STELLENBOSCH MUNICIPALITY

Water Services Development Plan Executive Summary

For IDP incorporation as directed by the Water Services Act (Act 108 of 1997

2025-2027

DRAFT

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Version Control:

Status	Description	Date	Reference
Version 1	Draft WSDP Executive Summary	October 2025	Draft Document
Approval	Final WSDP Executive Summary	Will be submitted to Council	Council Resolution for approval will be forwarded by the Municipality to the DWS.

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PROJECT P08356 - STELLENBOSCH MUNICIPALITY'S WSDP EXECUTIVE SUMMARY 2025-2027

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

STELLENBOSCH MUNICIPALITY

2025-2027 WSDP EXECUTIVE SUMMARY

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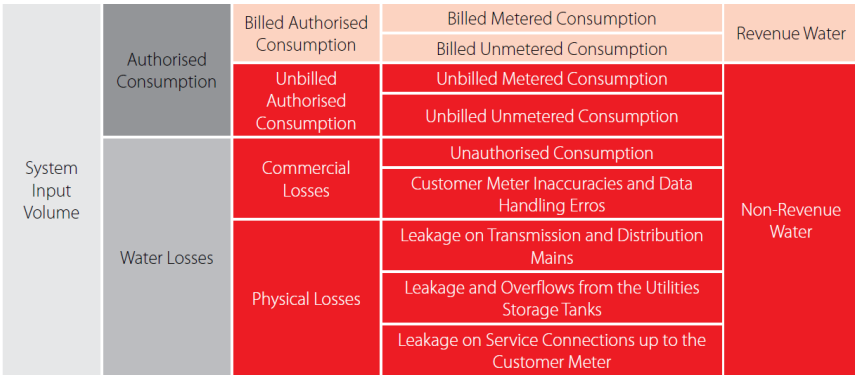
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AADD	Average Annual Daily Demand
AC	Asbestos Cement
AMP	Asset Management Plan
AMR	Automatic Meter Reading
BA	Breathing Apparatus
BD	Blue Drop
BDRR	Blue Drop Risk Rating
BGWMA	Breede-Gouritz Water Management Agency
BH	Borehole
BOWMA	Breede-Olifants Water Management Area
BRVAS	Berg River Voëlvlei Augmentation Agency
CAP	Corrective Action Plan
CBD	Central Business District
CCT	City of Cape Town
CMA	Catchment Management Agency
COD	Chemical Oxygen Demand
COVID-19	Coronavirus disease
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
DCoG	Department of Cooperative Government
DMA	District Metered Area
DO	Dissolved Oxygen
DRC	Depreciated Replacement Cost
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EC	Electrical Conductivity
EPWP	Expanded Public Works Programme
FCV	Flow Control Valve
GAMAP	Generally Accepted Municipal Accounting Practice
GD	Green Drop
GDIP	Green Drop Improvement Plan
GPS	Global Positioning System
GRAP	Generally Recognised Accounting Practice
HH	Household
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
IMQS	Infrastructure Management Query System
IRIS	Integrated Regulatory Information System
ISO	International Standards Organisation
IWA	International Water Association
Kl	Kilolitre
Kl/d	Kilolitre per Day
KPA	Key Performance Area
KPI	Key Performance Indicator
l/c/d	Litre per Capita per Day
l/p/d	Litre per Person per Day
l/s	Litre per Second
LGTAS	Local Government Turn Around Strategy
LM	Local Municipality

m	Metre
MBR	Membrane Biological Reactor
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
Mm^3/a	Million Cubic Metre per Annum
MNF	Minimum Night Flow
MTEF	Medium-Term Expenditure Framework
MTREF	Medium-Term Revenue Expenditure Framework
MuSSA	Municipal Strategic Self-Assessment
NRW	Non-Revenue Water
NSSS	Non-sewered Sanitation Systems
NWA	National Water Act
NWRS	National Water Resource Strategy
O&M	Operation and Maintenance
PAT	Progress Assessment Tool
PC	Process Controller
PDD	Peak Daily Demand
PRP	Pipe Replacement Potential
PRV	Pressure Reducing Valve
PS	Pump Station
RAS	Return Activated Sludge
RDP	Reconstruction and Development Programme
RR	Risk Ratio
RUL	Remaining Useful Life
SALGA	South African Local Government Association
SANS	South African National Standard
SBR	Sequencing Batch Reactor
SCADA	Supervisory Control and Data Acquisition
SCM	Supply Chain Management
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
SFA	Strategic Focus Area
SFWS	Strategic Framework for Water Services
SIV	System Input Volume
SLM	Stellenbosch Local Municipality
SMME	Small, Medium and Micro Enterprises
SST	Secondary Settling Tank
TW	Treated Water
UPVC	Unplasticized Polyvinyl Chloride
UV	Ultra Violet
VIP	Ventilated Improved Pit
WARMS	Water Authorisation Registration and Management System
WaSP	Water Safety Plan
WC/WDM	Water Conservation / Water Demand Management
WCWSS	Western Cape Water Supply System
WDM	Water Demand Management

WESS	Water Efficient Sanitation Solutions
WISA	Water Institute of South Africa
WMA	Water Management Area
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSDP-IDP	Water Services Development Plan – Integrated Development Plan
WSI	Water Services Institution
WSIG	Water Services Infrastructure Grant
WSP	Water Services Provider
WSS	Water Supply System
WTW	Water Treatment Works
WULA	Water Use License Application
W_2RAP	Waste Water Risk Abatement Plan
WWTP	Waste Water Treatment Plant
WWTW	Waste Water Treatment Works

KEY TERMS AND INTERPRETATIONS

Climate Change	Changes in climatic conditions due to natural causes or to anthropogenic (man-made) effects such as emissions of greenhouse gases, e.g. carbon dioxide, nitrous oxide, and methane, from industry, transport, farming and deforestation, which are expected to have significant consequences for rainfall and water availability on earth.
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.
Global Warming	The increase in the average surface temperatures across the globe, usually measured over long periods of time; reported to have increased by 1°C over the past hundred years.
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.
National Water Resource Strategy 2	Sets out how we will achieve the following core objectives: • Water supports development and the elimination of poverty and inequality. • Water contributes to the economy and job creation, and • Water is protected, used, developed, conserved, managed and controlled sustainably and equitably.
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 fire-fighting 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 AND 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.
Remaining useful life (RUL)	The time remaining over which an asset is expected to be used.
Re-use	Utilisation of treated or untreated wastewater for a process other than the one that generated it. For instance, the re-use of municipal wastewater for agricultural irrigation. Water re-use can be direct or indirect, intentional or unintentional, planned or unplanned, local, regional or national in terms of location, scale and significance. Water re-use may involve various kinds of treatment (or not) and the reclaimed water may be used for a variety of purposes.
Service Delivery Budget Implementation Plan (SDBIP)	The SDBIP is a management, implementation and monitoring tool that enable the City Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the City Manager, and for the community to monitor the performance of the municipality.
Strategic Framework for Water Services	The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a strategic framework for its implementation over the next ten years.
Water Conservation	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
Water Demand Management	The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability.

KEY TERMS AND INTERPRETATIONS

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 to the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance.
Water Services Provider (WSP)	A WSP means any person or institution that provides water services to consumers or to another water services institution, but does not include a water services intermediary.

WSDP EXECUTIVE SUMMARY

Introduction

Every WSA has a duty to progressively ensure efficient, affordable, economical and sustainable access to water services to all customers or potential customers in its area of jurisdiction, in order to promote sustainable livelihoods and economic development.

Sections 12 and 13 of the Water Services Act (Act No 108 of 1997) place a duty on WSAs to prepare and maintain a WSDP, as part of the process of preparing an IDP. The DWS has developed a new set of WSDP guidelines to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. The topics included in the guidelines and addressed in detail in Stellenbosch Municipality's WSDP are as follows:

- Settlements and Demographics
- Service Levels
- Water Services Infrastructure Management (Infrastructure)
- Water Services Infrastructure Management (O&M)
- Conservation and Demand Management
- Water Resources
- Financial
- Institutional Arrangements and Customer Care

The primary instrument of planning in the water services sector is the WSDP. The following principles apply to the WSDP:

- All WSAs must develop a WSDP.
- A new plan must be developed every five years and the plan should be updated as necessary and appropriate in the interim years.
- The WSDP must be integrated with the IDP of the municipality, as required in terms of the Municipal Systems Act.
- The WSDP must integrate water supply planning with sanitation planning.
- The WSDP must integrate technical planning with social, institutional, financial and environmental planning. The planning of capital expenditures must also be integrated with the associated operation and maintenance requirements and expenditures.
- The WSDP must be informed by the business plans developed by water services providers and with the plans of any regional water services providers, as relevant.
- The plan must take into account the impact of HIV/Aids on future water demand.
- The WSDP must integrate with the catchment management strategy.
- The planning process must take into account the views of all important stakeholders, including communities, through a consultative and participatory process. Every effort must be made to ensure the adequate and meaningful participation of women in consultation forums.
- The draft plan must be made available for public and stakeholder comment and all comments made must be considered when preparing the final plan.
- The contents of the WSDP must be communicated to all important stakeholders, including the DWS.

- A WSA must report annually and in a public way on progress in implementing the plan (Annual WSDP Performance- and Water Services Audit Report).

The purpose of this report is to provide relevant and summarised WSDP inputs for incorporation into Stellenbosch Municipality's IDP process and is structured as follows:

Section A: Status Quo Overview: Provides a summarised overview of the water services status quo in terms of the water services functional business elements as aligned to the WSDP framework.

Section B: State of Water Services Planning: Presents the status of- and references the water services planning within Stellenbosch Municipality.

Section C: Water Services Existing Needs Perspective: Gives an overview of Stellenbosch Municipality's assessment and interpretation of its water services, with specific focus on problem definition statements.

Section D: Water Services Objectives and Strategies: Outlines the 5-year water services objectives and strategies as developed through the WSDP process for incorporation in terms of the IDP and aligned to the water services functional business elements.

Section E: Water Services MTEF Projects: The agreed water services projects for the medium-term expenditure framework and inclusive of funding sources.

Section F: WSDP Projects: Presents the projects identified during the WSDP process in order to meet the water services strategies of Stellenbosch Municipality, as aligned to the outflow from the situation analysis per water services business element.

SECTION A: STATUS QUO OVERVIEW

Stellenbosch Municipality is situated within the Breede-Olifants Water Management Area (WMA) and is located within the Cape Winelands District of the Western Cape Province, in which the following local municipalities are also located:

- Drakenstein Municipality;
- Witzenberg Municipality;
- Breede Valley Municipality and
- Langeberg Municipality.

Stellenbosch Municipality consists of 22 individual wards and is the only WSA within the Stellenbosch Municipality's Management Area. The Municipality is also the Water Services Provider (WSP). Stellenbosch Municipality's responsibility as WSA also extends to the rural areas within its boundary, which prior to July 2003 had fallen under the jurisdiction of the former Boland District Municipality. Stellenbosch Municipality's Management Area includes the following towns and ***Water Distribution Systems***.

- The large town of Stellenbosch (including Kayamandi) – ***Stellenbosch System***

  Stellenbosch mainly relies on its own water supply from the Eerste River in the Jonkershoek Valley which is treated at the Idas Valley WTW. During summer when shortfalls occur, water is drawn from the WCWSS, obtained from the Theewaterskloof Dam and treated at Paradyskloof WTW.

- Franschhoek, Groendal, La Motte, Wemmershoek and Robertsvlei – ***Franschhoek System***

  The eastern part of Franschhoek is currently supplied with water from the Municipality's own source in the adjacent mountains, the so-called Perdekloof source. The raw water from the Perdekloof source is treated at the Franschhoek WTW (Package plant). The western part of Franschhoek, La Motte and Wemmershoek are supplied with potable water purchased from the CCT, which is supplied from the Wemmershoek WTW.

- Pniel, Kylemore, Lanquedoc, Johannesdal and Groot Drakenstein – ***Dwars River System***

  The Dwars River system obtains potable water from the Wemmershoek pipeline, operated by the CCT and which forms part of the WCWSS. The water is treated at the Wemmershoek WTW.

- Klapmuts – ***Klapmuts System***

  The Klapmuts system obtains potable water from the Wemmershoek pipeline, operated by the CCT and which forms part of the WCWSS. The water is treated at the Wemmershoek WTW.

- ***Rural Systems***
  - ***Faure / Raithby / Jamestown System***: The system, owned and operated by Stellenbosch Municipality, supplies potable water to the urban users in Raithby, rural consumers along the pipeline and can also supply water to the De Zalze Estate and Jamestown in Stellenbosch. The system is supplied with bulk potable water by the CCT from their Faure WTW.

    The town of Raithby is serviced with a formal sewer reticulation system consisting of ±5.0km gravity sewer pipelines. The hydraulic capacity of the Raithby WWTW (Activated Sludge) is 0.150 ML/d.

  - ***Polkadraai System***: The system, owned and operated by Stellenbosch Municipality, supplies potable water to the rural consumers in the Polkadraai area along the pipeline. Water can also in emergency conditions be supplied from the Faure system to the Polkadraai system. The system is supplied with bulk potable water by the CCT from their Blackheath WTW.

  - ***Koelenhof System***: The system, owned and operated by Stellenbosch Municipality, supplies potable water to the urban users in the Koelenhof rural area. The system is supplied with bulk potable water by the CCT from their Wemmershoek scheme.

  - ***Muldersvlei System***: The system, owned and operated by Stellenbosch Municipality, supplies potable water to the urban users in the Muldersvlei rural are. The system is supplied with bulk potable water by the CCT from their Bloekombos reservoir (supplied from the Wemmershoek pipeline).

  - ***Meerlust, Croydon and Helderberg Systems***: These systems supplies potable water to the urban users in these areas. Bulk potable water is supplied by the CCT. The Meerlust area is supplied with bulk water from the Wemmershoek scheme and the Helderberg and Croydon areas with bulk water from the Steenbras dam through the CCT's reticulation network.

Physical Perspective:

Climate change: It is necessary for WSAs to develop climate response strategies and include these in their WSDPs, implement WC/WDM and reduce levels of non NRW. Water-related climate change adaptation and mitigation planning should be incorporated into all WSDPs and IDPs. The implementation of WC/WDM is a critical element of adapting to climate change. This must be implemented by all water sector institutions and water users, and should include the optimisation of dam and groundwater operation, as well as the reduction of physical water losses and the introduction of water-efficient appliances, processes and crops.

In terms of adapting for climate change, water systems will need to be more robust and new / alternative sources of supply may need to be found. Increased skills will be required from water managers and long-term water projections are required. Although an overall decrease in rainfall is generally not forecasted, increased variability in the climate and frequency of extreme events, as well as increased temperature and wind could have an impact on water sources, particularly surface waters.

It is therefore advisable for Stellenbosch Municipality that a conservative approach be followed regarding the management of water sources. It is proposed that the following approach be adopted to mitigate and adapt to the impacts of climate change:

- All resources, especially surface water resources, need to be re-evaluated, especially where demand is close to the safe one in twenty year yields. It is therefore important to establish assurance of supply levels of all water sources;

- increase assurance of supply of the water resources by ensuring that there is at least 10% additional capacity (headroom), when considering the maximum 24 hour demand on the peak month of the year;
- do not undertake new developments unless a proper investigation of the implication on water sources and sustainability in the long term has been undertaken;
- vigorously implement WDM measures, especially in terms of the following:
  - increased water efficiency
  - frequent monitoring of the water supply system, from the sources to the consumers; and
  - regular and adequate system maintenance and repairs.
- Diversify water resources, e.g. surface water, groundwater, wastewater re-use and sea water desalination.

Floods: One of the climate change threats in some parts of the Western Cape is the likelihood of floods with greater intensity and longer-term impacts. There is likely to be increases in the severity and unpredictability of weather patterns. Flooding and storms are predicted which could have devastating effects on agricultural production. It is important for Stellenbosch Municipality to ensure that Stormwater Management Plans are in place for all the towns.

Natural Environment: Significant portions of Stellenbosch Municipality fall within globally recognized biosphere areas and designated public and private conservation areas. Eleven public conservation areas cover some 28 741 ha or 34,6% of the municipal area, with a further 3 000 ha managed as private conservation areas. The municipality's landscape consists of a series of valleys on a base of rolling hills to the west culminating in steep and dramatic mountain backdrops to the east and south-east, highly valued for its scenic beauty and sense of place.

Stellenbosch Municipality falls within the Cape Floral Kingdom, internationally recognised as one of the six floral kingdoms of the world (occupying 0,06% of the earth's surface). The Cape Floral Kingdom is the only floral kingdom contained within a single country and characterised by its exceptional richness in plant species and its endemicity.

Critical and vulnerable habitats are mostly found in the mountainous south-eastern parts of the municipality, where large tracts of land are already formally protected. However, within the municipal area nearly all the remaining vegetation is Critically Endangered or Vulnerable (SDF, June 2023).

TOPIC 1: SETTLEMENTS AND DEMOGRAPHICS

The tables below gives an overview of the settlements, population and households in Stellenbosch Municipality's Management Area for 2023/2024. The number of settlements were done according to the grouping of the different areas in DWS's GeoDatabase.

Table A.1.1: Settlement Summary

Section	Number	Assessment Score
1.1 Total Population (Permanent)	228 426	80%
1.2 Total Number of Households (Permanent)	64 492	80%
1.3 Average Household Size	3.6	80%
1.4 Total Number of Settlements (GeoDatabase)	74	80%

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

Table A.1.2 Summary by Settlement Group (Urban / Rural Split)

Settlement Type	Settlements	Population	Households	Assessment Score
Rural	17	47 125	10 797	80%
Urban	57	181 301	53 695	80%
Total	**74**	**228 426**	**64 492**	**80%**

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

Table A.1.3 Assessment Score by Settlement Type						
Main Type	**Settlement Type**	**Settlements**	**Population**	**Households**	**Average Household Size**	**Assessment Score**
Rural	Farming	1	42 423	9 719	4.4	80%
Rural	Scattered Rural Village	3	489	112	4.4	80%
Rural	Small Village <= 5000	9	8 117	2 239	3.6	80%
Rural	Informal Settlements (Squatter Camp)	3	950	269	3.5	80%
Urban	Formal Town	41	131 399	40 376	3.4	80%
Urban	Informal Settlements (Squatter Camp)	11	43 086	11 183	3.3	80%
Urban	Working Towns and Service Centres - Mines, Prisons etc.	6	1 961	594	3.3	80%
Total		**74**	**228 426**	**64 492**	**3.5**	**80%**

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

Table.A.1.4 Amenities Summary (Health & Educational facilities)		
Amenity Type	**Number of Amenities**	**Assessment Score**
Health Facilities	16	80%
Educational facilities	55	80%

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

The 2025/26 IDP of Stellenbosch Municipality and the 2024 Socio Economic Profile of Stellenbosch Municipality indicate the 2024 population at 209 831 persons and the 2024 permanent households at 57 520, with an estimated population of 231 712 by 2029, at an annual growth rate of 1.7%.

