliable, dignified and safe sanitation system with no blockages resulting in overflows that impact on the environment, including effective collection and treatment of faecal sludge.	**Low (100%)**
Customer Care • A functional customer service system manned by appropriate customer services representatives and using a complaints register, is in place to address complaints and appropriately inform customers of service interruptions, contamination of water, boil water alert, etc. • Regular municipal wide customer satisfaction surveys are conducted to determine customer satisfaction levels and inform the Customer Care Management Plan. • Please indicate what percentage of the reported water related complaints/callouts are acknowledged, including consumer response, within 24 hours.	**Low (80%)**

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	**Vulnerability**
• Please indicate what percentage of the reported wastewater/sanitation related complaints/callouts are acknowledged, including consumer response, within 24 hours. • A comprehensive customer awareness programme (informing customers of water and wastewater system O&M activities, water quality, resource protection / pollution, reporting incidents / security concerns, etc.) is in place and implemented.	
Water and Sanitation Services Planning • Your appropriate water and sanitation services planning (e.g. WSDP) and associated master planning processes include and are aligned with appropriate Water and Sewage Master Plans, Spatial Development Framework, Water Safety Plans and Wastewater Risk Abatement Plans (W_2RAPs), and are aligned to your IDP and associated SDBIP targets. • You are implementing an up-to-date and adopted municipal water and sanitation services plan (e.g. WSDP). • Your current project list addresses existing needs / shortcomings identified through the WSDP and associated master planning process. • Project progress is monitored, tracked and reported to municipal top management / council and the Regulator (through the annual water and sanitation services report). • Projects identified through your various planning processes have been implemented in the last 3 years.	**Low (100%)**
Water Resource Management (WRM) • The recommendations and actions from the Reconciliation Strategies (Large Systems / All Towns) have been incorporated into your WSDP, master planning and IDP processes. • The metered quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of abstraction and assurance of supply, and considering possible climate change impacts) (i.e. no shortage in 10 years). • The quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of assurance of supply) (i.e. no shortage in 10 years). • The source water quality is currently acceptable for its purpose. • The trend indicates a deteriorating source water quality.	**Low (90%)**
WC/WDM • Your WSA has developed a council approved WC/WDM Strategy, which includes a standard water balance (e.g. modified IWA). • Please indicate your percentage Non-Revenue Water (NRW) as per the modified IWA water balance. • System input volumes (bulk) to the WSA are accurately monitored using calibrated bulk meters (e.g. check metering). • Please indicate what percentage of all connections are metered and billed (residential and non-residential (commercial, industrial, etc.)) on a monthly basis. • Your WSA is implementing appropriate intervention programmes to reduce NRW (e.g. minimisation of night flows through pressure management, removal of unlawful connections, leak detection and repairs, consumer education / awareness).	**Low (96%)**
Drinking Water Safety and Regulatory Compliance • Please indicate your microbiological drinking- water quality compliance for E.Coli (or faecal coliforms) for the communities you are monitoring for the last 12 months. • ALL your supply schemes, WTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable Water Safety Planning framework. • Council have been made aware of high risk / critical water safety plan related issues (including those identified via the Blue Drop Certification programme) that require budget and auctioning, and these issues have been actioned (where applicable). • Sufficient funds have been made available to address all these identified water safety related issues. • Required corrective actions/remedial measures to address all these identified water safety related issues have been successfully implemented.	**Low (95%)**
Basic Sanitation • You have formal housing areas that are not fully serviced with sanitation infrastructure. • You have informal housing or rural areas that are not fully serviced with sanitation infrastructure. • You have a detailed plan and programme to provide safe sanitation to all households (including health and	**Moderate (70%)**

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	**Vulnerability**
hygiene education and user awareness including Water, Sanitation and Health (WASH) aspects). • Your sanitation budget is appropriate for required sanitation programmes (implementation and O&M). • You are servicing your basic sanitation facilities (e.g. pit latrines) as per safe sanitation requirements (healthy, environmentally safe, structurally sound, regularly maintained, following faecal sludge management best practices).	
Wastewater / Environmental Safety and Regulatory Compliance • Please indicate your treated wastewater effluent compliance for COD for your (or your service provider's) WWTWs for the last 12 months. • ALL your WWTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable wastewater risk abatement framework. • Council have been made aware of all W_2RAP related issues (e.g. pollution incidents, Green Drop deficiencies) that require budget and auctioning, and these issues have been actioned (where applicable). • Sufficient funds have been made available to address all identified wastewater and environmental safety related issues. • Required corrective actions/remedial measures to address all identified wastewater and environmental safety related issues have been successfully implemented.	**Low (79%)**
Infrastructure Asset Management • You have an appropriate and up-to-date water and sanitation services technical Asset Register (includes asset name, location, condition, extent, remaining useful life, performance and risk). NOTE: This does only not refer to GRAP17 asset register requirements. • You have developed an appropriate Infrastructure Asset Management (IAM) Plan for your WSA. • You are implementing the IAM outcomes. • Budget allocated to implement IAM outcomes is sufficient and is being effectively spent. • You conduct annual technical assessments of your water and wastewater related systems (including sources, WTWs, WWTWs, pump stations, network, etc.) and implement required follow-up actions.	**Low (95%)**
Operation and Maintenance of Assets • Appropriate maintenance facility(ies) that is (are) secure and stocked with essential equipment (e.g. spare parts), plant and tools is (are) available. • Appropriate water and sanitation services infrastructure / equipment planned / preventative maintenance schedules are developed. • Appropriate planned / preventative maintenance is performed at all WTWs and associated reservoirs, pump stations and distribution networks. • Appropriate planned / preventative maintenance is performed at all WWTWs and associated collection systems and pump stations. • Please indicate your infrastructure repairs and maintenance costs as a function of total operating expenditure (%).	**Low (80%)**
Information Management • You have a developed, approved and implemented IT Master Systems Plan (e.g. covering 3-5 years) that addresses your IT business requirements. • You have a developed, approved and implemented ICT Technology Master Plan that addresses your current and future IT infrastructure requirements. • You have IT systems that support your full range of water and sanitation services business requirements (e.g. billing, GIS, customer care, O&M, asset management). • ICT service continuity – Adequate IT security exists with off-site back-ups / archiving of operation critical applications, databases, data, etc. routinely performed in terms of an IT disaster Recovery Plan. • You have sufficient budget and staff to keep key IT systems table and up to date as per IT policies and procedures.	**Low (100%)**
Organisational Performance Monitoring • Appropriate plans, policies and procedures to address Disaster Management / emergencies and other issues (safety, public participation, communication, etc.) are developed and implemented. NOTE: Although Disaster Management is a district function, LMs need to ensure they are aware of their associated roles and responsibilities and have developed a Disaster Management Framework. • An organisational performance management system is developed and implemented (i.e. effectively measure, monitor and track water and sanitation services performance indicators).	**Low (90%)**