The published 2022 Census population for Stellenbosch Municipality was 175 411 persons (Annual growth rate of 1.1% over the period 2011 to 2022) and the number of permanent households was 59 626. The 2022 Census data is not yet available per town and it was therefore not possible to update Stellenbosch Municipality's projected population and households per town (system) according to the 2022 Census data.

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 projected population figures and the annual population growth percentages, as indicated in the table below, 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 Engineering Department during January 2014.

Table A.1.5: Estimated Future Annual Population Growth Percentages, Population and Households per Distribution System			
Town	**Estimated future annual population growth %**	**Projected 2023/2024 population**	**Projected 2023/2024 households**
Stellenbosch	3.5%	121 363	36 767
Franschhoek	5.0%	28 044	9 216
Dwars River	3.0%	16 395	3 771
Klapmuts	6.0%	15 500	3 942
Raithby	2.0%	1 152	275
Farms	1.5%	45 973	10 521
Stellenbosch Municipality	**3.3%**	**228 426**	**64 492**

The current 2023/2024 population for Stellenbosch Municipality is therefore estimated at 228 426 persons and the permanent households at 64 493, as indicated in the table above.

The table below gives an overview of the projected population and permanent number of households and the water and sanitation service levels in Stellenbosch Municipality's Management Area.

Table A.1.6: 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	Sanitation category: Adequate: Formal	Adequate: Informal	Adequate: Shared Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN																								
Metropolitan Area					Adequate			Below RDP					None		Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**																				
Formal Town					Adequate			Below RDP					None		Adequate			Below RDP					None	
Stellenbosch	16 206	47 712	28 012	86 343	P		P								P		P							
Franschhoek	3 497	9 076	7 321	20 463	P		P								P		P							
Dwars River	2 615	11 379	3 538	15 463	P		P								P		P							
Klapmuts	1 703	6 679	3 373	13 224	P		P								P		P							
Raithby	217	908	275	1 152	P		P								P		P							
Sub-Total	**24 238**	**75 754**	**42 519**	**136 645**																				
Townships					Adequate			Below RDP					None		Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**																				
Informal Settlements					Adequate			Below RDP					None		Adequate			Below RDP					None	
Stellenbosch	8 461	33 844	8 755	35 020		P									P									
Franschhoek	1 635	6 540	1 895	7 580		P									P									
Dwars River	30	120	233	932		P							P		P								P	
Klapmuts	256	1 024	569	2 276		P									P									
Sub-Total	**10 382**	**41 528**	**11 452**	**45 808**																				
Working towns & service centres					Adequate			Below RDP					None		Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**																				
Sub-Total: (Urban)	**34 620**	**117 282**	**53 971**	**182 453**																				
RURAL																								
Rural / Farming					Adequate			Below RDP					None		Adequate			Below RDP					None	
Stellenbosch Rural	8 800	38 451	10 521	45 973	P		P							P	P		P							P
Sub-Total	**8 800**	**38 451**	**10 521**	**45 973**																				
Informal Settlements					Adequate			Below RDP					None		Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**																				
Sub-Total (Rural)	**8 800**	**38 451**	**10 521**	**45 973**																				
TOTAL	**43 420**	**155 733**	**64 492**	**228 426**																				

TOPIC 2: SERVICE LEVELS

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

Table A.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.

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

Table A.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.		

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.

All the households on formal erven in the urban areas of Stellenbosch Municipality's Management Area are provided with water and sewer connections inside the erven. Informal areas are supplied with shared services (Communal standpipes and toilets) as an intermediary measure. Stellenbosch Municipality is committed to support the private landowners as far as possible in order to ensure that at least basic water and sanitation services are provided to those households in the rural areas with existing services still below basic standard.

The table and graph below give an overview of the water service delivery access profile of Stellenbosch Municipality.

Table A.2.3: 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	28 450	44%	29 011	47%	27 561	46%
Piped (tap) water inside yard	Yard connections	23 899	37%	21 373	34%	20 710	34%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	11 861	18%	11 596	19%	11 614	19%
	Sub-Total: Minimum Serivce Level and Above	**64 210**	**100%**	**61 980**	**99%**	**59 885**	**99%**
	WATER (BELOW MIN LEVEL)						
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	Standpipe connection: > 200 m < 500 m	94	0%	94	0%	94	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	8	0%	8	0%	8	0%
No access to piped (tap) water	No services	162	0%	217	0%	217	0%
	Sub-Total: Below Minimum Service Level	**282**	**0%**	**337**	**1%**	**337**	**1%**

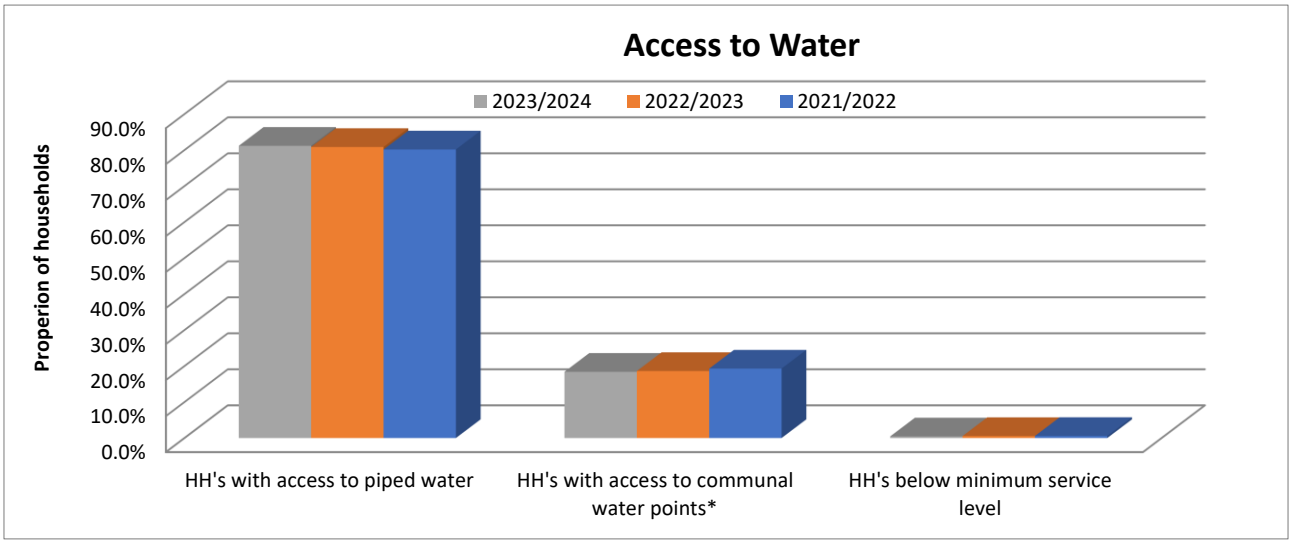


Figure A.2.1: Access to Water Services.

The existing residential water service levels in Stellenbosch Municipality's Management Area are estimated as follows (June 2024).

Table A.2.4: Residential water service levels (Residential Consumer Units)						
Service Level	**Stellenbosch**	**Franschhoek**	**Klapmuts**	**Dwars River**	**Farms**	**Total**
No Water Services	0	0	0	0	92 [2)]	92
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0
Below RDP: Infrastructure Extension	0	0	0	0	120 [3)]	120
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**212**	**212**
Below Housing Interim [4)]	2 492	-	61	70	0	2 623
Adequate Housing Permanent [5)]	6 263	1 895	508	163	0	8 829
Total Housing Need	**8 755**	**1 895**	**569**	**233**	**0**	**11 452**
Standpipes	-	-	-	-	479	479
Yard Connections [6)]	15 226	4 972	1 190	1 547	964	23 899
House Connections [1)]	12 786	2 349	2 183	1 991	9 141	28 450
Total Adequate	**28 012**	**7 321**	**3 373**	**3 538**	**10 584**	**52 828**
Total Residential Consumer Units for the Municipality	**36 767**	**9 216**	**3 942**	**3 771**	**10 796**	**64 492**

Notes: 1) Number of residential consumer units for the urban areas for 2023/2024, as taken from the financial system.

2) Census 2011: Number of households with no access to piped (tap) water 92.

3) Census 2011: Number of households with communal services (200m – 500m) 94, (500m – 1000m) 18 and (>1000m) 8.

4) Below Housing Interim in the above table is the number of households in informal areas without basic water services or with a ratio above 1 communal tap per 25 households as confirmed by the Municipality for June 2024.

5) Adequate Housing Permanent in the above table is the number of households in informal areas with communal water services at a ratio of 1 communal tap per 25 households or less as confirmed by the Municipality for June 2024.

6) Estimated number of backyard dwellers (Projected number of households – residential CUs – households in informal areas).

Table A.2.5: Improvement in Eradicating the Water Backlog					
Settlement	**Urban / Rural**	**2023/24**		**2022/23 (-Y1)**	
		Water backlog HH	**Water Backlog Population**	**Water backlog HH**	**Water Backlog Population**
Stellenbosch	Urban	2 492	8 226	2 723	8 988
Franschhoek	Urban	0	0	0	0
Dwars River	Urban	70	304	44	191
Klapmuts	Urban	61	240	261	1 026
Farms	Rural	212	926	212	926
Total		**2 835**	**9 696**	**3 240**	**11 131**

Table A.2.6: Water Supply Level Profile (Households)		
Section: Residential water services infrastructure supply level profile	**Totals**	**Assessment Score**
Total households with a water need (Irrelevant the type of need)	**2 835**	**80%**
Total households below RDP	**212**	**80%**
Piped water inside the dwelling/house	28 450	80%
Piped water inside yard	23 899	60%
Piped water distance <200m	9 308	60%
Piped water distance >200m	2 743	60%
Water other (Include no water)	92	60%
Total	**64 492**	**80%**

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

Table A.2.7: Water Reliability Profile (Households)		
Section: Water Reliability Profile	**Totals**	**Assessment Score**
Total Number of Households having Reliable Service	**61 657**	**80%**
Total Number of Households NOT having Reliable Service	**2 835**	**60%**

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

The projected figures in the previous tables for water services for the farms are still based on the 2011 Census data and can only be updated once the 2022 Census data becomes available per town or subplace.

The table and graph below give an overview of the sanitation service delivery access profile in Stellenbosch Municipality's Management Area.

Table A.2.8: 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	42 519	66%	40 709	65%	38 749	64%
	Waterborne: Low Flush	0	0%	0	0%	0	0%
Flush toilet (with septic tank)	Septic tanks / Conservancy	8 950	14%	8 795	14%	8 669	14%
Chemical toilet	Non-waterborne (above min. service level)	415	1%	415	1%	388	1%
Pit toilet with ventilation (VIP)		165	0%	165	0%	165	0%
Other / Communal Services		11 227	17%	11 198	18%	11 144	19%
	Sub-Total: Minimum Serivce Level and Above	**63 276**	**98%**	**61 282**	**98%**	**59 115**	**98%**
	SANITATION (BELOW MIN LEVEL)						
Pit toilet without ventilation	Pit toilet	148	0%	148	0%	148	0%
Bucket toilet	Bucket toilet	278	0%	278	0%	278	0%
Other toilet provision (below min. service level	Other	210	0%	210	0%	210	0%
No toilet provisions	No services	580	1%	399	1%	471	1%
	Sub-Total: Below Minimum Service Level	**1 216**	**2%**	**1 035**	**2%**	**1 107**	**2%**
	Total number of households	**64 492**	**100%**	**62 317**	**100%**	**60 222**	**100%**

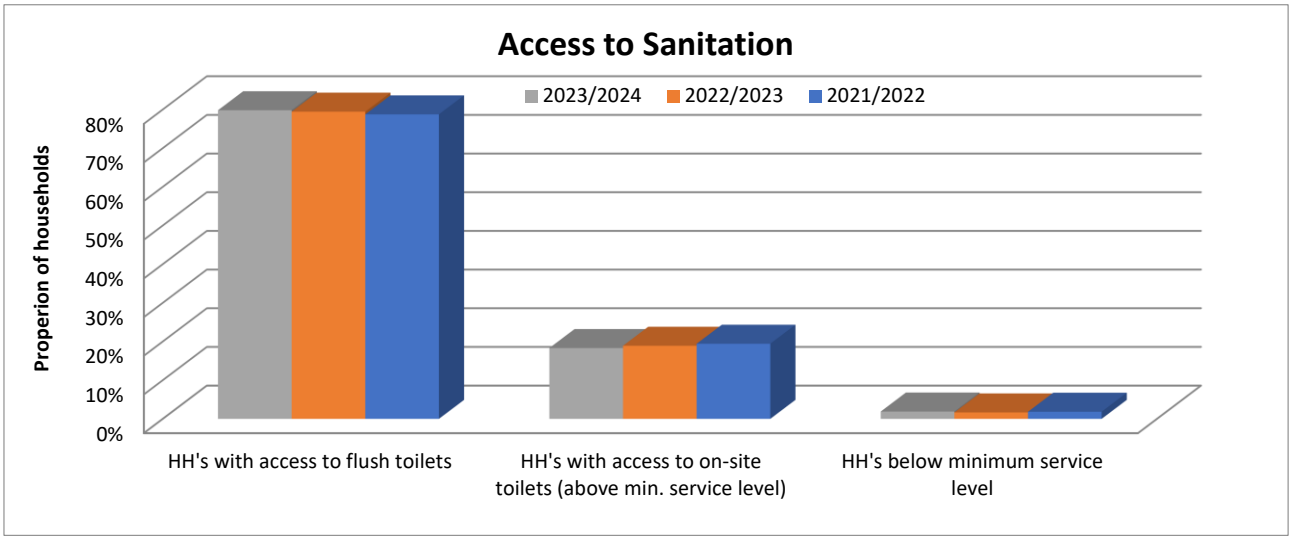


Figure A.2.2: Access to Sanitation Services.

The existing sanitation service levels in Stellenbosch Municipality's Management Area are estimated as follows (June 2024).

Table A.2.9: Residential sanitation service levels (Residential Consumer Units)						
Service Levels	**Stellenbosch**	**Franschhoek**	**Klapmuts**	**Dwars River**	**Farms**	**Total**
No Sanitation Services	0	0	0	0	355 [2)]	355
Below RDP: Infrastructure Upgrade	0	0	0	0	915 [3)]	915
Below RDP: Infrastructure Extension	0	0	0	0	0	0
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**1 270**	**1 270**
Inadequate Housing Interim [4)]	4 948	861	286	225	0	6 320
Inadequate Housing Permanent [5)]	3 807	1 034	283	8	0	5 132
Total Housing Need	**8 755**	**1 895**	**569**	**233**	**0**	**11 452**
No Waterborne (VIP)	0	0	0	0	165	165
Septic Tanks / Conservancy Tanks	0	0	0	0	9 086	9 086
Waterborne	28 012	7 321	3 373	3 538	275	42 519
Total Adequate [1)]	**28 012**	**7 321**	**3 373**	**3 538**	**9 526**	**51 770**
Total Residential Consumer Units for the Municipality	**36 767**	**9 216**	**3 942**	**3 771**	**10 796**	**64 492**

Notes: 1) Include Backyard dwellers

2) Census 2011: Number of households with no toilet facility 355.

3) Census 2011: Number of households with existing buckets 278, chemical toilets 279, pit toilets without ventilation 148 and "other" 210.

4) Below Housing Interim in the above table is the number of households in informal areas without basic sanitation services or with a ratio above 1 communal toilet per 5 households as confirmed by the Municipality for June 2024.

5) Adequate Housing Permanent in the above table is the number of households in informal areas with communal ablution facilities at a ratio of 1 communal toilet per 5 households or less as confirmed by the Municipality for June 2024.

Table A.2.10: Improvement in Eradicating the Sanitation Backlog					
Settlement	**Urban / Rural**	**2023/24**		**2022/23 (-Y1)**	
		Sanitation backlog HH	**Sanitation Backlog Population**	**Sanitation backlog HH**	**Sanitation Backlog Population**
Stellenbosch	Urban	4 948	16 333	4 973	16 416
Franschhoek	Urban	861	2 620	861	2 620
Dwars River	Urban	225	978	44	191
Klapmuts	Urban	286	1 125	386	1 518
Farms	Rural	1 270	5 554	1 270	5 554
Total		**7 590**	**26 610**	**7 534**	**26 299**

Table A.2.11: Sanitation Level of Service (Households)		
Section: Residential sanitation services infrastructure supply level profile	**Totals**	**Assessment Score**
Bucket toilet	278	60%
Pit without ventilation	148	60%
Pit toilet with ventilation (VIP)	165	60%
Chemical Toilet	279	60%
Flush toilet (with septic / conservancy tank)	9 086	80%
Flush toilet (connected to sewerage system)	47 651	80%
None	6 885	60%
Total	**64 492**	**60%**

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

Table A.2.12: Sanitation Reliability Profile (Households)		
Section: Residential sanitation reliability profile	**Totals**	**Assessment Score**
Total number of households having reliable service	**56 902**	**80%**
Total number of households not having reliable service	**7 590**	**60%**
Infrastructure to be upgraded: None to VIP	565	60%
Infrastructure requirement: Bucket to VIP	278	60%
Infrastructure requirement: None to waterborne	6 320	60%
Infrastructure to be upgraded: Pit to VIP	148	60%
Number of households NOT having reliable service due to: Functionality	279	60%

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

The projected figures in the previous tables for sanitation services for the farms are still based on the 2011 Census data and can only be updated once the 2022 Census data becomes available per town or subplace.

Table A.2.13: Direct Backlog (Water and Sanitation)		
Direct Backlog (Water & Sanitation)	**Totals**	**Assessment Score**
Direct settlement backlog water households. Total household of settlement with a water need (irrelevant the type of need)	2 835	60%
Direct settlement backlog water population. Total population of settlement with a water need (irrelevant the type of need)	9 696	60%
Direct settlement backlog sanitation households. Total household of settlement with a sanitation need (irrelevant the type of need)	7 590	60%
Direct settlement backlog sanitation population. Total population of settlement with a sanitation need (irrelevant the type of need)	26 610	60%

The current number of informal dwellings in Stellenbosch Municipality's Management Area is 11 452. Stellenbosch Municipality's works towards a ratio of at least one communal standpipe for every five households and one communal toilet to every twenty five households. The table below gives a summary of the communal services levels in the informal areas in Stellenbosch Municipality's Management Area.

Table A.2.14: Communal service levels in informal areas (June 2024)

No.	Informal Settlement	No. of informal dwellings	Sanitation						Water				
			Number of Toilets currently provided		HH / Toilet	Broken Toilets	Backlog *		Number of Taps currently provided	HH / Tap	Backlog **		Broken Taps
			Chemical Toilets	Waterborne Toilets			HH	Add. Toilets Required			HH	Add. Taps Required	
Stellenbosch													
1	Transit Camp (Devon Valley)	17	0	10	1.7	7	0	0	2	8.5	0	0	2
2	Longlands Farm	81	0	76	1.1	0	0	0	76	1.1	0	0	0
3	Mountain View (Jamestown)	237	100	40	1.7	40	0	0	22	10.8	0	0	0
4	Jonkershoek / Fisheries / Compound / Assegaaibos	128	15	5	6.4	5	28	6	4	32.0	28	2	4
5	Ma Tops	1	0	1	1.0	1	0	0	1	1.0	0	0	0
Total Stellenbosch		**464**	**115**	**132**	**1.9**	**53**	**28**	**6**	**105**	**4.4**	**28**	**2**	**6**
Kayamandi													
6	Enkanini Kayamandi	3 172	0	160	19.8	40	2 372	475	63	50.3	1 597	64	26
7	Watergang Informal Settlement	1 420	10	41	27.8	0	1 165	233	27	52.6	745	30	0
8	Zone A	606	0	164	3.7	1	0	0	81	7.5	0	0	31
9	Zone D	107	0	4	26.8	0	87	18	3	35.7	32	2	0
10	Zone F	183	0	37	4.9	0	0	0	21	8.7	0	0	6
11	Zone I	160	0	41	3.9	1	0	0	17	9.4	0	0	1
12	Zone J	425	0	73	5.8	0	60	12	39	10.9	0	0	2
13	Zone K	196	0	11	17.8	0	141	29	6	32.7	46	2	3

Table A.2.14: Communal service levels in informal areas (June 2024)													
No.	Informal Settlement	No. of informal dwellings	Sanitation						Water				
			Number of Toilets currently provided		HH / Toilet	Broken Toilets	Backlog *		Number of Taps currently provided	HH / Tap	Backlog **		Broken Taps
			Chemical Toilets	Waterborne Toilets			HH	Add. Toilets Required			HH	Add. Taps Required	
14	Zone L	241	0	52	4.6	2	0	0	22	11.0	0	0	18
15	Zone M	50	0	21	2.4	1	0	0	13	3.8	0	0	13
16	Zone P	59	0	5	11.8	0	34	7	5	11.8	0	0	0
17	Zone O	1 427	0	103	13.9	5	912	183	86	16.6	0	0	38
18	Siyahlala	219	0	14	15.6	10	149	30	7	31.3	44	2	3
Total Kayamandi		**8 265**	**10**	**726**	**11.2**	**60**	**4 920**	**987**	**390**	**21.2**	**2 464**	**100**	**141**
Cloetesville													
19	Slabtown (under the bridge)	26	0	10	2.6	2	0	0	8	3.3	0	0	4
Total Cloetesville		**26**	**0**	**10**	**2.6**	**2**	**0**	**0**	**8**	**3.3**	**0**	**0**	**4**
Dwars River													
20	Erf 64 Kylemore	8	6	0	1.3	0	0	0	2	4.0	0	0	0
21	Ghiff Pniel	11	0	0	0.0	0	11	3	0	0.0	11	1	0
22	Meerlust Simondium	59	0	0	0.0	0	59	12	0	0.0	59	3	0
23	Covid Camp	155	0	0	0.0	0	155	31	8	**19.4**	0	0	0
Total Dwars River		**233**	**6**	**0**	**38.8**	**0**	**225**	**46**	**10**	**23.3**	**70**	**4**	**0**
Klapmuts													
24	La Rochelle	33	0	40	0.8	0	0	0	14	2.4	0	0	0
25	Mandela City	536	0	50	10.7	0	286	58	19	28.2	61	3	0
Total Klapmuts		**569**	**0**	**90**	**6.3**	**0**	**286**	**58**	**33**	**17.2**	**61**	**3**	**0**
Franschhoek													
26	Mooiwater Office	24	0	2	12.0	2	14	3	2	12.0	0	0	1
27	Klein Mooiwater	64	5	16	3.0	10	0	0	8	8.0	0	0	6
28	Langrug	1 807	0	192	9.4	52	847	170	100	18.1	0	0	32
Total Franschhoek		**1 895**	**5**	**210**	**8.8**	**64**	**861**	**173**	**110**	**17.2**	**0**	**0**	**39**
Total Stellenbosch Municipality		**11 452**	**136**	**1 168**	**8.8**	**179**	**6 320**	**1 270**	**656**	**17.5**	**2 623**	**109**	**190**

Notes: No Services, Ratios above Targets, Ratios meeting Targets

* Backlog Sanitation: Households where the ratio of one toilet seat for every 5 households is exceeded.

** Backlog Water: Households where the ratio of one communal tap for every 25 households is exceeded.

It can be noted from the above table that an additional 1 270 toilets and 109 communal taps are required for the informal areas in order to comply with the ratios of one toilet for every five households and one communal tap for every twenty-five households. 179 Toilets and 190 communal taps also need to be repaired. Some of the challenges experienced by Stellenbosch Municipality with regard to the informal areas and the provision of services to these areas include the following:

- Lack of space for new facilities;
- Lack of access for maintenance and emergency vehicles (narrowed roads);
- Uncooperative community members, don't want to move to create space for services;
- Vandalism of existing infrastructure, budget for new infrastructure must be used to maintain existing infrastructure; and
- Illegal water connections that must be removed.

Consumer units in the two tables below refer to number of billed metered consumers within the Municipality. It may well be that an entire residential development (e.g. a block of flats) consisting of many households, is metered with one bulk meter (One consumer). Consequently, the term "billed metered consumer units" does not necessarily equate to the number of households. The number of user connections in each user sector as calculated from the financial data (Billed Metered Consumers), for the various water distribution systems in Stellenbosch Municipality's Management Area, are as indicated in the table below.

Table A.2.15: Total number of billed metered consumers per category and water distribution system

Distribution System	Year	Residential	Business	Other	Total
Stellenbosch	21/22	12 510	694	221	13 425
	22/23	12 593	699	234	13 526
	23/24	**12 786**	**699**	**244**	**13 729**
Franschhoek	21/22	2 341	138	52	2 531
	22/23	2 347	141	55	2 543
	23/24	**2 349**	**143**	**55**	**2 546**
Dwars River	21/22	1 991	11	18	2 020
	22/23	1 990	10	20	2 020
	23/24	**1 991**	**10**	**20**	**2 021**
Klapmuts	21/22	2 161	22	12	2 195
	22/23	2 177	22	11	2 210
	23/24	**2 183**	**21**	**11**	**2 216**
Total	21/22	19 003	865	303	20 171
	22/23	19 107	872	320	20 299
	23/24	**19 310**	**873**	**330**	**20 512**

The total number of billed metered consumers per distribution system and the percentage annual growth over the period 2021/2022 to 2023/2024 are indicated in the table below.

Table A.2.16: Total number of billed metered consumers per system and percentage annual growth from 21/22 to 23/24

Distribution System	Annual Growth % 21/22 – 23/24	21/22	22/23	23/24
Stellenbosch	1.13%	13 425	13 526	13 729
Franschhoek	0.30%	2 531	2 543	2 546
Dwars River	0.02%	2 020	2 020	2 021
Klapmuts	0.48%	2 195	2 210	2 216
Total	**0.84%**	**20 171**	**20 299**	**20 512**

The graph below provides an overview of the number of billed metered consumers per water distribution system.

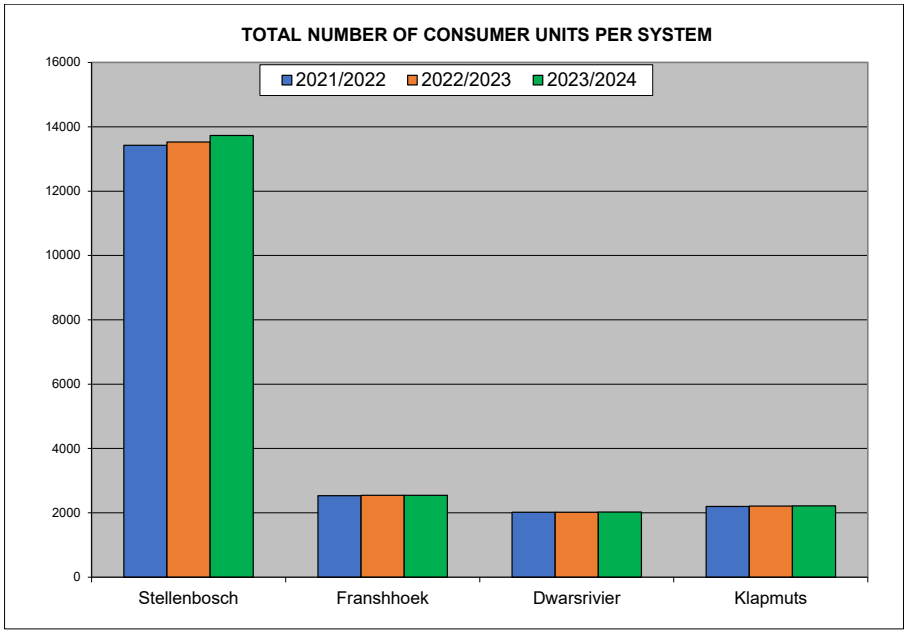


Figure A.2.3: Consumer Units per System (Billed Metered Consumers)

The graph below provides an overview of the number of billed metered consumers per category for all the water distribution systems.

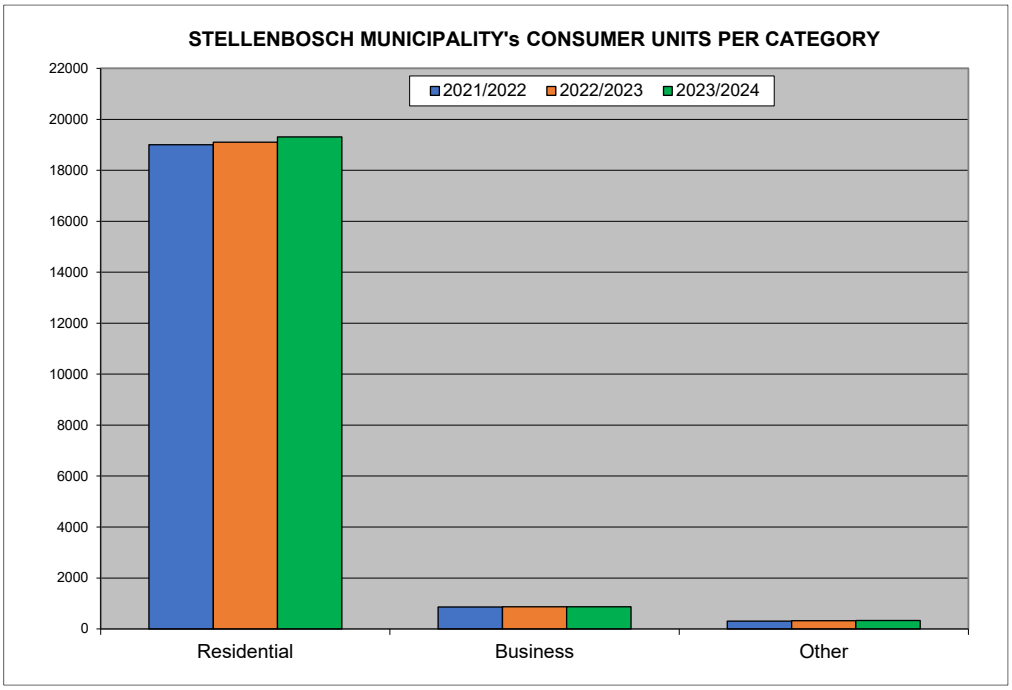


Figure A.2.4: Consumer Units per Category Type (Billed Metered Consumers)

Public Amenities

All schools, tertiary- and health facilities in the urban areas of Stellenbosch Municipality's Management Area are supplied with adequate water and sanitation services. The water and sanitation service levels of the educational and health facilities in the rural areas need to be verified.

The water service levels of the health and education facilities in Stellenbosch Municipality's Management Area are indicated in the table below.

Table A.2.17: Water Services at Education and Health facilities

Associated services facility	Number of facilities	Facilities with adequate services	Facilities with no services	Facilities with inadequate services	Total potential cost (basic level) (Rmil)
Education Plan					
Primary school	28	20	8 (To be verified)		Unknown
Secondary school	12	11	1 (To be verified)		Unknown
Tertiary	8	8	-	-	-
Combined	5	2	3 (To be verified)		Unknown
Special needs	2	2	-	-	-
Other	-	-	-	-	-
Total	**55**	**43**	**12 (To be verified)**		**Unknown**
Health Plan					
Hospitals	2	2	-	-	-
Health Centers	1	1	-	-	-
Clinics	13	10	3 (To be verified)		Unknown
Other	-	-	-	-	-
Total	**16**	**13**	**3 (To be verified)**		**Unknown**

The sanitation service levels of the health and education facilities in Stellenbosch Municipality's Management Area are indicated in the table below.

Table A.2.18: Sanitation services at Education and Health facilities

Associated services facility	Number of facilities	Facilities with adequate services	Facilities with no services	Facilities with inadequate services	Total potential cost (basic level) (Rmil)
Education Plan					
Primary school	28	20	8 (To be verified)		Unknown
Secondary school	12	11	1 (To be verified)		Unknown
Tertiary	8	8	-	-	-
Combined	5	2	3 (To be verified)		Unknown
Special needs	2	2	-	-	-
Other	-	-	-	-	-
Total	**55**	**43**	**12 (To be verified)**		**Unknown**
Health Plan					
Hospitals	2	2	-	-	-
Health Centers	1	1	-	-	-
Clinics	13	10	3 (To be verified)		Unknown
Other	-	-	-	-	-
Total	**16**	**13**	**3 (To be verified)**		**Unknown**

TOPIC 3: WATER SERVICES ASSET MANAGEMENT

The table below provides a summary of the operational water and sewerage infrastructure of Stellenbosch Municipality.

Table A.3.1: Infrastructure Components

Assets	Boreholes	Abstraction Points	WTW	Water Pump Stations	Sewer Pump Stations	Water Bulk Pipelines	Sewer Bulk Pipelines	Reservoirs	WWTW	Assessment Score
Total number of components / km of pipeline / units	3	4	6	33	18	122.523 606.148	20.643 464.754	43	5	80%

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

Table A.3.2: Existing water infrastructure

Water Distribution System	Bulk Water Resources and Water Services Provider	Water Treatment Works	Network Bulk and Reticulation		Number of Water PS		Municipal Reservoirs and Towers (Total Storage)
			Bulk (km)	Ret. (km)	RW	TW	
Stellenbosch	Eerste River, WCWSS, CCT	Idas Valley WTW and Paradyskloof WTW	75.865	345.335	2	12	18 (56.950Ml)
Franschhoek	Perdekloof and CCT	Franschhoek WTW and Wemmershoek WTW	21.014	68.015	-	5	8 (10.900 Ml)
Dwars River	CCT	Wemmershoek WTW	14.232	38.042	-	5	6 (9.800 Ml)
Klapmuts	CCT	Wemmershoek WTW	2.779	29.522	-	1	3 (9.400 Ml)
Raithby	CCT	Faure WTW	3.916	5.187	-	1	1 (0.180 Ml)
Faure	CCT	Faure WTW	-	10.640	-	2	-
Polkadraai	CCT	Blackheath WTW	0.983	49.787	-	1	4 (16.736 Ml)
Koelenhof	CCT	Wemmershoek WTW	2.910	47.646	-	3	3 (6.127 Ml)
Muldersvlei	CCT	Wemmershoek WTW	-	7.768	-	-	-
Meerlust	CCT	Wemmershoek WTW	0.824	0.763	-	-	-
Helderberg / Croydon	CCT	Steenbras	-	3.443	-	1	-
Total			**122.523**	**606.148**	**2**	**31**	**43 (110.093 Ml)**

Note: The number of PS in the above table exclude decommissioned and private pump stations

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

Table A.3.3: Existing sewerage infrastructure

Sewer Drainage Systems	Sewer Drainage Network		Number of Municipal Sewer Pump Stations	Waste Water Treatment Works		
	Rising Pipelines	Gravity Pipelines		Name of WWTW	Capacity	
					Hydraulic	Organic
	km	km			Ml/d	Kg COD/day
Stellenbosch	13.791	320.721	10	Stellenbosch	35.000	35 000
Franschhoek	1.813	73.863	1	Wemmershoek	3.600	4 350
Dwars River	3.627	37.376	4	Pniel	4.500	4 500
Klapmuts	1.412	27.189	3	Klapmuts	2.400	2 700
Raithby	-	5.605	-	Raithby	0.150	53
Faure	-	-	-	-	-	-
Polkadraai	-	-	-	-	-	-
Koelenhof	-	-	-	-	-	-
Muldersvlei	-	-	-	-	-	-
Meerlust	-	-	-	-	-	-
Helderberg / Croydon	-	-	-	-	-	-
Total	**20.643**	**464.754**	**18**	**-**	**45.650**	**46 603**

The table below gives an overview of the refurbishment needs and O&M occurrence of the existing water and sewerage infrastructure.