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	**Vulnerability**
• A municipal risk management framework is developed and implemented and includes monitoring and tracking of water and sanitation related risks. • Effective administration support is available to technical staff to assist with processing work orders, providing order numbers, handling correspondence, etc. • "Access to Basic Water and Sanitation Services" progress reports are frequently produced and presented to council for discussion, action and follow-up.	
Financial Management • Financial controls - Please state the audit opinion with regard to your last audit report on the financial statements. • Cash flow status – Please state your Cash / Cost Coverage Ratio (excluding Unspent Conditional Grants) • Your actual operating expenditure closely reflects your budgeted operating expenditure (i.e. Operating Expenditure Budget Implementation Indicator). • Your actual revenue closely reflects your budgeted operating revenue (i.e. Operating Revenue Budget Implementation Indicator). • Liabilities (Creditors) - Money is owed by your municipality to major / critical service providers (e.g. ESKOM, Water Board, largest contractors, etc.) for more than 30 days from receipt of invoice (NOTE: Ignore disputed invoices).	**Low (90%)**
Revenue Collection • Please indicate the frequency of actual consumer meter readings. • Net Surplus / Deficit – Please state your net surplus / deficit from water services activities for the last 12 months (NOTE: This question tests whether your WSA currently has fully cost reflective Water and Sanitation Tariffs, which take into account cost of maintenance and renewal of purification plants and networks and the cost of new infrastructure). • Revenue collections - Please state the revenue collection rate in respect to Water and Sanitation Services (%). • Revenue Growth – Please state your Water and Sanitation Services revenue growth for the last 12 months (%). • Grant dependency – Actual-operating revenue less operational grants / subsidies (e.g. equitable share) sufficiently covers actual operating expenditure.	**Low (95%)**
Financial Asset Management • Capital Expenditure (Municipal). Please state your municipal Capital Expenditure as a percentage of Total Expenditure (i.e. Total Operating Expenditure + Capital Expenditure). • Capital Expenditure (Water Services). Please state your Capital Expenditure on Water and Sanitation Services as a percentage of Total Capital Expenditure (Capital Expenditure (Municipal)). • Asset Renewal. Please state your Asset Renewal investment as percentage of Depreciation Costs. • Repairs and Maintenance. Please state your Repairs and Maintenance expenditure as a percentage of Property, Plant and Equipment, Investment Property (Carrying Value). • Grant funding of capital expenditure – Please state your reliance on grant funding.	**High (50%)**
Management Skill Level (Technical) • Your council approved technical management organisational organogram meets your business requirements, and key posts are filled (e.g. Technical Director, Water Services Manager, and Sanitation Services Manager). • You have sufficient technical management and technical support staff. • Technical management and technical support staff have the correct skills / qualifications and experience as per Job Description requirements (e.g. if Job Description requires Pr Eng, Pr Tech or CPM, the staff have these qualifications). • Managers and technical support staff regularly attend appropriate water and sanitation services skills development / training to support professionalisation. • Key technical managers (e.g. Section 56 and other Senior Management) have signed and monitored Performance Agreements.	**Low (90%)**
Staff Skill Levels (Technical) • WTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834). • WWTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834). • Water system plumbers, mechanics and electricians have the correct skills / qualifications and experience. • Sewage system plumbers, millwrights, mechanics and electricians have the correct skills/qualifications and experience (including contractors / outsourced resources).	**Low (89%)**

Table C.9.1: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Swartland Municipality	
Section	**Vulnerability**
• Staff regularly attend appropriate water services skills development / training (including safety) (e.g. ESETA courses).	
Technical Staff Capacity (Numbers) • Your council approved technical staff organisational organogram meets your business requirements, and posts are filled (i.e. Superintendent of WTWs / WWTWs and below). • WTWs are operated by the appropriate number of staff (as per Regulation 2834). • WWTWs are operated by the appropriate number of staff (as per Regulation 2834). • You have sufficient water and sewerage/sanitation network operations and repair staff/plumbers including contractors / outsourced resources (i.e. you have the appropriate number of staff). • An active mentoring/shadowing programme is in place where experienced staff train younger, inexperienced municipal staff.	**Low (99%)**

The Municipal staff is continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled annually and the specific training needs of the personnel, with regard to water and wastewater management are determined annually. The table below gives an overview of the training provided during the 2023/2024 financial year, as taken from the Workplace Skills Plan (Training that impact on Water and Sanitation Services).