Table A.3.4: Refurbishment Need and O&M Occurrence

Component	Refurbishment Need				O&M Occurrence				Observation			
	High	Medium	Low	None	Regular	Periodic	Sporadic	None	Dysfunctional	Operational	Prime Condition	Vandalised
Boreholes	0	0	3	0	3	0	0	0	0	3	0	0
Abstraction points	0	0	4	0	4	0	0	0	0	4	0	0
Bulk water pipelines	0	0	5	0	5	0	0	0	0	5	0	0
Reservoirs	3	3	34	3	43	0	0	0	2	36	5	0
Water pump stations	3	2	15	13	33	0	0	0	2	16	14	1
WTW	0	1	5	0	6	0	0	0	3	3	0	0
Bulk sewer pipelines	0	0	5	0	5	0	0	0	0	5	0	0
Sewer pump stations	0	0	17	1	18	0	0	0	0	13	5	0
WWTW	0	2	3	0	5	0	0	0	0	4	1	0

Asset Management Plan: An updated Asset Management Policy (2025/2026) is in place, which includes the following objectives:

- Specifying Council's practice regarding accounting for assets;
- Ensure consistency in accounting treatment; and
- To assist officials in understanding their legal and managerial responsibilities with regard to key asset functions such as safeguarding of assets; maintaining assets; establishing and maintaining a management, accounting and information system; that accounts for the assets of the municipality; asset valuation principles in accordance with GRAP; establishing and maintaining systems of internal controls over assets; establishing and maintaining asset registers and clarifying responsibilities and accountabilities for the asset management process.

Each Directorate must develop a maintenance strategy that will ensure that the assets of Stellenbosch Municipality are maintained at an adequate operational level or standard by ensuring that all statutory, technical and operational objectives are achieved. This strategy must ensure that tangible assets under the custody and control of the relevant directors are properly maintained and repaired so that their possible maximum useful lives are realised.

Stellenbosch Municipality updated their current Asset Register after June 2024, in order to include the new assets constructed during the 2023/2024 financial year. The tables that follow give an overview of the current water and sewerage infrastructure included in Stellenbosch Municipality's Asset Register.

Water Infrastructure: The Opening Cost and Book Value of the water infrastructure of Stellenbosch Municipality is summarised in the table below (June 2024).

Table A.3.5: Opening Cost and Book Value of the water infrastructure			
Asset Type	**Opening Cost**	**Book Value**	**Book Value / Opening Cost**
Borehole	R86 227 551	R61 774 220	71.64%
Water Mains	R225 179 114	R178 123 277	79.10%
Dams and Weirs	R16 166 313	R12 038 177	74.46%
Water Reticulation Pipeline	R1 305 772 600	R919 260 997	70.40%
Water Pump Station	R2 905 428	R679 144	23.37%
Reservoirs & Tanks	R214 592 898	R188 575 179	87.88%
WTW	R107 159 498	R88 391 666	82.49%
Total	**R1 958 003 402**	**R1 448 842 660**	**74.00%**

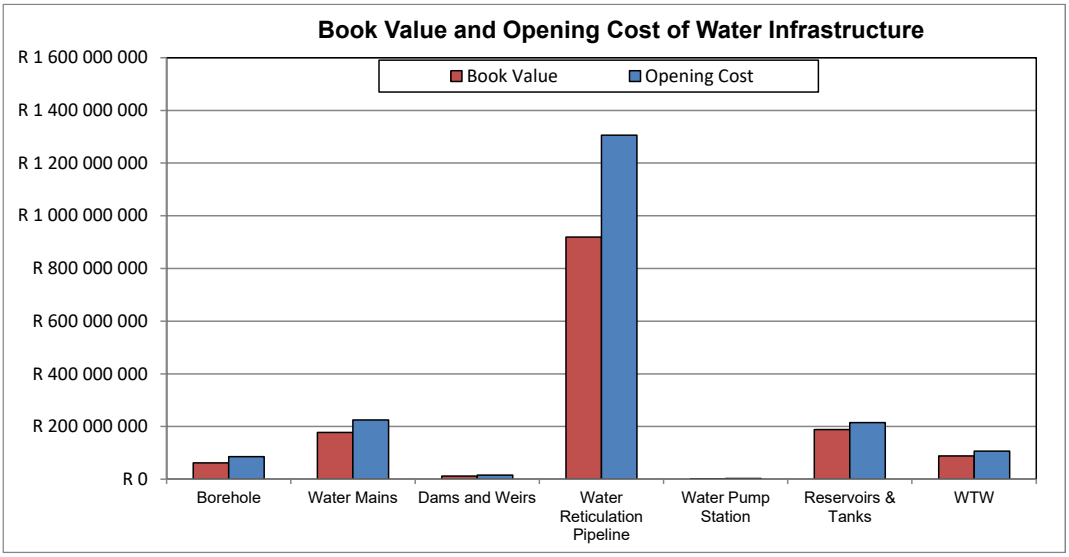


Figure A.3.1: Book Value and Opening Cost of the Water Infrastructure

The information in the previous table indicates that 26.00% of the value of the water infrastructure has been consumed.

The following table gives an overview of the remaining useful life by facility type for the water infrastructure (Opening Cost).

Table A.3.6: Overview of the RUL by facility type for the water infrastructure (Opening Cost):					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Borehole	R433 575	R477 147	R85 196 336	R120 493	R0
Water Mains	R1 169 274	R22 027 529	R13 168 950	R39 192 240	R149 621 121
Dams and Weirs	R0	R0	R14 687 500	R1 478 813	R0
Water Reticulation Pipeline	R52 767 127	R30 269 629	R24 052 697	R81 907 639	R1 116 775 508
Water Pump Station	R202 905	R2 667 956	R0	R34 567	R0
Reservoirs & Tanks	R37 232 699	R45 221 682	R11 788 266	R10 586 802	R109 763 449
WTW	R4 649 565	R15 782 149	R27 861 781	R5 311 334	R53 554 669
Total	**R96 455 145**	**R116 446 092**	**R176 755 530**	**R138 631 888**	**R1 429 714 747**

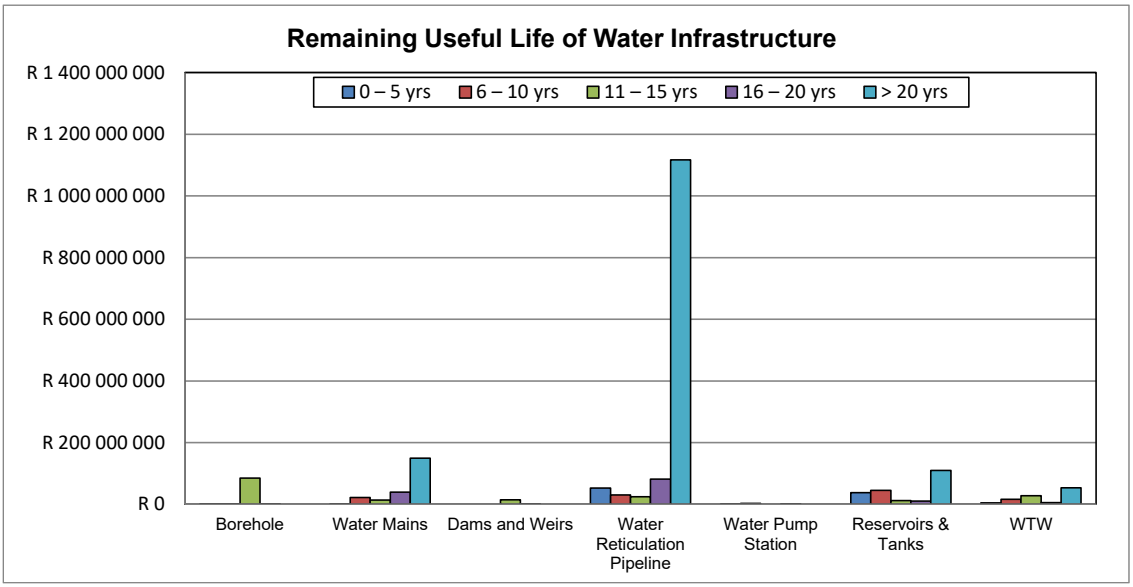


Figure A.3.2: Remaining Useful Life of the Water Infrastructure

The following table gives an overview of the age distribution by facility type for the water infrastructure (Opening Cost).

Table A.3.7: Overview of the age distribution by facility type for the water infrastructure (Opening Cost):

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Borehole	R85 032 002	R867 954	R327 595	R0	R0
Water Mains	R67 305 313	R91 795 484	R66 078 317	R0	R0
Dams and Weirs	R0	R0	R16 166 313	R0	R0
Water Reticulation Pipeline	R157 356 210	R183 991 257	R964 397 481	R0	R27 652
Water Pump Station	R0	R0	R2 905 428	R0	R0
Reservoirs & Tanks	R89 026 085	R16 018 469	R109 548 344	R0	R0
WTW	R34 630 531	R71 728 967	R800 000	R0	R0
Total	**R433 350 141**	**R364 402 131**	**R1 160 223 478**	**R0**	**R27 652**

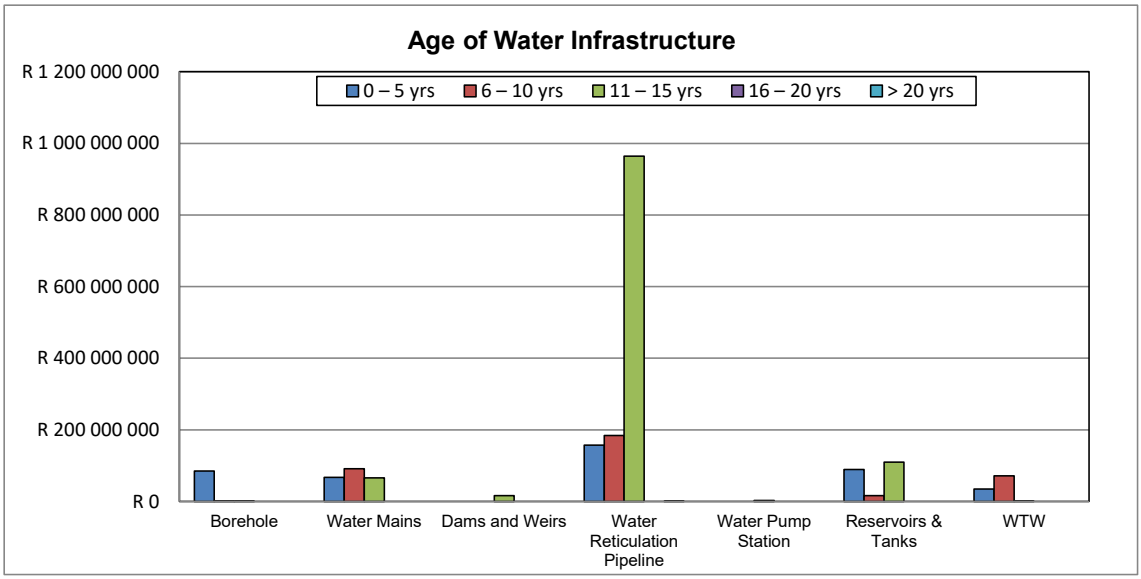


Figure A.3.3: Age Distribution of the Water Infrastructure

Sewer Infrastructure: The Opening Cost and Book Value of the sewerage infrastructure of Stellenbosch Municipality is summarised in the table below (June 2024).

Table A.3.8: Opening Cost and Book Value of the sewerage infrastructure			
Asset Type	**Opening Cost**	**Book Value**	**Book Value / Opening Cost**
Outfall sewers	R356 008 567	R293 722 404	82.50%
WWTW	R185 948 308	R289 122 875	155.49%
Sewer Reticulation Pipeline	R760 668 957	R448 129 150	58.91%
Sewer Pump Station	R11 921 015	R2 042 856	17.14%
Toilet Facilities	R2 048 200	R1 921 640	93.82%
Totals	**R1 316 595 047**	**R1 034 938 925**	**78.61%**

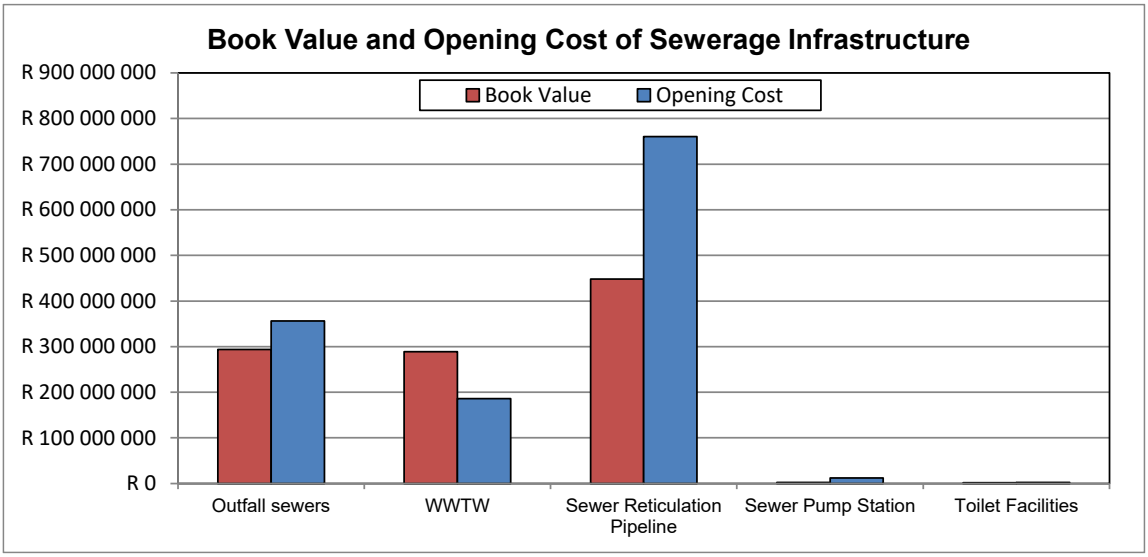


Figure A.3.4: Book Value and Opening Cost of the Sewerage Infrastructure

The information in the previous table indicates that 21.39% of the value of the sewerage infrastructure has been consumed.

The following table gives an overview of the remaining useful life by facility type for the sewerage infrastructure (Opening Cost).

Table A.3.9: Overview of the RUL by facility type for the sewerage infrastructure (Opening Cost)					
Asset Type	**< 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Outfall sewers	R0	R36 767	R13 544 782	R4 623 797	R337 803 221
WWTW	R0	R11 691 518	R37 274 403	R9 070 973	R127 911 414
Sewer Reticulation Pipeline	R13 748 631	R25 813 118	R227 224 801	R76 903 940	R416 978 467
Sewer Pump Station	R5 047 249	R295 787	R6 227 923	R58 218	R291 838
Toilet Facilities	R0	R0	R0	R0	R2 048 200
Totals	**R18 795 880**	**R37 837 190**	**R284 271 909**	**R90 656 928**	**R885 033 140**

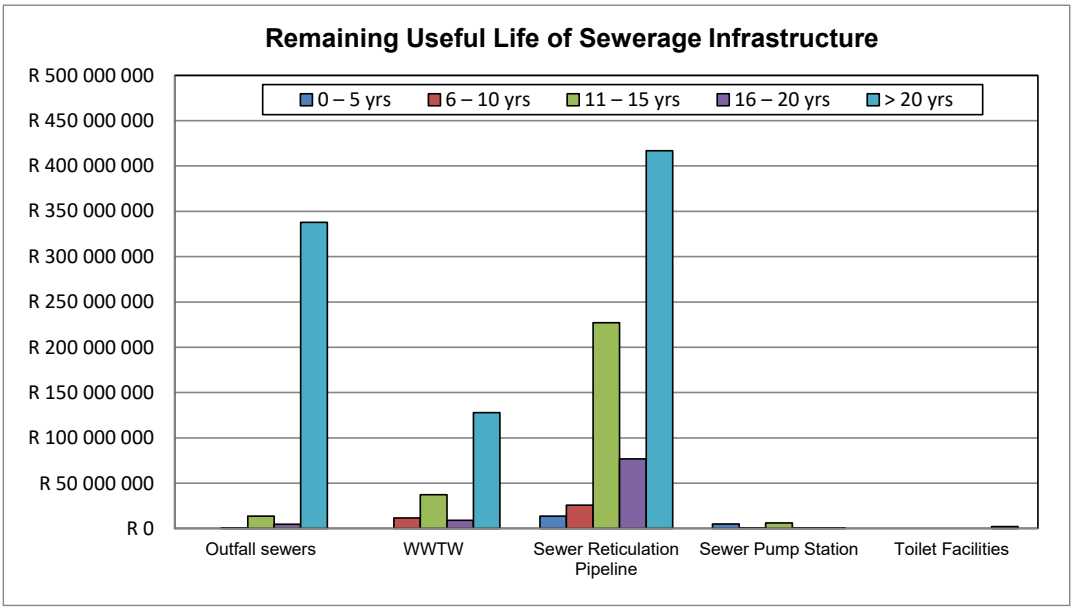


Figure A.3.5: Remaining Useful Life of the Sewerage Infrastructure

The following table gives an overview of the age distribution by facility type for the sewerage infrastructure (Opening Cost).

Table A.3.10: Overview of the age distribution by facility type for the sewerage infrastructure (Opening Cost)

Asset Type	< 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Outfall sewers	R204 327 475	R2 265 506	R149 415 586	R0	R0
WWTW	R98 691 377	R38 604 143	R48 652 788	R0	R0
Sewer Reticulation Pipeline	R182 572 984	R441 865 583	R136 230 390	R0	R0
Sewer Pump Station	R268 338	R0	R11 652 677	R0	R0
Toilet Facilities	R2 048 200	R0	R0	R0	R0
Totals	**R487 908 374**	**R482 735 232**	**R345 951 441**	**R0**	**R0**

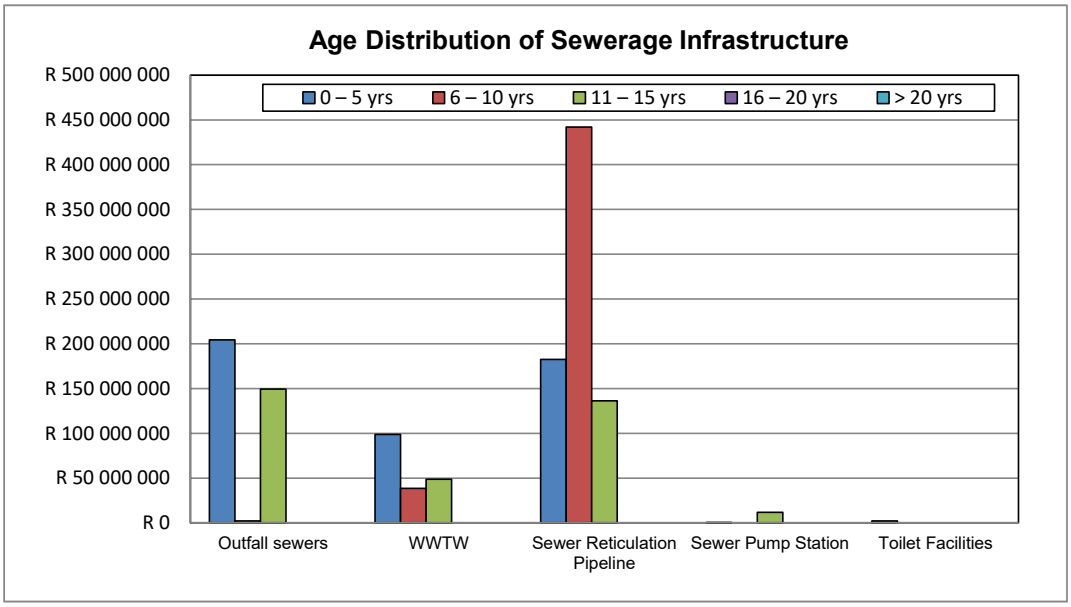


Figure A.3.6: Age Distribution of the Sewerage Infrastructure

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.