Table C.9.2: Training provided during the 2023/2024 financial year (Workplace Skills Plan)

LGSETA Strategic Focus Area	Municipal Key Performance Area	Skills Gap	Female Employed	Male Employed	Total
Enhancing Infrastructure and Service Delivery	Basic Service Delivery and Infrastructure Development	Plumbing Pre Trade Test	0	8	8
		Client Services	21	6	27
		Water & Wastewater Treatment	0	18	18

The WWTWs in Swartland Municipality's Management Area and the Process Controllers working at these plants still need to be registered according to the new Regulation 3630 requirements of the DWS. The West Coast District Municipality will ensure that the two bulk WTWs and the Process Controllers working at these two plants are also registered according to the new Regulation requirements.

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

Swartland Municipality's Organogram, as approved by Swartland Municipality's Council on the 26th of January 2023, which include water and sanitation services, is included in Annexure G. Swartland Municipality is currently effectively managing its water and sanitation services. Urgent attention is however required to address the backlog in infrastructure replacement and refurbishment. All forward planning for water and sanitation services is guided by the Water and Sewer Master Plans.

The staff composition for Water Services for the last two financial years, as taken from the Annual Reports, is indicated in the table below.

Table C.9.3: Staff composition for Water Services for the last two financial years

Job Level	2023/2024					2022/2023				
	Approved Posts	Budgeted Posts	Employees	Vacancies	Vacancies (as a % of budgeted posts)	Approved Posts	Budgeted Posts	Employees	Vacancies	Vacancies (as a % of budgeted posts)
	No.	No.	No.	No.	%	No.	No.	No.	No.	%
0 – 3	12	12	12	0	0.00%	12	12	12	0	0.00%
4 – 6	12	12	12	0	0.00%	12	12	11	1	8.33%
7 – 9	5	5	5	0	0.00%	5	5	5	0	0.00%
10 – 12	6	6	6	0	0.00%	6	6	6	0	0.00%
13 – 15	2	2	2	0	0.00%	1	1	1	0	0.00%
16 – 18	0	0	0	0	0.00%	0	0	0	0	0.00%
19 - 20	0	0	0	0	0.00%	0	0	0	0	0.00%
Total	**37**	**37**	**37**	**0**	**0.00%**	**36**	**36**	**35**	**1**	**2.78%**

The staff composition for Waste Water Services for the last two financial years, as taken from the Annual Reports, is indicated in the table below.

Table C.9.4: Staff composition for Waste Water Services for the last two financial years

Job Level	2023/2024					2022/2023				
	Approved Posts	Budgeted Posts	Employees	Vacancies	Vacancies (as a % of budgeted posts)	Approved Posts	Approved Posts	Employees	Vacancies	Vacancies (as a % of budgeted posts)
	No.	No.	No.	No.	No.	No.	No.	No.	No.	%
0 – 3	2	2	2	0	0.00%	5	5	5	0	0.00%
4 – 6	15	15	14	1	6.67%	12	12	12	0	0.00%
7 – 9	10	10	10	0	0.00%	11	11	11	0	0.00%
10 – 12	4	4	4	0	0.00%	3	3	3	0	0.00%
13 – 15	1	1	1	0	0.00%	1	1	1	0	0.00%
16 – 18	0	0	0	0	0.00%	0	0	0	0	0.00%
19 - 20	0	0	0	0	0.00%	0	0	0	0	0.00%
Total	**32**	**32**	**31**	**1**	**3.13%**	**32**	**32**	**32**	**0**	**0.00%**

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.

A Client Services Charter is also in place, with the following water supply and sewage services standards.

Water Supply:

- Repair of network: Reaction within three (3) hours after incident has been reported.
- Installation of new household water connections: Within ten (10) working days after receipt of payment.

Provision of Sewage Services:

- Clearing obstruction: Reaction within three (3) hours after incident has been reported.
- Installation of new household sewer connections: Within ten (10) working days after payment.
- Draining of conservancy tanks: Within 24 hours after request has been received. Service vehicle available for pumping service on scheduled days.

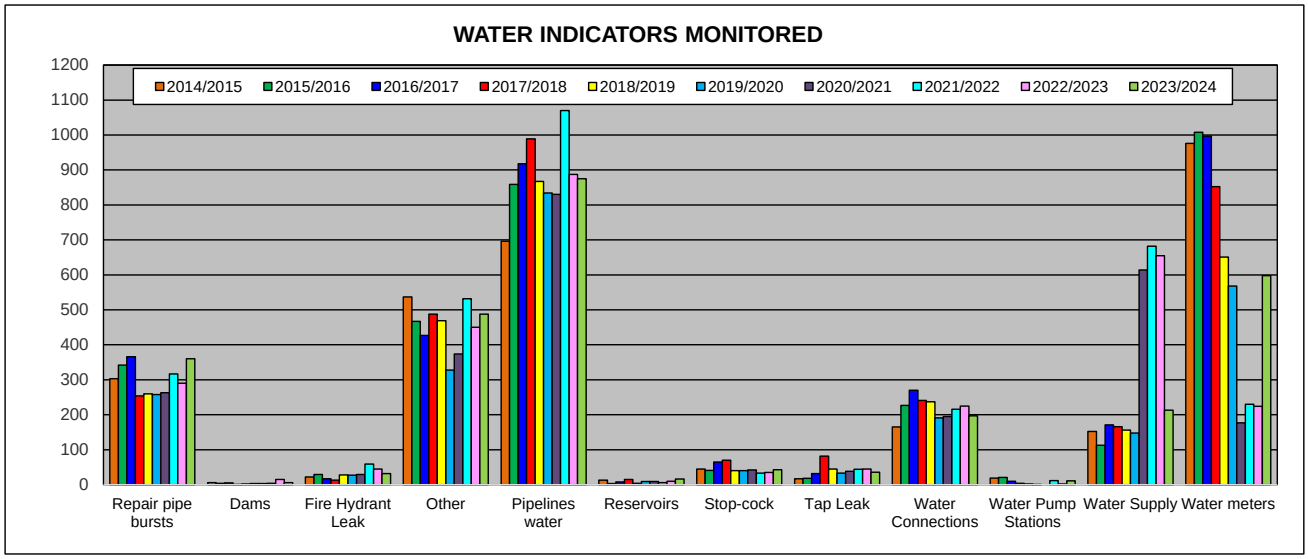


Figure C.9.2: Water indicators recorded for the various financial years.

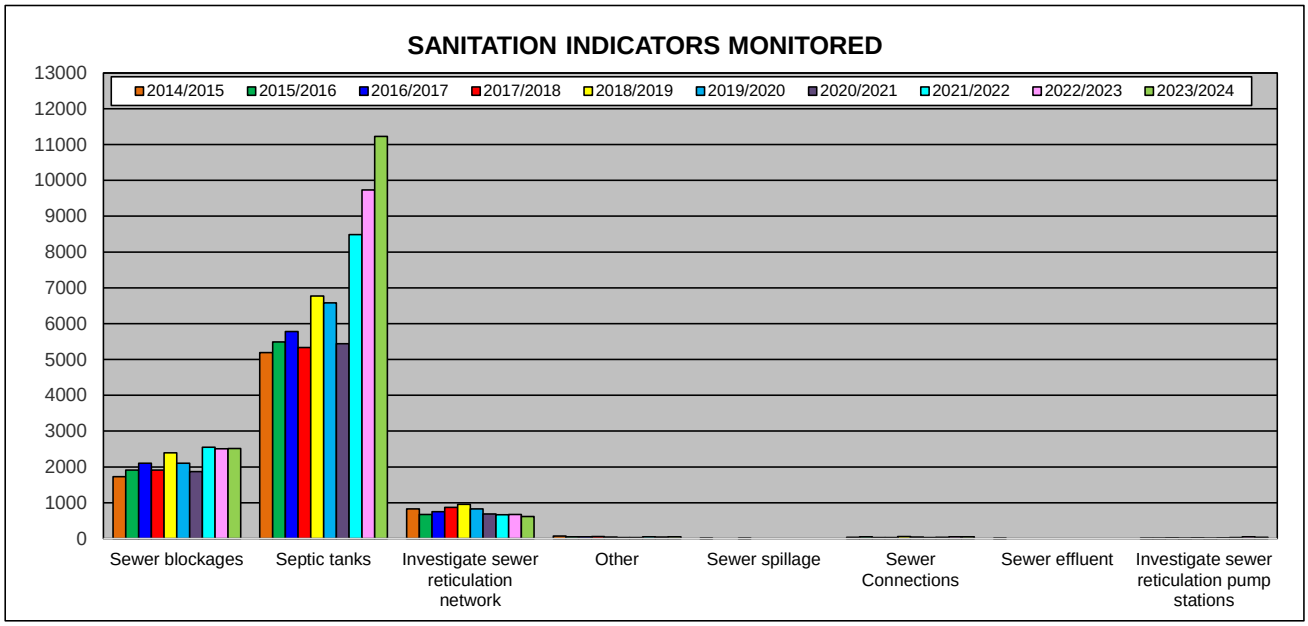


Figure C.9.3: Sanitation indicators recorded for the various financial years.

The table below gives an overview of the water customer services and maintenance work for the different areas for the last five financial years.

Table C.9.5: Water indicators monitored by Swartland Municipality with regard to customer services and maintenance work