Disaster Management Plan: The purpose of Stellenbosch Municipality Disaster Management is to ensure coordination of multi-disciplinary and multi-sectorial risk reduction through the integrated institutional capacity for disaster risk management, risk assessment, response and recovery, and implementation of measures aimed at:

- Preventing or reducing the risk of disasters;
- Mitigating the severity or consequences of disasters;
- Emergency preparedness;
- Rapid and effective response to disasters; and
- Post-disaster recovery and rehabilitation.

Stellenbosch Municipality's Disaster Management Plan is reviewed annually and:

- anticipates the types of disasters that are likely to occur in its area of jurisdiction and their possible effect;
- places emphasis on measures that reduce the vulnerability of disaster-prone areas, communities, and households at risk;
- promotes disaster management research;
- identifies and addresses weaknesses in capacity to deal with disasters;
- provides for appropriate prevention and mitigation strategies;
- facilitates a rapid and effective response to disaster; and
- Post-disaster recovery and rehabilitation.

Untreated Effluent Management Plan: All effluent discharged in the urban areas in Stellenbosch Municipality are treated at the existing WWTWs and there is no known untreated effluent discharged to the environment. W_2RAPs were prepared for all the WWTWs and sewer drainage networks.

TOPIC 4: WATER SERVICES OPERATION AND MAINTENANCE

Maintenance is usually practiced in two forms, preventative maintenance and corrective maintenance. A third form is called design-out maintenance, which is rather an aspect of the design considerations when the infrastructure is planned.

Pipe bursts and other serious damage to pipes immediately interrupts services to the affected area and is rapidly addressed by Stellenbosch Municipality. O&M is a continuous process for Stellenbosch 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. Stellenbosch Municipality's O&M Plan depends on a range of factors such as the age and condition of the water and sewerage infrastructure, requirements of the Municipality and DWS as the regulating authority, the availability of staff, plant, equipment, spares, money and other resources.

Stellenbosch Municipality also 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 Stellenbosch 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 technical personnel ensure that sufficient repair materials, consumables and back-up equipment are also readily available in the stores.

Table A.4.1: Operation and Maintenance

Compliancy	Existing Groundwater Infrastructure	Existing Surface Water Infrastructure	Existing WTW Infrastructure	Existing WWTW Infrastructure	Existing Pump Station Infrastructure	Existing Bulk Pipeline Infrastructure	Existing Tower & Reservoir Infrastructure	Existing Reticulation Infrastructure
Resources	Min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement
Information	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement	Above min. requirement
Activity Control & Management	Min. requirement	Min. requirement	Min. requirement	Min. requirement	Min. requirement	Min. requirement	Min. requirement	Min. requirement

TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

The implementation of the Municipality's WC/WDM measures over the last number of years and the water restrictions during the drought periods has been extremely successful, with an average annual decrease of 0.22% of the raw water volume for all the systems over the last fifteen financial years, from 13 233 Ml in 2008/2009 to 12.807 Ml in 2023/2024. **The overall NRW for all the systems for the 2023/2024 financial year was 3 931.556 Ml (31.3%). The overall water losses for the last financial year were 3 529.523 Ml (28.1%). The Municipality is committed to continue with the implementation of specific WC/WDM measures to further reduce the current NRW and Water Losses.**

The current WC/WDM measures implemented by Stellenbosch Municipality are mostly through their Operation and Maintenance Budgets. The main water demand management interventions implemented by Stellenbosch Municipality over the last number of years, include the following:

- Meter and record all bulk water supply for the various distribution systems and improve the billed metered consumption data (Financial Department) in order to carry out more detail IWA water balances for the various distribution systems.
- Customer Services and Complaints System is implemented by the Municipality for burst pipes, leaks, etc. Standby teams are available after hours and over weekends for immediate repairs of any burst pipes or leaks.
- Strict municipal services standards for the installation of new water reticulation networks for own and private developments.
- Implementation of pressure management, continuous operation and maintenance of various PRV zones.
- Implementation of a seven-block step water tariff structure that promotes the efficient use of water and discourage wastages. Water restrictions are also implemented when required.
- Regular updating of the Water Master Plans for the various water distribution systems.
- Implementation of a Water Pipeline Replacement Programme.

A contractor was also appointed to assist the municipality with various demand management activities during the 2022/2023 financial year. The scope of works comprises of the following key components:

- The inspection and repair of plumbing defects to selected existing residential properties including the repair of leaks associated with pipes, toilets, geysers, taps and other general plumbing components;
- Removal of existing water meters and installation of new programmable domestic (Smart) water meters;
- Replacement of faulty domestic and bulk water meters;
- Installation of new pressure reducing valves and electromagnetic flow meters in the municipal water network;
- Construction of valve and bulk water meter chambers; and
- Connecting pipework to the municipal water network.

The total expenditure over the period 2018/2019 to 2023/2024 for the implementation of these WC/WDM measures over the last six financial years was R20 016 391 (Vat Excluded).

A Water Conservation and Water Demand Management Strategy was drafted for Stellenbosch Municipality in February 2012, but is outdated and requires review and updating.

The table below gives a summary of the treatment losses, NRW, water losses and ILIs for the various distribution systems in Stellenbosch Municipality's Management Area.

Table A.5.1: Treatment Losses, NRW, Water Losses and ILIs for the various water distribution systems

Description	Component	Unit	Record: Prior (Ml/a)					23/24
			18/19	19/20	20/21	21/22	22/23	
Stellenbosch	Treatment Losses	Volume	308.690	584.229	75.350	297.562	214.613	243.699
		Percentage	5.6%	9.1%	1.1%	3.8%	2.9%	2.8%
	NRW	Volume	1 335.677	1 460.955	2 324.201	2 395.113	1 963.333	3 012.827
		Percentage	22.6%	22.0%	29.0%	28.4%	24.1%	30.7%
	Water Losses	Volume	1 146.352	1 248.653	2 068.119	2 125.005	1 702.594	2 698.690
		Percentage	19.4%	18.8%	25.8%	25.2%	20.9%	27.5%
	ILI					**4.40**	**4.15**	**6.59**
Franschhoek	NRW	Volume	223.419	320.059	245.181	502.650	522.748	365.275
		Percentage	24.1%	30.0%	21.3%	37.1%	38.6%	28.9%
	Water Losses	Volume	193.738	285.914	208.410	459.351	479.437	324.854
		Percentage	20.9%	26.8%	18.1%	33.9%	35.4%	25.7%
	ILI					**5.21**	**6.85**	**4.71**
Dwars River	NRW	Volume	452.219	259.493	213.959	242.515	317.222	345.836
		Percentage	56.9%	31.0%	23.5%	34.5%	41.9%	40.8%
	Water Losses	Volume	426.788	232.721	184.796	220.032	293.001	318.743
		Percentage	53.7%	27.8%	20.3%	31.3%	38.7%	37.6%
	ILI					**5.29**	**7.05**	**7.30**
Klapmuts	NRW	Volume	84.730	164.563	123.001	160.903	144.782	207.618
		Percentage	20.3%	29.4%	22.6%	26.3%	26.4%	32.6%
	Water Losses	Volume	71.377	146.649	105.556	141.330	127.223	187.236
		Percentage	17.1%	26.2%	19.4%	23.1%	23.2%	29.4%
	ILI					**3.08**	**2.76**	**3.84**
TOTAL	**NRW**	**Volume**	**2 096.045**	**2 205.070**	**2 906.342**	**3 301.181**	**2 948.085**	**3 931.556**
		Percentage	**26.0%**	**24.2%**	**27.4%**	**29.7%**	**27.3%**	**31.3%**
	Water Losses	**Volume**	**1 838.255**	**1 913.936**	**2 566.882**	**2 945.718**	**2 602.255**	**3 529.523**
		Percentage	**22.8%**	**21.0%**	**24.2%**	**26.5%**	**24.1%**	**28.1%**

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) in the previous table 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. 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.

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

Table A.5.2: 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	Stellenbosch	Franschhoek	Dwars River	Klapmuts
System Input Volume	1 959	1 359	1 148	787
Average Billed Metered Cons.	1 358	966	679	531
Non-Revenue Water	601	393	469	257

Stellenbosch is the town with the highest system input volume per connection per day, the highest average billed metered consumption per connection per day and the highest NRW per connection per day.

The table below gives an overview of the various WC/WDM measures and whether the measures are adequately addressed by Stellenbosch Municipality.

Table A.5.3: Reducing Water Losses		
Reducing Water Losses and water inefficiencies		**Assessment Score**
Night flow metering	Partially	60%
Day flow metering	Yes	80%
Reticulation leaks	Yes	80%
Illegal connections	Yes	80%
Un-metered connections	Yes	80%
Leak and meter repair programmes. Consumer units targeted by:		
Leak repair assistance programme	Partially	60%
Retro-fitting of water inefficient toilets	Partially	60%
Meter repair programme	Yes	80%
Consumer/end-use demand management: Public Information & Education Programmes		
Schools targeted by education programmes	No	20%
Consumers targeted by public information programmes	Yes	80%

DWS's scorecard for assessing the potential for WC/WDM efforts was completed for Stellenbosch Municipality. 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 Stellenbosch Municipality is 69 out of 100 suggesting that the Municipality is making good progress with regard to the implementation of specific WC/WDM activities.**

TOPIC 6: 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. The drought over the period 2015 to 2017 reduced the assurance of supply from the WCWSS to Stellenbosch Municipality and also reduced the yield of the Municipality's own existing surface water resources. The Municipality therefore continued with the implementation of specific WC/WDM measures to lower the current water requirements and the planning for the augmentation of the existing water resources. A Bulk Water Resources: Drought Intervention Projects Study was completed in June 2019 for Stellenbosch Municipality. The Study included various recommended future resource augmentation projects for Stellenbosch Municipality. The table below gives an overview of the current water resources, the current volumes abstracted and authorised and whether the abstractions are registered and recorded.

Table A.6.1: Current water sources and volumes							
Current Water Sources							
Source Type	**Scheme**	**Number of Sources**	**Current 23/24 Abstraction or Returns (Mm³/a)**	**Licensed Abstraction / Returns (Mm³/a)**	**Community Water Supply**		**Assessment Score**
					Rural	**Urban**	
Groundwater	Stellenbosch	Various	0.000000	2.040905	0%	100%	60%
Surface Water	Stellenbosch	1	4.333228	7.224000	0%	100%	80%
	Franschhoek	1	0.188309	0.576648	0%	100%	60%
External Sources (Bulk Purchase)	Stellenbosch	2	5.727256	6.988.864	0%	100%	80%
	Franschhoek	1	1.074850	1.890048	0%	100%	80%
	Dwars River	1	0.846636	1 486.016	0%	100%	80%
	Klapmuts	1	0.636939	1 123.072	0%	100%	80%
Water Returned to Source	Stellenbosch WWTW	1	7.358376	12.775000	-	-	40%
	Wemmershoek WWTW	1	1.353311	1.872450	-	-	40%
	Pniel WWTW	1	0.813672	1.642500	-	-	40%
	Klapmuts WWTW	1	0.532870	0.547500 (Application)	-	-	40%
	Raithby WWTW	1	0.022636	Unknown	-	-	40%
Conjunctive use	-	-	-	-	-	-	-

The table below indicates the potential additional future water resources for Stellenbosch Municipality.

Table A.6.2: Additional water resources and volumes				
Source Type	**Schemes**	**Number of Sources**	**Potential Volume (Mm³/a)**	**Licensed Abstraction (Mm³/a)**
Groundwater	Stellenbosch	To be determined	1.598	WULAs will only be submitted when boreholes are developed.
	Dwars River	To be determined	0.365	
	Franschhoek	To be determined	1.054	
	Klapmuts	To be determined	0.473	
	Meerlust	To be determined	0.024	
	Koelenhof	To be determined	0.151	
Surface Water	-	-	-	-
Wastewater Reclamation	Stellenbosch	1	1.825	Detail investigations required first.
	Dwars River	1	0.365	
	Franschhoek	1	0.730	
	Klapmuts	1	0.255	
External Sources (Bulk Purchase)	Stellenbosch (CCT, Blackheath WTW)	1	1.140	Increased allocation from CCT
	Stellenbosch (WCWSS, Second Phase)	1	2.710	Increased allocation from WCWSS
	Other areas (CCT)	1	3.920	Increased allocation from CCT

The table below gives an overview of the various water quality monitoring measures and whether it is in place for Stellenbosch Municipality.

Table A.6.3: Monitoring of abstraction volumes, water levels and water quality		
Monitoring	**Assessment Score**	
% of water abstracted monitored: Surface water	100%	
% of water abstracted monitored: Ground water	Currently not in use	
% of water abstracted monitored: External Sources	100%	
Monitoring	**Interval**	**Assessment Score**
Surface water levels (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	Daily and Weekly	80%
Ground water levels (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	Not in use	80%
Water quality for formal schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	Hourly, Two Hourly, Six Hourly, Daily, Bi-Weekly	80%
Water quality for rudimentary schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	Cape Winelands District Municipality on request	-
Borehole abstraction? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	Daily when in use	80%

The graph below gives an overview of the average daily raw water supply to all the towns in Stellenbosch Municipality. The impact of the drought experienced over the period 2015 to 2018 can be noted on the graph.

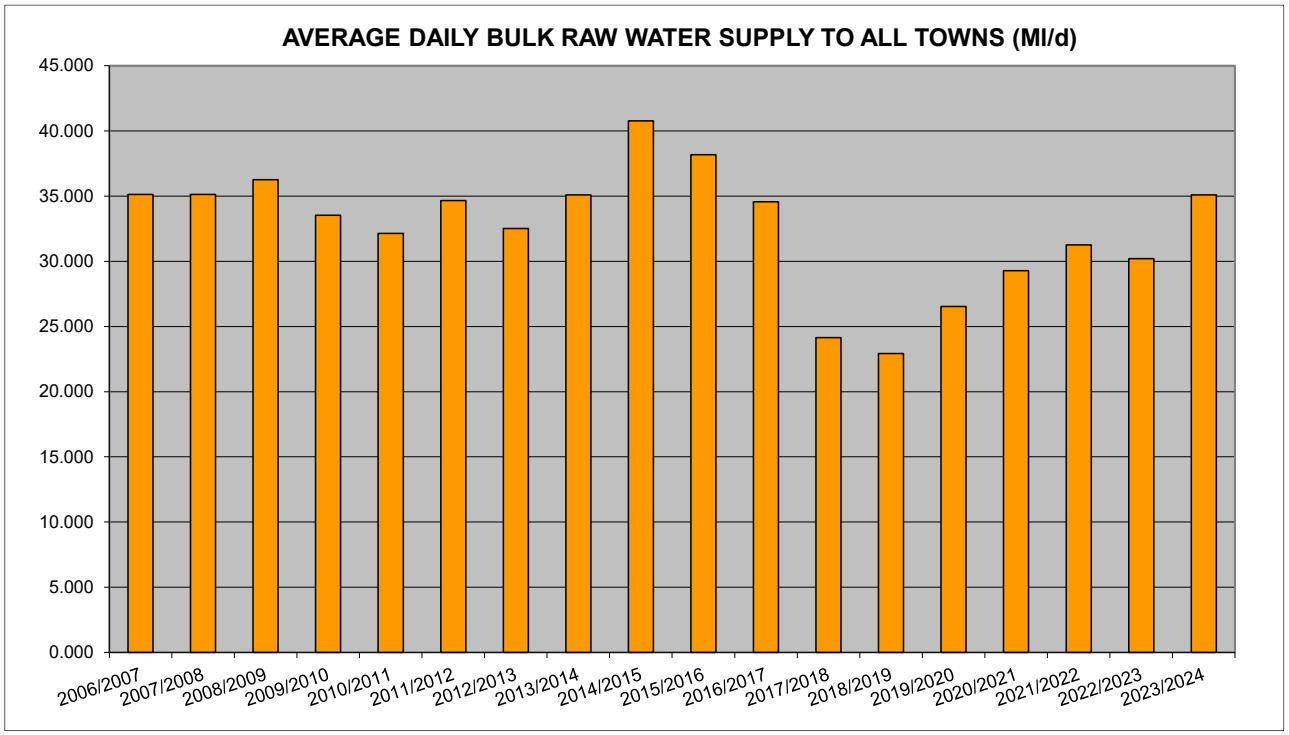


Figure A.6.1: Average daily bulk raw water supply volumes for all the water distribution systems

The graph below gives an overview of the total annual system input volumes and the NRW for the various water distribution systems in Stellenbosch Municipality's Management Area.

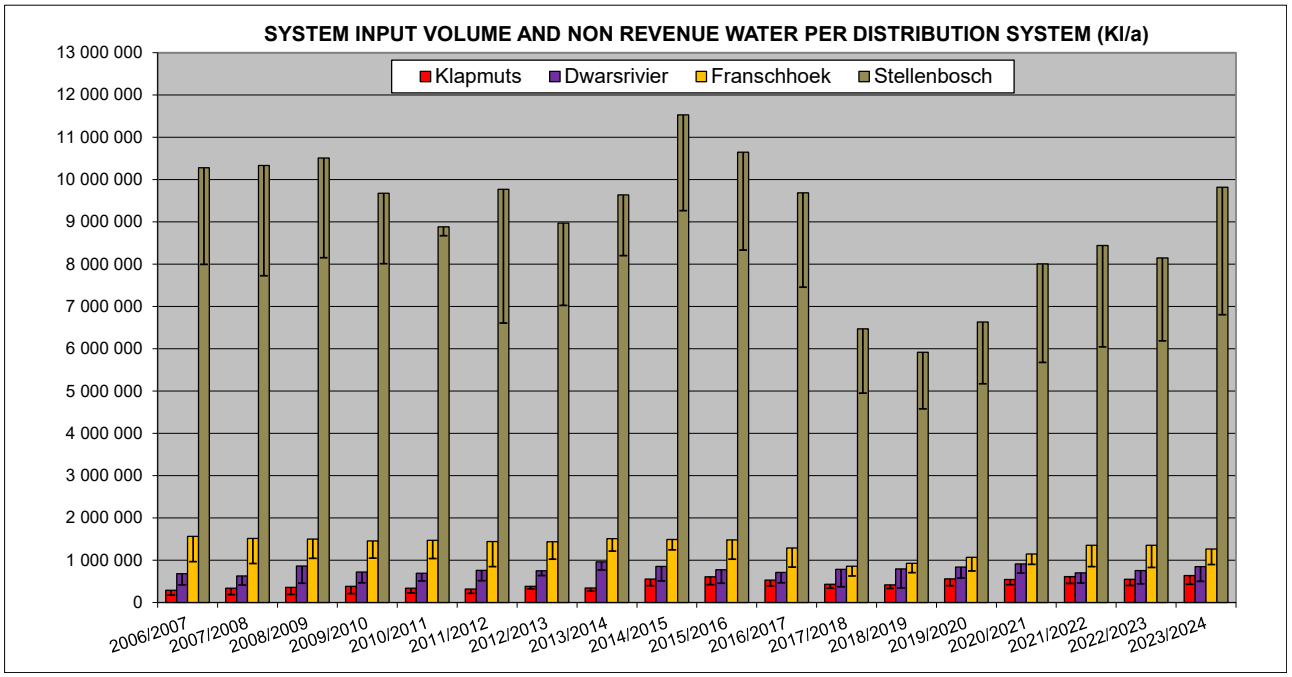


Figure A.6.2: Annual system input volumes and NRW per water distribution system

All water sources are supplied with bulk water meters and accurate records are kept of all bulk water meter readings. The table below gives an overview of the annual volume of bulk potable water supplied (System Input Volume) for each of the water distribution systems within Stellenbosch Municipality's Management Area.

Table A.6.4: Bulk potable water supplied for the various water distribution systems (System Input Volume)

Distribution System	Source	Record: Prior (Ml/a)					
		18/19	19/20	20/21	21/22	22/23	23/24
Stellenbosch	Eerste River, WCWSS, CCT	5 916.404	6 634.438	8 002.551	8 440.869	8 148.090	9 816.785
Franschhoek	Perdekloof and Wemmershoek (CCT)	927.535	1 067.033	1 149.087	1 353.083	1 353.457	1 263.159
Dwars River	Wemmershoek (CCT)	794.708	836.630	911.330	702.596	756.910	846.636
Klapmuts	Wemmershoek (CCT)	417.291	559.826	545.150	611.660	548.730	636.939
Total		**8 055.938**	**9 097.927**	**10 608.118**	**11 108.208**	**10 807.187**	**12 563.519**

Water Quality: Stellenbosch Municipality makes use of an accredited external laboratory to conduct the drinking water compliance sampling and analysis. Samples are taken at various locations in each system and analysed to evaluate the compliance. The water quality results are loaded onto DWS's IRIS via the internet. Once entered the data is automatically compared to SANS241. This real-time system allows for immediate intervention to rectify any problems.

The table below gives an overview of the various water quality monitoring measures and whether it is in place for Stellenbosch Municipality.

Table A.6.5: Water Quality

Water Quality	In place	Status Quo	Assessment Score
Is there a Water Safety Plan in Place?	Yes	40%	40%
Reporting on quality of water taken from source: Urban and Rural	Yes	80%	80%
Quality of water returned to the resource: Urban	Yes	60%	60%
Quality of water returned to the resource: Rural	No	Not Applicable	80%
Is there a pollution contingency measures plan in place?	Yes	60%	60%
Quality of water taken from source: Urban - % monitored by WSA self?	Yes	80%	80%
Quality of water taken from source: Rural - % monitored by WSA self?	No	Not Applicable	80%
Quality of water returned to the source: Urban - % monitored by WSA self?	Yes	60%	60%
Quality of water returned to the source: Rural - % monitored by WSA self?	No	Not Applicable	80%
Are these results available in electronic format?	Yes	80%	80%
% Time within SANS241 standards per year	Yes	80%	80%
Abstraction IS registered with DWS	Yes	80%	80%
The abstraction IS NOT registered with DWS	-	-	-
The abstraction IS recorded	Yes	80%	80%
The abstraction IS NOT recorded	-	-	-

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.

Table A.6.6: Percentage compliance of the water quality samples for the last three financial years per performance indicator

Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)			% Sample Compliance according to SANS 241-2015 Limits		
	2021/2022	2022/2023	2023/2024	2021/2022	2022/2023	2023/2024
Stellenbosch System (Above 100 000 persons)						
Acute Health Microbiological	No (Excellent)	No (Good)	Yes (Unacceptable)	99.28%	97.24%	96.21%
Acute Health Chemical	No (Excellent)	No (Good)	No (Excellent)	100.00%	97.72%	100.00%
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	99.78%	100.00%
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	97.99%	97.61%	96.12%
Operational Efficiency	Yes (Unacceptable)	Yes (Unacceptable)	Yes (Unacceptable)	92.23%	91.69%	86.51%
Blackheath System (Above 100 000 persons)						

Table A.6.6: Percentage compliance of the water quality samples for the last three financial years per performance indicator						
Performance Indicator	**Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)**			**% Sample Compliance according to SANS 241-2015 Limits**		
	2021/2022	**2022/2023**	**2023/2024**	**2021/2022**	**2022/2023**	**2023/2024**
Acute Health Microbiological	Yes (Unacceptable)	Yes (Unacceptable)	No (Excellent)	92.31%	96.00%	100.00%
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	99.40%
Operational Efficiency	No (Good)	Yes (Unacceptable)	No (Good)	93.10%	88.10%	93.18%
Faure System (Below 100 000 persons)						
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	98.57%	100.00%
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	99.77%	98.61%	99.77%
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	97.93%	96.89%	96.14%
Franschhoek System (Below 100 000 persons)						
Acute Health Microbiological	No (Excellent)	No (Excellent)	No (Good)	97.67%	100.00%	96.80%
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	97.84%	100.00%	97.78%
Operational Efficiency	No (Excellent)	No (Excellent)	No (Excellent)	93.44%	95.35%	94.09%
Wemmershoek System (Below 100 000 persons)						
Acute Health Microbiological	No (Excellent)	Yes (Unacceptable)	Yes (Unacceptable)	97.07%	90.63%	93.13%
Acute Health Chemical	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	100.00%
Chronic Health	No (Excellent)	No (Excellent)	No (Excellent)	100.00%	100.00%	99.80%
Aesthetic	No (Excellent)	No (Excellent)	No (Excellent)	99.00%	98.39%	99.20%
Operational Efficiency	No (Good)	Yes (Unacceptable)	No (Good)	90.35%	85.04%	92.40%

Notes: The compliance percentages for the Stellenbosch and Blackheath distribution system were calculated against Table 4 of SANS241-2:2015 with a population above 100 000 persons.

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 A.6.7: 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 following additional operational monitoring parameters are recommended for Stellenbosch Municipality in order to comply with the minimum monitoring requirements of SANS:241-2: 2015 (Table 1: Minimum monitoring for prescribed process risk indicators) for the various WTWs and distribution systems.

- Stellenbosch: Acute Health Microbiological: Additional monthly sampling.
- Stellenbosch: Operational Efficiency: Additional monthly sampling
- Wemmershoek: Acute Health Microbiological: Additional monthly sampling

The table below indicates the compliance of the monthly E.Coli monitoring frequency in the water distribution systems of Stellenbosch 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 A.6.8: Stellenbosch Municipality's compliance of the monthly E.Coli monitoring frequency in the water distributions systems 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 by Municipality during 2023/2024 (According to Sampling Programme)
Stellenbosch	121 363	24.3	48
Franschhoek	28 044	5.6	14
Dwars River	16 395	3.3	6
Klapmuts	15 500	3.1	2

It can be noted from the above table that the number of monthly E.Coli samples taken according to the Sampling Programme for the 2023/2024 financial year was more than the required number of samples for all the water distribution systems, except for Klapmuts, where one additional sample per month is required. The current compliances were calculated against the Sampling Programme, but the Municipality needs to measure their future compliance against the actual number of samples taken in each financial year for each of the systems.

Effluent quality: The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the last three financial years at the various WWTWs in Stellenbosch Municipality's Management Area are summarised in the table below.

Table A.6.9: Percentage microbiological compliance of the compliance samples taken at the various WWTWs for the last three financial years.

WWTW	2021/2022	2022/2023	2023/2024
Stellenbosch 1	9.1	16.7	0.0
Stellenbosch 2	16.7	0.0	0.0
Wemmershoek	15.4	16.7	33.3
Raithby	58.3	45.5	33.3
Pniel	83.3	11.1	0.0
Klapmuts	53.8	33.3	50.0
Total	**39.7**	**21.0**	**22.2**

Table A.6.10: Percentage chemical compliance of the compliance samples taken at the various WWTWs for the last three financial years.

WWTW	2021/2022					2022/2023					2023/2024				
	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall	Ammonia	Nitrates	COD Filtered	Ortho Phosphate	Overall
Stellenbosch 1	54.5	72.7	45.5	45.5	**54.5**	0.0	83.3	16.7	0.0	**25.0**	0.0	100.0	0.0	0.0	**25.0**
Stellenbosch 2	91.7	8.3	91.7	25.0	**54.2**	58.3	25.0	83.3	25.0	**47.9**	58.3	25.0	75.0	41.7	**50.0**
Wemmershoek	0.0	92.3	0.0	0.0	**23.1**	16.7	58.3	0.0	0.0	**18.8**	16.7	75.0	8.3	8.3	**27.1**
Raithby	8.3	58.3	100.0	100.0	**66.7**	72.7	100.0	90.9	100.0	**90.9**	50.0	83.3	83.3	91.7	**77.1**
Pniel	0.0	91.7	0.0	16.7	**27.1**	33.3	33.3	11.1	11.1	**22.2**	91.7	8.3	75.0	16.7	**47.9**
Klapmuts	46.2	100.0	92.3	84.6	**80.8**	8.3	100.0	100.0	91.7	**75.0**	0.0	100.0	58.3	91.7	**62.5**
All WWTWs	**32.9**	**71.2**	**54.8**	**45.2**	**51.0**	**33.9**	**66.1**	**54.8**	**41.9**	**49.2**	**41.3**	**60.3**	**57.1**	**47.6**	**51.6**

Table A.6.11: Percentage physical compliance of the compliance samples taken at the various WWTWs for the last three financial years.												
WWTW	2021/2022				2022/2023				2023/2024			
	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall
Stellenbosch 1	0.0	100.0	36.4	**45.5**	83.3	16.7	0.0	**33.3**	100.0	33.3	0.0	**44.4**
Stellenbosch 2	50.0	100.0	83.3	**77.8**	50.0	100.0	75.0	**75.0**	41.7	100.0	66.7	**69.4**
Wemmershoek	100.0	100.0	0.0	**66.7**	100.0	100.0	0.0	**66.7**	100.0	100.0	0.0	**66.7**
Raithby	83.3	100.0	75.0	**86.1**	100.0	100.0	81.8	**93.9**	100.0	100.0	63.6	**88.6**
Pniel	100.0	100.0	0.0	**66.7**	100.0	100.0	11.1	**70.4**	100.0	100.0	75.0	**91.7**
Klapmuts	100.0	100.0	15.4	**71.8**	100.0	100.0	16.7	**72.2**	100.0	100.0	33.3	**77.8**
All WWTWs	**74.0**	**100.0**	**34.2**	**69.4**	**88.7**	**91.9**	**33.9**	**71.5**	**88.9**	**96.8**	**45.2**	**77.1**

The percentage wastewater quality compliance for the various WWTWs, as included in DWS's 2022 Green Drop Report and DWS's 2023 Green Drop Progress Report, were as follows.

Table A.6.12: Microbiological, Chemical, Physical and Overall compliance percentages, as included in DWS's 2022 Green Drop Report and DWS's 2023 Green Drop Progress Report.						
WWTW	2022 Green Drop Report			2023 Green Drop Progress Report (July 2021 – June 2022 data)		
	Microbiological	Chemical	Physical	Microbiological	Chemical	Physical
Stellenbosch	9%	54%	61%	4.5%	38.6%	73.8%
Wemmershoek	0%	31%	54%	23.1%	34.2%	69.2%
Pniel	92%	52%	66%	53.3%	53.8%	74.4%
Klapmuts	54%	80%	69%	60.0%	72.9%	79.5%
Raithby	58%	54%	80%	53.3%	67.5%	87.2%

Industrial Consumers: The quality of the industrial effluent discharged into the Municipality's sewer system is monitored monthly by Stellenbosch Municipality.

TOPIC 7: FINANCIAL

Capital Budget: The table below gives an overview of Stellenbosch Municipality's historical water and sewerage capital expenditure over the last three financial years.

Table A.7.1: Historical Capital expenditure of the water and sewerage infrastructure projects						
Financial Year	Water Infrastructure			Sewerage Infrastructure		
	Budget	Expenditure	% Spend	Budget	Expenditure	% Spend
2021/2022	R49 250 028	R35 797 206	73%	R73 524 472	R64 838 150	88%
2022/2023	R82 858 090	R73 907 194	89%	R43 409 482	R40 100 719	92%
2023/2024	R75 162 071	R72 954 522	97%	R29 244 591	R18 960 932	65%

Operational Budget: The table below gives a summary of the O&M expenditure and income for Water Management and Waste Water Management for the last five financial years.

Table A.7.2: Summary of Operational and Maintenance expenditure and income budgets for water and sanitation services						
Service	Expenditure / Income	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Water	Expenditure	R129 425 045	R133 103 899	R130 660 076	R139 981 129	R188 693 168
	Income	R197 988 808	R155 977 202	R159 947 375	R174 277 325	R219 897 784
	Surplus / (Deficit)	**R68 563 763**	**R22 873 303**	**R29 287 299**	**R34 296 196**	**R31 204 616**
Sanitation	Expenditure	R121 738 318	R141 130 178	R136 010 638	R151 856 835	R168 251 439
	Income	R149 969 988	R143 373 736	R142 903 845	R149 401 570	R169 299 629
	Surplus / (Deficit)	**R28 231 670**	**R2 243 558**	**R6 893 207**	**R2 455 265**	**R1 048 190**

Water Management generated operating surpluses for the last five financial years. Waste Water Management also generated surpluses for four of the last five financial years, except for the 2022/2023 financial year. The surpluses are used to subsidise other services that do not generate enough own revenue to sustain themselves.

Tariff and Charges: Stellenbosch Municipality's current (2024/2025) water and sewer tariffs are based on the following:

- A seven-block step rising residential water tariff structure, with the first 6 kl/month being free for all indigent registered households (Subsidised).
- A fix tariff per Kl for Commercial, Business and Industrial consumers.
- A fix tariff per Kl for Miscellaneous and All Other users (Schools, Sport Bodies, Churches and Charity Organisations).
- A three block step rising water tariff structure for Municipal usage.
- Water restriction tariffs (10%, 20%, 30% and 40%) are also in place.
- The annual sanitation tariffs are based on either one of the following:
  - The size of the erf for properties utilised for dwelling purposes, all vacant erven and all other developed erven.
  - Levies based on the usage and floor areas of the buildings (Offices, Halls, Shops, Educational and Research buildings, Hospitals, etc.).

The cost residential consumers had to pay for their water in Stellenbosch Municipality's Management Area, for the various financial years, is presented on the graphs below.

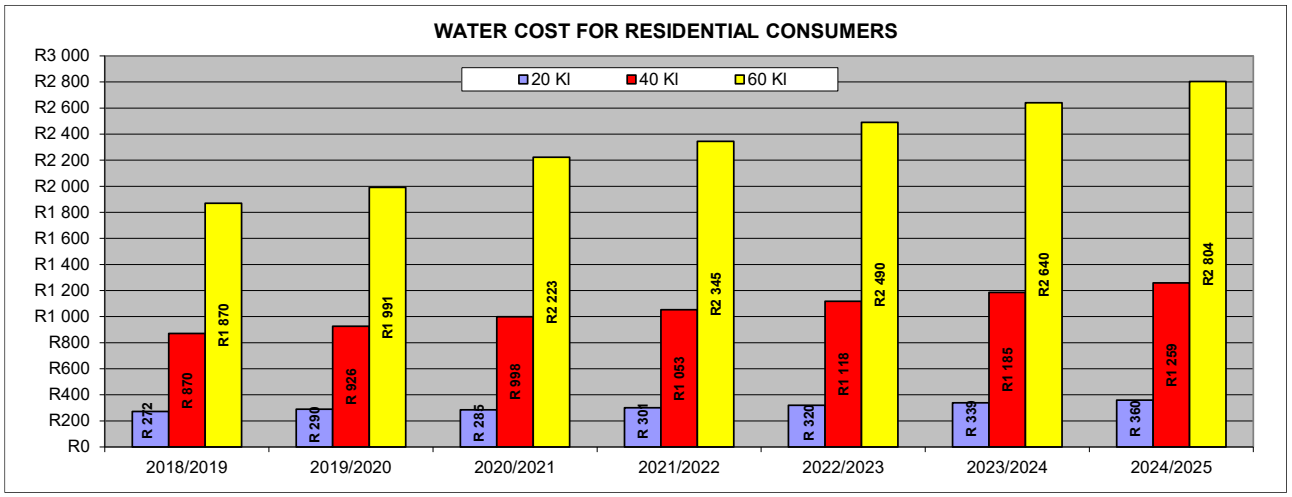


Figure A.7.1: Water Cost for Residential Consumers

TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES

Stellenbosch Municipality is the WSA and Water Services Provider for the various towns in Stellenbosch Municipality's Management Area. Raw water is supplied from the WCWSS to the Paradyskloof WTW and bulk potable water is also supplied by the CCT to the greater Stellenbosch system, the Franschhoek system, the Klapmuts system and the Dwars River system. The areas in Stellenbosch Municipality supplied with potable water by the CCT from their WTWs are as follows:

- Wemmershoek WTW: Portion of Franschhoek, La Motte, Wemmershoek, Pniel, Boschendal, Johannesdal, Kylemore, Lanquedoc, Klapmuts, Koelenhof, Elsenburg, Devon Valley and Mudersvlei.
- Blackheath WTW: Polkadraai, Spier and Vlottenburg.
- Faure WTW: Faure, Jamestown, De Zalze, Raithby and Lynedoch.