Service	Indicator	Abbotsdale	Chatsworth	Darling	Kalbaskraal	Koringberg	Malmesbury	Moorrees-burg	Farms	Onggegund (PPC)	Riebeek Kasteel	Riebeek Wes	Riverlands	Yzerfontein	Total
Repair pipe bursts	Repair of burst water pipelines	6	61	26	12	4	106	34	3	6	27	13	53	9	**360**
Dams	Inspect / Repair faults at dams	0	0	0	1	0	5	0	0	0	0	0	0	0	**6**
Fire Hydrant Leak	Inspect / repair leaking hydrants	0	1	8	1	0	15	5	0	0	2	0	0	0	**32**
Other	Other water complaints (Not specified)	11	26	107	14	6	223	49	1	1	24	8	8	10	**488**
Pipelines water	Inspect / repair of faulty water pipelines	15	93	77	33	14	388	94	2	2	36	15	82	24	**875**
Reservoirs	Inspection of reservoirs and work carried out	2	0	4	0	1	8	1	0	0	0	0	0	0	**16**
Stop-cock	Inspect / Repair leaking stop-cocks	0	0	10	0	1	3	29	0	0	0	0	0	0	**43**
Tap Leak	Inspect / Repair leaking taps	1	0	5	0	1	22	5	0	0	0	0	0	2	**36**
Water Connections	New / Inspections and work carried out at water connections	8	11	13	10	1	71	8	0	1	13	5	1	55	**197**
Water Pump Stations	Inspections and work carried out at water PS	1	0	0	7	0	0	0	0	0	1	0	2	0	**11**
Water Supply	Faulty water supply	11	22	10	14	3	93	21	4	0	16	9	8	2	**213**
Water meters	Inspect / Test / Repair / Install	17	67	86	20	4	270	66	2	0	20	13	25	8	**598**
Total for 2023/2024		**72**	**281**	**346**	**112**	**35**	**1 204**	**312**	**12**	**10**	**139**	**63**	**179**	**110**	**2 875**
Repair pipe bursts	Repair of burst water pipelines	5	13	18	6	1	133	28	1	4	21	17	42	1	**290**
Dams	Inspect / Repair faults at dams	2	0	0	0	0	10	1	0	0	2	0	0	0	**15**
Fire Hydrant Leak	Inspect / repair leaking hydrants	0	1	11	0	0	21	7	0	0	0	1	3	1	**45**
Other	Other water complaints (Not specified)	10	9	155	10	2	165	36	1	0	17	13	4	28	**450**
Pipelines water	Inspect / repair of faulty water pipelines	24	43	64	15	14	462	144	1	2	35	24	35	24	**887**
Reservoirs	Inspection of reservoirs and work carried out	0	0	2	1	1	4	0	0	1	1	0	0	0	**10**
Stop-cock	Inspect / Repair leaking stop-cocks	0	0	3	0	0	0	32	0	0	0	0	0	0	**35**
Tap Leak	Inspect / Repair leaking taps	1	1	5	0	1	30	7	0	0	0	0	0	0	**45**
Water Connections	New / Inspections and work carried out at water connections	6	22	16	9	1	78	16	0	1	14	3	0	59	**225**
Water Pump Stations	Inspections and work carried out at water PS	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
Water Supply	Faulty water supply	14	28	135	16	11	240	106	1	2	7	10	29	56	**655**
Water meters	Inspect / Test / Repair / Install	9	15	15	9	2	121	17	1	1	15	9	4	6	**224**
Total for 2022/2023		**71**	**132**	**424**	**68**	**33**	**1 264**	**394**	**5**	**11**	**112**	**77**	**117**	**175**	**2 883**

Table C.9.5: Water indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	**Indicator**	**Abbotsdale**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Koringberg**	**Malmesbury**	**Moorrees-burg**	**Farms**	**Ongegund (PPC)**	**Riebeek Kasteel**	**Riebeek Wes**	**Riverlands**	**Yzerfontein**	**Total**
Repair pipe bursts	Repair of burst water pipelines	3	19	20	7	1	157	19	1	6	33	20	24	7	**317**
Dams	Inspect / Repair faults at dams	0	0	0	1	0	3	0	0	0	0	0	0	0	**4**
Fire Hydrant Leak	Inspect / repair leaking hydrants	0	3	5	0	0	30	17	0	0	2	0	2	0	**59**
Other	Other water complaints (Not specified)	14	39	86	15	7	267	66	5	0	7	7	12	7	**532**
Pipelines water	Inspect / repair of faulty water pipelines	20	43	97	21	16	566	188	3	6	32	19	42	17	**1 070**
Reservoirs	Inspection of reservoirs and work carried out	0	0	0	1	0	5	0	0	0	0	0	0	0	**6**
Stop-cock	Inspect / Repair leaking stop-cocks	0	0	1	0	3	3	26	0	0	0	0	0	0	**33**
Tap Leak	Inspect / Repair leaking taps	1	0	4	3	0	27	7	0	0	0	0	0	2	**44**
Water Connections	New / Inspections and work carried out at water connections	6	31	5	6	5	92	21	0	0	9	8	0	33	**216**
Water Pump Stations	Inspections and work carried out at water PS	0	1	0	5	0	4	0	0	0	0	0	2	0	**12**
Water Supply	Faulty water supply	23	47	125	19	12	279	112	1	1	16	4	24	19	**682**
Water meters	Inspect / Test / Repair / Install	11	16	10	17	1	128	16	1	2	11	8	4	5	**230**
Total for 2021/2022		**78**	**199**	**353**	**95**	**45**	**1 561**	**472**	**11**	**15**	**110**	**66**	**110**	**90**	**3 205**
Repair pipe bursts	Repair of burst water pipelines	10	11	18	8	1	114	23	0	3	21	13	32	9	**263**
Dams	Inspect / Repair faults at dams	0	0	0	0	0	2	1	0	0	0	0	0	0	**3**
Fire Hydrant Leak	Inspect / repair leaking hydrants	1	2	4	0	0	14	5	0	2	1	0	0	0	**29**
Other	Other water complaints (Not specified)	16	12	80	3	1	190	47	1	0	8	4	7	5	**374**
Pipelines water	Inspect / repair of faulty water pipelines	25	30	89	23	7	477	109	0	2	16	6	35	11	**830**
Reservoirs	Inspection of reservoirs and work carried out	1	1	0	0	0	6	0	0	0	0	0	0	1	**9**
Stop-cock	Inspect / Repair leaking stop-cocks	0	0	10	0	1	0	30	0	0	0	0	0	1	**42**
Tap Leak	Inspect / Repair leaking taps	0	1	3	0	0	28	5	0	0	1	0	0	0	**38**
Water Connections	New / Inspections and work carried out at water connections	9	35	10	11	0	87	10	0	0	8	3	2	20	**195**
Water Pump Stations	Inspections and work carried out at water PS	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Water Supply	Faulty water supply	21	40	85	20	22	249	115	0	0	17	9	26	10	**614**
Water meters	Inspect / Test / Repair / Install	5	15	16	9	2	100	14	1	0	7	5	1	2	**177**