The existing Water and Sewer Master Plans of Stellenbosch Municipality were updated during 2023/2024 and 2024/2025 and were incorporated into the WSDP. All forward planning for water and sanitation services and water and sewerage infrastructure is guided by the Water and Sewer Master Plans.

W_2RAPs are in place for all the WWTWs and sewer drainage networks (August 2021). Detail WWTW Process Audits were also compiled during June 2021. A Water Safety Plan was also previously drafted (February 2013), which requires updating. The Municipality annually compile the WSDP Performance- and Water Services Audit Report, as required by the Water Services Act and the DWS.

Stellenbosch Municipality is currently effectively managing their water and sanitation services. Special focus is however required to ensure adequate rehabilitation and maintenance of the existing water and sewerage infrastructure, with adequate operational personnel.

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

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

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 support that is more effective.

The Spider Diagram below effectively indicates the vulnerability levels of Stellenbosch Municipality across the eighteen key service areas, as identified through the Municipal Strategic Self-Assessment of Water Services process (2023).

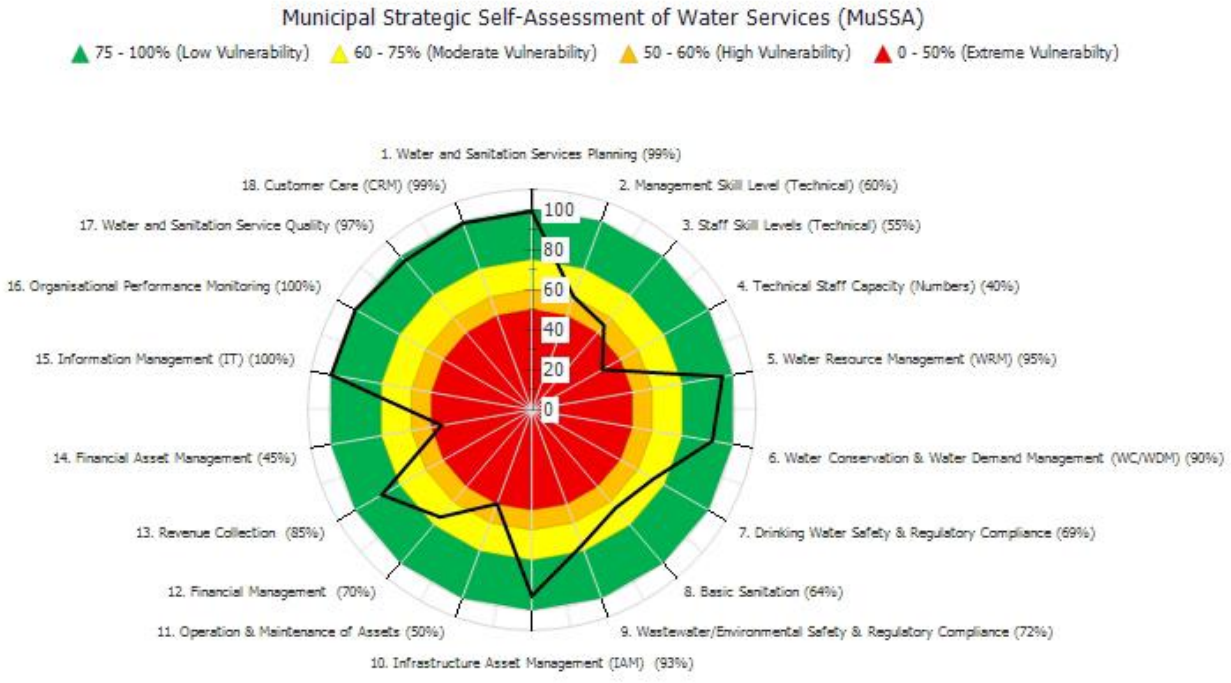


Figure A.8.1: Spider Diagram of the Vulnerability Levels of Stellenbosch Municipality for 2023

Stellenbosch Municipality's Vulnerability Index for 2023 was indicated as 0.44 "Moderate Vulnerability". The areas of concern evident from the 2021 assessment are Operation & Maintenance of Assets (50.0%), Financial Management (45.0%), Staff Skill Levels (Technical) (55.0%) and Technical Staff Capacity (Numbers) (40.0%).

A comprehensive Customer Services and Complaints system is in place at Stellenbosch Municipality and the Municipality has maintained a high and a very consistent level of service to its urban water consumers. A Customer Care Service Charter is also in place.

DWS's No Drop Process: Stellenbosch 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 A.8.1: 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).

Table A.8.2: No Drop Performance of the Municipality (DWS's 2023 No Drop Report)		
No Drop Score (2021/2022)		**57%**
Criteria	**Weight**	**Score**
1: WC/WDM Strategy, Planning and Implementation	45%	55% (Average)
2: Asset Management	10%	40% (Poor)
3: Technical Skills	10%	20% (Critical)
5: Compliance and Performance	35%	46% (Poor)
Weighted Sub-Total		**47%**
Bonus		10%
Score		**57% (Average)**
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		0.8 (Good)
1.2: WC/WDM Strategy and Business Plan		0.0 (Critical)
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		0.3 (Poor)
5.2: Physical Water Losses		0.4 (Poor)
5.3: Commercial Water Losses		0.5 (Average)
5.4: Non-Revenue Water		0.4 (Poor)
5.5: Water Use Efficiency		0.7 (Average)
Water Balance Integrity		**High (Excellent)**

Regulatory Impression: The score of 57% indicates an average performance for Stellenbosch Municipality.

- There is ample room for improvement. Stellenbosch Municipality has demonstrated some understanding of its water use situation and WC/WDM Strategy.
- The IWA water balance did not include all the required components and/or did not cover 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.
- Leak repairs were proven, but an insufficient number of repairs were completed in 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.

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 Stellenbosch Municipality was summarised as follows in the DWS's 2023 Blue Drop Report.

Table A.8.3: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)	
Municipal Blue Drop Score	**2011 – 95.74%, 2012 – 95.56%, 2014 – 80.12% and 2023 – 84.65%**

Introductions: Stellenbosch Local Municipality supplies approximately 126 795 people with potable water through a total of 5 water supply systems and one water service provider. The municipality is responsible for operating and maintaining the water supply network, treatment systems and distribution of 2 systems: Franschhoek and Stellenbosch CBD. The Stellenbosch CBD system is supplied by 2 WTWs (Idas Valley WTW and Paradyskloof WTW), which are operated and maintained by the Stellenbosch LM. The two water supply systems withdraw water from dams and a fountain in the Berg-Olifants catchment area.

The Water Service Provider (WSP), City of Cape Town, supplies treated water to three of the municipality's systems for distribution, namely: Blackheath, Faure and Wemmershoek. In the distribution and delivery systems, Stellenbosch LM contributes a total SIV of 22 907 kl/d and City of Cape Town 8 933 kl/d (1 675 kl/d via Blackheath WTW; 1 990 kl/d via Faure WTW and 5 268 kl/d via Wemmershoek WTW), accounting for 100% (31 840 kl/d) distributed by Stellenbosch LM.

Regulatory Impression: The Stellenbosch Local Municipality team exhibited a positive attitude towards the Blue Drop assessment process and recognized the value of the assessments in assisting them with improving the management of their water supply systems and optimisation of their operational efficiency. Unfortunately, the position of Manager for Water was vacant at the time of the assessments and the team was not well prepared in terms of uploading documentation on IRIS in advance of the main audit. The audit team acknowledges the involvement and support of the Senior Manager for Water & Wastewater Services, as well as the Manager for Wastewater in rectifying the situation, so that a meaningful assessment can be conducted. The Blue Drop scores for the systems supplied by the City of Cape Town, namely, Blackheath, Faure and Wemmershoek, are consistent with those in 2014, with Wemmershoek showing an improvement. Regrettably, the Blue Drop scores for Franschhoek and Stellenbosch CBD have decreased since the last Blue Drop audit in 2014. The main reasons for this deterioration are the lack of implementation of a coordinated water safety planning process with the associated compliance monitoring programmes, no evidence of operational monitoring programmes and actual operational monitoring and no process audits informing the risk management process. However, despite the deterioration in these scores, the WSA should be lauded for supplying drinking water of excellent quality to its consumers. Overall, both chemical and microbiological compliance is excellent, although the audit team noted a relatively poor microbiological compliance in the Blackheath distribution system managed by the Stellenbosch LM.

Despite not attaining Blue Drop status, the Stellenbosch team should be commended for their actions in several key areas. Design capacities of the WTWs, water balances for all the supply systems and daily flow measurement data are available for the full 12 months of the assessment period. However, flow meters are not calibrated, and the team is encouraged to ensure the meters are calibrated regularly to ensure accuracy of flow measurements. Process controllers for all the WTWs are compliant with the Blue Drop requirements. The WSA employs a full contingent of engineering staff and a professional scientist.

There are, however, several areas identified for improvements. The team is encouraged to focus on enhancing their management processes and procedures to ensure compliance with relevant norms and regulations. Supervisors need to be employed, trained, and registered to ensure compliance with Blue Drop requirements. The WSA has a full multi-disciplinary maintenance team, but a coordinated maintenance programme (preferably informed by a comprehensive asset register) should be developed, implemented and the maintenance records should be formalised to ensure longevity of equipment and infrastructure, as well as reducing the risk of equipment failure. The Stellenbosch Municipality's team is encouraged to review the WaSP that was completed in 2020 and focus on the implementation of a risk-management process supported by associated compliance and operational monitoring programmes. Comprehensive process audits are essential for efficient operation and risk mitigation. The findings and recommendations of the process audits should be integrated into the Water Safety Planning process. Regular inspections and condition assessment of all water reticulation systems need to be undertaken, the findings need to be formally reported and recommendations should be implemented. For the Franschhoek and Idas Valley WTWs the WSA needs to obtain water use authorisations for raw water abstraction. The WSA should review its existing Incident Management Protocols and maintain incident registers and logbooks. The WSA should also improve its supply chain management procedures.

Table A.8.3: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)

The audit team firmly believes that the Stellenbosch team has the necessary managerial and technical competence to strive for Blue Drop status during the next Blue Drop audit cycle. This will be achieved by focusing on the abovementioned areas of improvement.

Several capital projects are planned for the Stellenbosch CBD WSS to improve asset condition and operational efficiency:
Stellenbosch CBD:

- R1,193,075 Refurbishment - Idas Valley Water Treatment Works
- R500,000 Bulk Water Supply Pipeline and Reservoir – Jamestown
- R11,851,547 New Reservoir – Rosendal.

Blue Drop Findings:

- While process controllers for all Stellenbosch LM's WTW's comply with Blue Drop requirements, supervisors do not comply with regulatory requirements. The WTWs are not officially registered on IRIS in terms of Regulation 2834.
- Although the WSA provided proof of a full maintenance team, there is no evidence of coordinated maintenance plans and maintenance logbooks.
- The WSA employs qualified engineering staff and a professional scientist.
- Water Safety plans were compiled in 2020 but have not been implemented and have not been reviewed. There is no proof of a risk-based compliance monitoring programme.
- There is no evidence of compliant operational monitoring programmes and no proof that operational monitoring is taking place.
- The WSA uses an external laboratory which is fully accredited.
- Incident Management Protocols were compiled in 2020 but have not been formally implemented and reviewed. There is no evidence of any incident registers or logbooks.
- Partial system-specific operational cost determinations are done, including costs of raw water and employee remunerations, but excluding costs for electricity, chemicals, and maintenance.
- Global water specific operational budgets and expenditure systems for water treatment and supply are in place but can be further refined to allow more accurate financial planning and control.
- Supply chain management is lacking. Approved contracts for chemicals and treatment consumables are in place, but there are no service agreements for spares, maintenance, or calibration of flow meters.
- Water use authorisations are only available for the Paradyskloof WTW.
- Design capacities for all WTWs are available and WTWs are operating within their design capacities. While daily flow measurements are taken on all WTWs, flow meters need to be calibrated. Water balances are available for all water supply systems.
- The WSA has not conducted any process audits. Condition assessments by internal staff are available for the Franschhoek and Stellenbosch CBD WTWs; however, findings and recommendations have not been implemented and incorporated in the Water Safety planning and risk management process.
- The WSA does not undertake regular inspections of the reticulation systems for any of the water supply systems.
- Although an asset register is in place, it needs to be expanded to inform maintenance plans and schedules.
- Microbiological and chemical compliance is excellent for all systems, except for the Blackheath distribution system managed by Stellenbosch LM, which has a relatively poor microbiological compliance. While chemical monitoring compliance is adequate for Franschhoek and Stellenbosch CBD, there is room for improvement.

Technical Site Assessment:

The **Paradyskloof WTW** was inspected to determine the condition and functionality of infrastructure, to assess operational performance on site and to verify the Blue Drop audit findings. The WTW received a technical site score of 71% with a VROOM estimated cost of R1 406 900 required to restore the system to full functionality. The WTW is relatively new, and the infrastructure is generally in very good condition and well maintained. A serious concern is that free chlorine is not measured in the final treated water. The WSA relies on intermittent E.coli count measurements in various reservoirs to determine microbiological quality compliance. This is a major risk and the WSA should address this urgently. Refer to the Blue Drop Watch Report 2023 for more detail.

Performance Area		Blackheath (CCT)	Faure (CCT)	Fransch-hoek	Stellenbosch CBD	Wemmershoek (CCT)
Bulk/WSP		City of Cape Town Metropolitan Municipality	City of Cape Town Metropolitan Municipality	-	-	City of Cape Town Metropolitan Municipality
Capacity Management	15%	94.00%	94.00%	65.00%	65.00%	94.00%
DWQ Risk Management	20%	73.00%	74.00%	43.00%	43.00%	74.00%
Financial Management	10%	70.15%	70.15%	55.75%	65.75%	73.90%
Technical Management	20%	74.00%	74.00%	35.00%	35.00%	74.00%
DWQ Compliance	35%	79.80%	97.80%	75.50%	75.50%	91.80%
Bonus	10%	90.00%	90.00%	62.50%	62.50%	90.00%
Penalties	10%	10.00%	0.00%	0.00%	0.00%	0.00%
Disqualifiers		None	None	None	None	None
Blue Drop Score (2023)	**%**	**84.20%**	**89.45%**	**62.04%**	**63.04%**	**87.72%**
Blue Drop Score (2014)	%	88.52%	81.51%	70.50%	77.63%	88.14%

Table A.8.3: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)						
Blue Drop Score (2012)	%	95.28%	95.28%	84.21%	98.25%	95.28%
Blue Drop Score (2011)	%	96.36%	96.79%	75.02%	97.11%	93.40%
System Design Capacity	kl/d	430 000	500 000	2 000	49 000	250 000
System Available Capacity	kl/d	400 000	500 000	2 000	44 000	170 000
System Input Value	kl/d	1 675	1 990	357	22 550	158 228
Capacity utilization	%	71.75%	39.00%	17.85%	51.84%	93.08%
Average Daily Consumption	l/p/d	1 288	321	63	272	5 158
Resource Abstracted From		Theewaterskloof dam via the Kleinplaas balancing dam	Riviersonderend, Theewaterskloof dam	Mount Rochelle Fountain	Riviersonderend, Theewaterskloof dam	Wemmershoek dam and Theewaterskloof dam
Microbiological Compliance	%	98.29%	99.33%	97.48%	99.22%	97.87%
Chemical Health Compliance	%	99.99%	99.99%	99.99%	99.99%	99.99%
Risk Defined Compliance	%	96.63%	98.13%	92.93%	92.87%	96.18%
VROOM	Rand	R1 505 000	R1 500 000	-	R1 405 800	R2 875 000
BDRR 2023	%	29.46%	19.66%	17.98%	23.25%	27.31%
BDRR 2022	%	23.50%	22.50%	26.30%	39.90%	35.20%

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

Table A.8.4: Average residential daily consumption (l/p/d) for the last three financial years.									
Distribution System	**2021/2022**			**2022/2023**			**2023/2024**		
	Estimated Permanent Population	**Aver. Daily Residential Billed Metered. Consumption (kl)**	**Aver. Daily consumption (l/p/d)**	**Estimated Permanent Population**	**Aver. Daily Residential Billed Metered. Consump-tion (kl)**	**Aver. Daily consump-tion (l/p/d)**	**Estimated Permanent Population**	**Aver. Daily Residential Billed Metered. Consumption (kl)**	**Aver. Daily consump-tion (l/p/d)**
Stellenbosch	114 400	16 564	**145**	117 259	9 830	**84**	121 363	11 129	**92**
Franschhoek	25 437	2 330	**92**	26 709	1 657	**62**	28 044	1 696	**60**
Dwars River	15 454	1 260	**82**	15 917	1 141	**72**	16 395	1 215	**74**
Klapmuts	13 795	1 235	**90**	14 623	971	**66**	15 500	1 021	**66**

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 Stellenbosch Municipality is summarised as follows in the DWS's 2022 Green Drop Report.

Table A.8.5: Green Drop Performance of the Stellenbosch Municipality (DWS's 2022 Green Drop Report)	
Average Green Drop Score	**2009 – 53%, 2011 – 71%, 2013 – 40%, 2021 – 84%**

Regulator's Comment: Stellenbosch Local municipality has delivered a sterling performance during the 2021 audit cycle, as is evident from an 84% Green Drop score. This marks a progressive upwards movement from the 2013 baseline score of 40%. The Regulator noted the change being brought about by a highly committed and qualified team, coupled by systematic improvements made over several years since the last Green Drop assessments. Four (4) of the 5 systems have scored >80%, and all 5 systems reside in medium- and low risk CRR positions.