Table C.9.5: Water indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	**Indicator**	**Abbotsdale**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Koringberg**	**Malmesbury**	**Moorrees-burg**	**Farms**	**Ongegund (PPC)**	**Riebeek Kasteel**	**Riebeek Wes**	**Riverlands**	**Yzerfontein**	**Total**
Total for 2020/2021		**88**	**147**	**315**	**74**	**34**	**1 267**	**359**	**2**	**7**	**79**	**40**	**103**	**59**	**2 574**
Repair pipe bursts	Repair of burst water pipelines	6	14	14	8	-	126	19	-	5	28	14	19	5	**258**
Dams	Inspect / Repair faults at dams	-	-	-	-	-	3	-	-	-	-	-	-	-	**3**
Fire Hydrant Leak	Inspect / repair leaking hydrants	-	-	2	2	-	19	2	-	-	1	-	1	-	**27**
Other	Other water complaints (Not specified)	10	5	52	6	3	185	42	-	-	5	5	8	7	**328**
Pipelines water	Inspect / repair of faulty water pipelines	15	40	71	21	7	497	79	3	6	19	21	45	10	**834**
Reservoirs	Inspection of reservoirs and work carried out	-	-	-	2	-	5	-	-	-	1	-	1	-	**9**
Stop-cock	Inspect / Repair leaking stop-cocks	-	-	9	-	1	4	24	-	-	-	-	-	2	**40**
Tap Leak	Inspect / Repair leaking taps	-	-	4	-	-	25	2	-	-	1	-	-	1	**33**
Water Connections	New / Inspections and work carried out at water connections	10	23	13	5	1	87	8	-	2	6	2	-	34	**191**
Water Pump Stations	Inspections and work carried out at water PS	-	1	-	-	-	-	-	-	-	-	-	-	-	**1**
Water Supply	Faulty water supply	9	7	3	9	3	74	14	-	1	9	3	5	11	**148**
Water meters	Inspect / Test / Repair / Install	29	28	95	10	13	248	85	-	2	16	9	26	7	**568**
Total for 2019/2020		**79**	**118**	**263**	**63**	**28**	**1 273**	**275**	**3**	**16**	**86**	**54**	**105**	**77**	**2 440**

The table below gives an overview of the sanitation customer services and maintenance work for the different areas for the last five financial years.

C.9.6 Sanitation indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	**Indicator**	**Abbotsdale**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Koringberg**	**Malmesbury**	**Moorrees-burg**	**Farms**	**Ongegund (PPC)**	**Riebeek Kasteel**	**Riebeek Wes**	**Riverlands**	**Yzerfontein**	**Total**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	97	28	501	48	27	828	689	5	26	164	70	24	5	**2 512**
Septic tanks	Empty septic tanks	44	800	191	661	685	103	556	1 256	0	309	1053	7	5 565	**11 230**
Investigate sewer reticulation network	Investigate and clear blockages in network	21	5	117	9	4	261	45	13	7	66	33	15	20	**616**
Other	Other sewer complaints (Not specified)	1	4	3	4	1	11	21	1	0	1	0	0	2	**49**

C.9.6 Sanitation indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	**Indicator**	**Abbotsdale**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Koringberg**	**Malmesbury**	**Moorrees-burg**	**Farms**	**Ongegund (PPC)**	**Riebeek Kasteel**	**Riebeek Wes**	**Riverlands**	**Yzerfontein**	**Total**
Sewer spillage	Investigate and clean sewer spillages	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Sewer Connections	Installation of sewer connections	8	0	16	1	0	8	5	0	0	7	1	2	0	**48**
Sewer effluent	Investigate effluent distribution for irrigation purposes	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	6	0	6	6	0	5	0	0	1	8	1	1	0	**34**
Total for 2023/2024		**177**	**837**	**834**	**729**	**717**	**1 216**	**1 316**	**1 275**	**34**	**555**	**1 158**	**49**	**5 592**	**14 489**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	60	31	504	37	25	885	668	5	30	135	99	30	2	**2 511**
Septic tanks	Empty septic tanks	24	679	213	612	570	82	526	1 063	0	278	870	38	4 775	**9 730**
Investigate sewer reticulation network	Investigate and clear blockages in network	33	14	95	11	0	316	55	15	8	55	27	16	27	**672**
Other	Other sewer complaints (Not specified)	3	0	3	0	0	23	1	1	0	6	0	2	3	**42**
Sewer spillage	Investigate and clean sewer spillages	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Sewer Connections	Installation of sewer connections	1	0	18	0	0	9	7	0	1	10	0	0	1	**47**
Sewer effluent	Investigate effluent distribution for irrigation purposes	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	4	3	4	0	0	23	0	0	0	14	0	1	0	**49**
Total for 2022/2023		**125**	**727**	**837**	**660**	**595**	**1 338**	**1 257**	**1 084**	**39**	**498**	**996**	**87**	**4 808**	**13 051**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	57	47	569	43	40	797	715	8	32	130	77	29	7	2 551
Septic tanks	Empty septic tanks	22	793	187	528	463	68	443	1 047	0	252	796	29	3 855	8 483
Investigate sewer reticulation network	Investigate and clear blockages in network	34	11	131	16	6	270	81	11	4	46	33	5	21	669
Other	Other sewer complaints (Not specified)	2	0	6	2	0	20	10	0	0	7	0	0	5	52
Sewer spillage	Investigate and clean sewer spillages	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sewer Connections	Installation of sewer connections	4	0	6	0	0	3	8	0	0	11	3	0	0	35
Sewer effluent	Investigate effluent distribution for irrigation purposes	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investigate sewer	Work carried out at sewer pump stations	1	0	1	3	0	14	0	0	0	6	1	1	0	27

C.9.6 Sanitation indicators monitored by Swartland Municipality with regard to customer services and maintenance work															
Service	**Indicator**	**Abbotsdale**	**Chatsworth**	**Darling**	**Kalbaskraal**	**Koringberg**	**Malmesbury**	**Moorrees-burg**	**Farms**	**Ongegund (PPC)**	**Riebeek Kasteel**	**Riebeek Wes**	**Riverlands**	**Yzerfontein**	**Total**
reticulation pump stations															
Total for 2021/2022		**120**	**851**	**900**	**592**	**509**	**1 172**	**1 257**	**1 066**	**36**	**452**	**910**	**64**	**3 888**	**11 817**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	41	14	442	24	12	597	574	2	20	63	55	23	3	1 870
Septic tanks	Empty septic tanks	20	541	129	422	310	47	288	737	0	148	481	10	2 306	5 439
Investigate sewer reticulation network	Investigate and clear blockages in network	25	6	129	15	1	280	110	17	8	51	19	9	14	684
Other	Other sewer complaints (Not specified)	4	1	2	5	0	10	5	0	0	1	1	1	1	31
Sewer spillage	Investigate and clean sewer spillages	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sewer Connections	Installation of sewer connections	3	0	6	2	0	7	4	0	0	4	0	0	0	26
Sewer effluent	Investigate effluent distribution for irrigation purposes	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	2	0	0	1	0	7	0	0	0	1	0	3	0	14
Total for 2020/2021		**95**	**562**	**708**	**469**	**323**	**948**	**981**	**756**	**28**	**268**	**556**	**46**	**2 324**	**8 064**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	57	11	446	39	24	690	589	2	18	121	75	18	12	2102
Septic tanks	Empty septic tanks	13	483	250	411	392	56	308	794	-	238	679	7	2 946	6 577
Investigate sewer reticulation network	Investigate and clear blockages in network	32	15	136	22	1	375	105	12	9	53	23	16	31	830
Other	Other sewer complaints (Not specified)	-	-	5	1	-	13	2	1	1	2	-	-	1	26
Sewer spillage	Investigate and clean sewer spillages	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer Connections	Installation of sewer connections	6	-	8	-	-	11	5	-	-	10	2	1	-	43
Sewer effluent	Investigate effluent distribution for irrigation purposes	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	-	-	-	4	-	2	-	-	-	1	-	-	-	7
Total for 2019/2020		**108**	**509**	**845**	**477**	**417**	**1 147**	**1 009**	**809**	**28**	**425**	**779**	**42**	**2 990**	**9 585**

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

Table C.9.7: Number of tanks pumped

Town	2023/2024					2022/2023	2021/2022	2020/2021	2019/2020	2018/2019
	Pump 1	Pump 2	Pump 3	After Hours	Total	Total	Total	Total	Total	Total
Abbotsdale	23	11	5	0	39	24	22	24	13	17
Chatsworth	654	123	26	0	803	669	829	614	484	401
Darling	113	30	7	0	150	205	169	144	214	239
Kalbaskraal	489	141	11	0	641	615	538	556	392	368
Koringberg	443	195	15	0	653	548	461	374	373	374
Malmesbury	50	12	3	0	65	66	43	51	40	32
Moorreesburg	418	111	7	0	536	532	426	379	302	345
Farms / Other	1 039	212	71	0	1 322	1 179	1 133	952	834	815
Riebeek Kasteel	163	111	18	0	292	378	237	229	226	212
Riebeek Wes	610	322	115	0	1 047	915	790	703	672	541
Riverlands	9	0	0	0	9	37	29	17	7	4
Yzerfontein	3 891	1 077	385	0	5 353	4 661	3 786	3 186	2 736	2 676
Department	72	58	141	0	271	252	259	177	289	128
Total	**7 974**	**2 403**	**804**	**0**	**11 181**	**10 081**	**8 722**	**7 406**	**6 582**	**6 152**

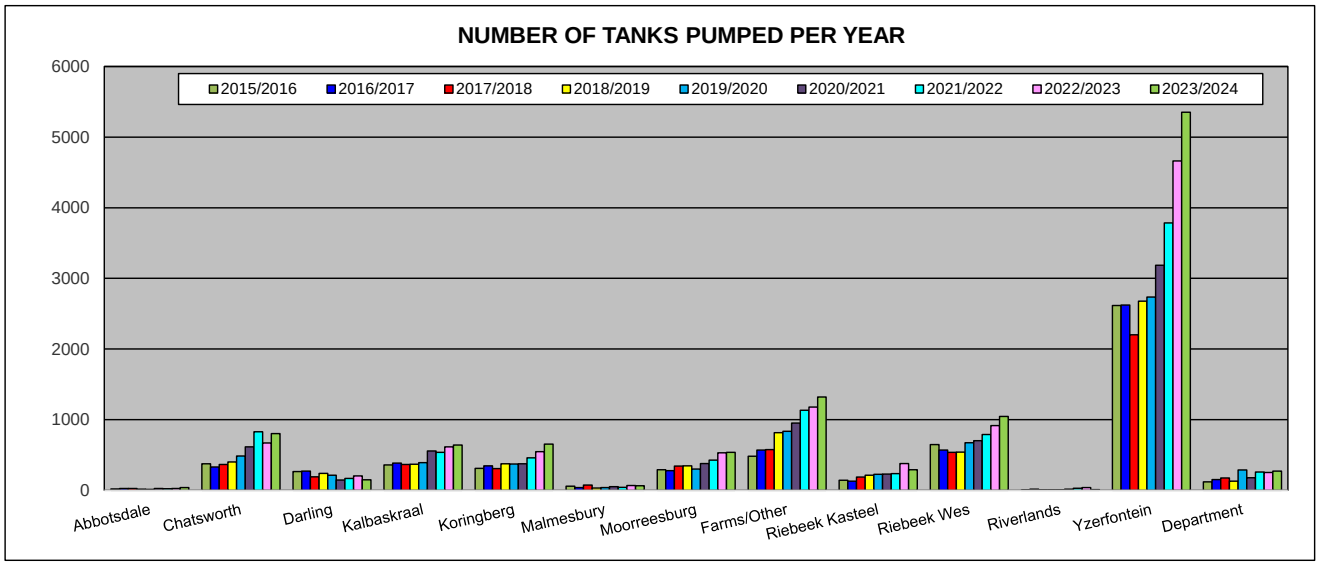


Figure C.9.4: Number of sewage tanks pumped per year for the different areas

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

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

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

- Protection at points of abstraction such as Paardenberg Dam and the boreholes (Abstraction Management).

- Protection and maintenance of the distribution systems. This includes ensuring an adequate disinfectant residual at all times, rapid response to pipe bursts and other leaks, regular cleaning of reservoirs, keeping all delivery points tidy and clean, etc.

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

- A well informed Council and municipal managers that understand the extreme importance of and are committed to providing adequate resources for continuous professional operation and maintenance of the water supply system.

- Competent managers and supervisors in the technical department who are responsible for water supply services lead by example and are passionate about monitoring and safeguarding drinking water quality.

- Well informed community members and other consumers of water supply services that know how to protect the water from becoming contaminated once it has been delivered, that have respect for water as a precious resource and that adhere to safe hygiene and sanitation practices.

D. APPROVAL AND PUBLICATION RECORD

This Annual WSDP Performance- and Water Services Audit Report is for the 2023/2024 Financial Year and is hereby approved for submission to the Minister of the Department of Water and Sanitation, the Minister for the Department of Cooperative Governance, the Western Cape Province and to SALGA, as required by the Water Services Act, 1997.

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

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

RECOMMENDED:

_____ _____
Signature Date
Name: E de Jager
Title: Senior Manager: Solid Waste and Trade Services

_____ _____
Signature Date
Name: L Zikmann
Title: Director Civil Engineering Services

APPROVED:

_____ _____
Signature Date
Name: J Scholtz
Title: Municipal Manager

REFERENCES

- SA Census Data (2011), Community Profiles.
- Water Services Act, Act 108 of 1997. Regulations under Section 9 of the Water Services Act, which include the water services audit as Section 10 of the Guidelines for Compulsory National Standards.
- DWS's Annual Water Services Development Plan Performance- and Water Services Audit Report Template, August 2014.
- DWS's 2023 Blue Drop Report.
- DWS's 2022 Green Drop Report and 2023 Green Drop Progress Report.
- Swartland Municipality's Municipal Services Strategic Assessment (MuSSA) Report, 2023, DWS.
- DWS's All Towns Reconciliation Strategy Documents for each of the towns in Swartland Municipality's Management Area, March 2016.
- Swartland Municipality's Water Services Audit Report for 2022/2023, Final Document, iX engineers.
- Swartland Municipality's Operational and Maintenance Budgets and Tariffs.
- Asset Register for Water and Sanitation Infrastructure Assets, June 2024.
- SDBIP of Swartland Municipality for 2023/2024.
- Socio-Economic Profile for Swartland Municipality, Provincial Treasury, 2023.
- Swartland Municipality: Resource Augmentation Study – Desktop Study, May 2021, iX engineers.
- Water Safety Plan for the Swartland Bulk Water Distribution System, June 2022, iX engineers.
- Water Safety Plan for the Withoogte Bulk Water Distribution System, June 2022, iX engineers.
- Water Safety Plan for the Internal Water Supply Systems, August 2022, iX engineers.

ATTENDANCE REGISTER (DISCUSSION OF DRAFT DOCUMENT)

ANNEXURE A

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

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

IWA Water balance models for the various distribution systems

Rainfall and WWTWs flows and capacities

WTWs capacities

ANNEXURE B

No Drop Spreadsheets and ILI

ANNEXURE C

Future Water Requirement Projections for the various distribution systems

ANNEXURE D

Water Quality Compliance Sample Results for 23/24

Final Effluent Quality Compliance Sample Results for 23/24

Industrial Effluent Quality Compliance Sample Results for 23/24

ANNEXURE E

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

ANNEXURE F

Water and Sanitation Operational and Maintenance Budget

ANNEXURE G

Swartland Municipality's Approved Organogram