An outstanding feature by Stellenbosch has been the persistent refurbishments and amendments to the Stellenbosch WWTW (the largest size plant). Senior management commitment and attention to their staff's needs seems to make a markable difference and is evident in terms of financial and technical support to the staff and systems. Nevertheless, further improvements can be made to move the municipality to Green Drop Certification status in 2023, if they are addressed. These include but are not limited to finalisation of pending authorisations for the works that are still outstanding, implementing plans for using the generated and classified sludge to the benefit of the municipality.

Linking process audits/conditional assessment findings of the works to the respective W_2RAPs and provide practical implementation plan of all the risks identified.

Stellenbosch is appraised for its high standard and modern equipped laboratory that is used for inhouse operational monitoring and river health monitoring. The laboratory renders a professional scientific service to all WWTWs of the municipality. Furthermore, the municipality has a fully-fledged pollution control unit department that focuses on all the industrial discharges and thereby enforcing bylaws. Stellenbosch sets an example for professionalisation of wastewater services and the Regulator is pleased to acknowledge Stellenbosch for its service and performance, notably in the office and in the field, as can been seen by the 84% Green Drop score and 80% TSA score for the Stellenbosch system. Well done.

Green Drop findings:

1. More than 90% has been achieved against KPAs A and B for all systems, except Raithby.
2. Pniel exceeds its design capacity, all other WWTWs are well below.
3. Work is required to classify and allocate Process Controllers to specific systems, or define their allocations across different systems.
4. Zero out of 5 WWTWs complied with all effluent quality categories (i.e., Microbiological, Chemical and Physical) – this was the single reason for not achieving Green Drop excellence status. The good microbiological compliance by Pniel is acknowledged.
5. Energy efficiency management is not practiced; hence, recommendations were made to tap in with existing initiatives by SALGA, DMRE, GIZ and WISA.
6. Most of the licenses/permits are outdated and engagement with DWS must be intensified to resolve this before the next audit.
7. Wemmershoek WWTW is currently undergoing planned upgrades and it is expected to resolve the effluent compliance issues.
8. No plants in the high or critical risk positions.
9. Bonusses have been maximised by offering additional evidence, only one penalty applied for the Pniel system.
10. Budget had been secured for capital projects for replacement, upgrades, and addition of new unit process at some of the WWTWs and associated infrastructure:
    - R989,000: Stellenbosch WWTW upgrades through internal funding and capital replacement reserves.
    - R90,000,000: Wemmershoek WWTW upgrades through internal funding and capital replacement reserves.
    - R47,000,000: Pniel WWTW upgrades through internal funding and capital replacement reserves.
    - R16,000,000: Klapmuts WWTW upgrades through internal funding and capital replacement reserves.
    - R5,000,000: Raithby WWTW upgrades through internal funding and capital replacement reserves.

The Stellenbosch WWTW was inspected to verify the Green Drop Audit Findings: Technical Site Assessment Score 80%

- The plant's installed and design capacity is 35 Ml/day and consist of: 27 Ml/d MBR (submerged membrane bioreactor) plant (new plant commissioned in 2019) and 8 Ml/d conventional activated sludge plant (old plant but recently refurbished and amended configuration).
- A combined inlet works (mechanical screens, vortex degritters and flow measurement) provides preliminary treatment for both parts of the works (new and old). There is no primary settlement, but there are fine screens for the new works to protect the submerged membranes. The final effluent streams are again blended, and disinfection is via UV.

Table A.8.5: Green Drop Performance of the Stellenbosch Municipality (DWS's 2022 Green Drop Report)

- The flow to the plant is only 16 Ml/d which has decreased since the recent water restrictions and COVID (less students at Stellenbosch university). The works appear to be in very good condition and despite a few minor teething problems, appears to be well operated.
- The discharge requirements are 'special limits' which is currently under dispute with DWS, in particular the UV disinfection, noting that the receiving river is under general limit conditions.
- Good quality sludge was produced, as product of aerobic digestion and belt presses. The sludge is taken to the landfill site which will have to be reviewed in future under new legislation.
- The MBR plant and aerobic digestion is (inherently) power intensive and the works SPC and energy efficiency could potentially be further optimized.
- The works has a Dissolved Air Flotation unit that is currently not utilised.

GREEN DROP REPORT CARD						
Key Performance Area	**Weight**	**Stellenbosch**	**Wemmershoek**	**Pniel**	**Klapmuts**	**Raithby**
A. Capacity Management	15%	92.0%	92.0%	92.0%	94.0%	80.0%
B. Environmental Management	15%	92.5%	92.5%	92.5%	92.5%	78.5%
C. Financial Management	20%	81.0%	81.0%	81.0%	81.0%	81.0%
D. Technical Management	20%	87.0%	79.5%	87.0%	75.5%	79.5%
E. Effluent & Sludge Compliance	30%	46.0%	46.0%	66.0%	37.0%	21.0%
F. Bonus		67.5%	67.5%	67.5%	75.0%	67.5%
G. Penalties		0.0%	0.0%	-50.0%	0.0%	0.0%
H. Disqualifiers		None	None	None	None	None
Green Drop Score (2021)		**84%**	**83%**	**83%**	**82%**	**73%**
2013 Green Drop Score		**41%**	**37%**	**40%**	**39%**	**32%**
2011 Green Drop Score		**72%**	**70%**	**58%**	**72%**	**62%**
2009 Green Drop Score		**55%**	**47%**	**52%**	**59%**	**52%**
System Design Capacity (Ml/d)		35.000	5.000	1.350	2.500	0.150
Design Capacity Utilisation (%)		46%	52%	117%	44%	41%
Resource Discharged into		Veldwachters River	Berg River (Sensitive)	Dwars River	Klapmuts River	Raithby River
Microbiological Compliance (%)		9%	0%	92%	54%	58%
Chemical Compliance (%)		54%	31%	52%	80%	54%
Physical Compliance (%)		61%	54%	66%	69%	80%
Wastewater Risk Rating (CRR% of CRRmax)						
2011 CRR (%)		**74.1%**	**58.8%**	**64.7%**	**58.8%**	**47.1%**
2013 CRR (%)		**81.8%**	**76.5%**	**82.4%**	**94.1%**	**76.5%**
2021 CRR (%)		**55.6%**	**63.3%**	**58.8%**	**41.2%**	**64.7%**

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

Table A.8.6: Green Drop Risk Rating of Stellenbosch Municipality (DWS's 2023 Green Drop Progress Report)

Municipal CRR% 2023 (%CRR/CRRmax)	84.1%

Introduction:

Stellenbosch Local Municipality is responsible for the management and operation of the five (5) WWTWs using various technologies and various sizes from the Activated Sludge plant at Stellenbosch (20 400 kl/day) to the 150 kl/day Rotating Biological Contactors at Raithby.

Regulator's Comments: Stellenbosch Local Municipality failed to provide any information at all to the regulator to verify the accuracy of the information on the IRIS and to allow the review of the CRR scores. This dismal performance is of great concern to the regulator as the WWTWs are all high-risk sites due to the high CRR scores. There is a significant lack of correct design capacity information for all sites which has impacted on the successful registration of these sites on the IRIS. No information on the operational flow is available for any of the sites and this represents a critical risk as a lack of flow measurement information impacts on the CRR score significantly. The WSA must confirm the operational capacity of all works with accurate flow records. In addition, the WSA must ensure that inflow meters are installed 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 final effluent quality at all sites is of concern. Most concerning is the effluent quality from the Stellenbosch and Wemmershoek WWTWs as the effluent from both these sites fails to meet the discharge limits for most of the required parameters including very poor microbiological quality. This presents a significant risk to downstream users. No information on sludge quality is available. The poor effluent quality is a reflection on the lack of skilled operational and maintenance staff at these sites and presents a critical risk for SLM. These positions should be prioritized as effective operation cannot take place without competent staff to operate and maintain the treatment works. The lack of registered skilled process controllers and supervisors at many of the sites is concerning. On a positive note, the availability of a qualified supervisor and sufficient process control staff at Stellenbosch WWTW is to be commended. The WSA should ensure that the other sites area also provided with competent and qualified supervisors and process control staff to ensure effective operation and management of the treatment works including Klapmuts, Pniel, Raithby and Wemmershoek. No information on the maintenance team is available, which is a critical risk to the effective management of a WWTWs. The lack of a maintenance team with required competencies presents a high risk of as this will negatively impact on functionality of the WWTWs.

No information was provided by the WSA for Wastewater Risk Abatement Planning (W_2RAP) and no GDIP or Corrective Action Plan (CAP) documentation was provided. No descriptions of current projects or future capital projects are available as the WSA did not provide any evidence for the GD PAT via the municipal information spreadsheet (MIS) or on the IRIS system. The WSA is encouraged to develop or review and implement the risk-based methodology of the W_2RAP as this ensure minimizing the overall risk rating and 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 time frames to address the gaps. Overall, the lack of interest exhibited by the SLM during the GD PAT does not inspire confidence in the ability of the WSA to manage these treatment works effectively, and it is hoped that the WSA will engage with the Regulator in future to ensure effective wastewater management.

Risk Assessment Areas	Weight	Klapmuts	Pniel	Raithby	Stellenbosch	Wemmershoek
Class of Works		E: Incomplete	Incomplete	D: Incomplete	A: Incomplete	C: Incomplete
Treatment Technology		None	None	None	None	None
A: Total Design Capacity	Kl/d	2 500	1 350	150	20 400	5 000
B: Operational Capacity (% inflow/design)	%	0.0%	0.0%	0.0%	0.0%	0.0%
C: Effluent Quality Non-compliance	#	4	5	4	7	6

Table A.8.6: Green Drop Risk Rating of Stellenbosch Municipality (DWS's 2023 Green Drop Progress Report)						
% Microbiological Compliance	%	60.0%	53.3%	53.3%	4.5%	23.1%
% Physical Compliance	%	79.5%	74.4%	87.2%	73.8%	69.2%
% Chemical Compliance	%	72.9%	53.8%	67.5%	38.6%	34.2%
D: Technical Skills Compliance	%	33.3%	0.0%	0.0%	66.7%	50.0%
Process Controller Compliance	%	100.0%	0.0%	0.0%	100.0%	50.0%
Supervisor Compliance	%	0.0%	0.0%	0.0%	100.0%	100.0%
Maintenance Team Compliance	%	0.0%	0.0%	0.0%	0.0%	0.0%
CRR (2023)	%	**70.6%**	**82.4%**	**76.5%**	**86.4%**	**82.4%**
CRR (2021)	%	**41.2%**	**58.8%**	**64.7%**	**55.6%**	**63.6%**
CRR (2013)	%	**94.1%**	**82.4%**	**76.5%**	**81.8%**	**76.5%**
CRR (2011)	%	**58.8%**	**64.7%**	**47.1%**	**74.1%**	**58.8%**
W_2RAP Status: 2022 Green Drop Report		No Proof	No Proof	No Proof	No Proof	No Proof
W_2RAP Status: 2023 Green Drop PAT		No Proof	No Proof	No Proof	No Proof	No Proof
Capital and Refurbishment Projects (Rand)		NI	NI	NI	NI	NI
Description of Capital and Refurbishment Projects		NI	NI	NI	NI	NI
2022 GD Score	%	82.0%	83.0%	73.0%	84.0%	83.0%
GD Improvement Plan (GDIP)	Y/N	No	No	No	No	No
Corrective Action Plan (CAP)	Y/N	No	No	No	No	No

SECTION B: STATE OF WATER SERVICES PLANNING

This updated WSDP is for the 2025-2027 five year cycle. The Municipality also annually compile the WSDP Performance- and Water Services Audit Report, as required by the Water Services Act and the DWS. The last WSDP Performance- and Water Services Audit Report was compiled for the 2023/2024 financial year. The Municipality will continue to compile annual WSDP Performance- and Water Services Audit Reports, as required by the Water Services Act and the DWS. The annual draft WSDP Performance- and Water Services Audit Report needs to be available before the end of October during each financial year and needs to be taken to Council with the Municipality's Annual Report.

W_2RAPs are in place for all the WWTWs and sewer drainage networks (August 2021). Detail WWTW Process Audits were also compiled during June 2021. A Water Safety Plan was also previously drafted (February 2013). Both the existing Water Safety Plan and the W_2RAPs need to be updated. WTW and WWTW Process Audits also need to be compiled regularly.

Water Safety Plans are a form of water quality assurance through a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. The multiple barrier principle implies that actions are required at all stages in the process of producing and distributing water in order to protect water quality.

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 W_2RAP is used by Stellenbosch Municipality to manage the identified risks according to its potential impacts on the receiving environment / community / resources.

Stellenbosch Municipality updated their Water and Sewer Master Plans. The Water and Sewer Master Plan process entails the establishment of computer models for the water systems and the sewer systems in Stellenbosch Municipality, the linking of these models to the stand and water meter databases of the treasury financial system, evaluation and master planning of the networks and the posting of all the information to IMQS. The Water and Sewer Master Plans lists the analyses and findings of the study on Stellenbosch Municipality's water distribution and sewer drainage systems.

The existing Water and Sewer Master Plans, which were available for inclusion in Stellenbosch Municipality's WSDP, were as follows:

- Water Master Plan, Stellenbosch Municipality, July 2025, GLS Consulting
- Sewer Master Plan, Stellenbosch Municipality, July 2025 GLS Consulting

The following water and sanitation related investigations were successfully completed during the 2023/2024 financial year.

- The Water Services Audit Report for the 2022/2023 financial year was finalised and approved by the Council as part of the Annual Report. The water balance models were also 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.

- Stellenbosch Municipality continues with the monitoring of the Minimum Night Flows at various locations in order to identify the areas with unrealistic high night flows. The SCADA system is used to monitor the flows for the different areas.

- Stellenbosch 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 into the Municipality's sewer system is also monitored by Stellenbosch Municipality.

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

SECTION C: WATER SERVICES EXISTING NEEDS PERSPECTIVE

The existing needs perspective as presented below was developed through a systematic and comprehensive review of the water services function in terms of the WSDP Guide Framework. The output from this process is presented below and includes compliance assessment in terms of:

- The intervention required to address the gap;
- The proposed solution to address the gap; and
- The Future plan / identified project that would meet the requirement.

The water services situation analysis prompted the development of problem statements which formed the input for the development of the water services objectives and strategies which follows in Section D.

The Vision statement of Stellenbosch Municipality is "**An Integrated Valley of Opportunity and Innovation**"

Stellenbosch Municipality's mission is to deliver services in an enabling environment through sustainable, cost-effective and accountable services for our community.

Stellenbosch Municipality's Strategic Focus Areas and Pre-determined Objectives, as included in the 3rd Review of the 5th Generation IDP 2022 – 2027, May 2025, are as follows:

- Valley of Possibility (SFA 1).
  - Create an environment conducive to business development and job creation.
  - To facilitate and coordinate support to emerging entrepreneurs by utilising internal SCM processes and linking SMMEs with opportunities in the market.
  - To provide, upgrade and maintain an effective engineering infrastructure to support effective service delivery.
  - To ensure the provision of non-motorised transport routes as a functional mode of transport
- Green and Sustainable Valley (SFA 2)
  - Managing human use of the biosphere and its resources.
  - Enhancing the integrity of the environment is imperative for long-term sustainability.
  - Incorporating biodiversity into the environment as an imperative for long-term sustainability.
  - Ensuring spatial sustainability.
  - Facilitate efficient use of all forms of capital available to Stellenbosch.
  - Building Human capacity and ability.
  - Efficient information management.
- Safe Valley (SFA 3)
  - To implement an integrated safety strategy that incorporates multi-stakeholder engagements and social crime preventions.
  - To develop and implement institutional crime prevention strategies, with the focus on improved law enforcement and neighbourhood watches.
- Dignified Living (SFA 4)
  - To develop and maintain sustainable human settlements that will deliver in the diverse range of housing needs.
  - To develop and implement a social infrastructure master plan for the upgrading and maintenance of social facilities in all wards.
  - To involve and build the capacity of stakeholders in the planning and management (governance) of the areas where they live (Promote participatory planning and integrated implementation).

- To provide access to basic services for households in the WC024 area.

- Good Governance and Compliance (SFA 5)
  - To develop, align and implement effective management information systems.
  - An effective asset management system to optimise the use of municipal assets.
  - To manage integrated development planning and the efficient measurement of predetermined objectives as per regulatory framework.
  - To involve the community in the planning and management of programmes and projects impacting their ward(s),
  - To review municipal governance processes as per the Risk-Based Audit Plan
  - A skilled and capable workforce that supports the growth objectives of the municipal area
  - A responsive, accountable, effective and efficient local government system
  - To implement an effective revenue management system.
  - To provide accurate and relevant financial information for decision-making.
  - To develop and implement a responsive, accountable, effective and efficient customer care structure and system.

The **Strategic Risks** identified for Stellenbosch Municipality, as included in the 3rd Review of the 5th Generation IDP 2022 – 2027, May 2025 are as follows:

- Availability and cost of electricity;
- Increased risk of a land invasion;
- Economic downturn due to civil unrest and crime;
- Climate change;
- Scarcity of Landfill Space; and
- Increase in community unrest since the growth in demand for housing exceeds the resources available for development.

The **Operational Risks** identified for Stellenbosch Municipality, as included in the 3rd Review of the 5th Generation IDP 2022 – 2027, May 2025 are as follows:

- Timeous Capital Spending;
- Insufficient burial space in the greater Stellenbosch;
- Water Security;
- High Vacancy Rate; and
- Material misstatements in the AFS that constitute noncompliance with Section 122 of the MFMA. System errors, transactions and events not recognised as they occur and accordingly not recorded in the financial period.

Stellenbosch Municipality's Management Area falls within the Breede-Olifants Catchment Management Area. The Breede-Olifants Catchment Management Agency was established by extending the boundary and area of operation of the Breede-Gouritz CMA Water Management Area (Government Gazette No.47559, 25 November 2022).

The area of operation of the Breede-Olifants Catchment Management Agency includes the previous Breede-Gouritz and Berg-Olifants water management areas as pronounced in the National Water Resource Strategy second edition, 2013.

A Catchment Management Strategy is not yet available for the Breede-Olifants Water Management Area (BOWMA), but the Catchment Management Strategy of the former Breede-Gouritz Water Management Area (BGWMA), July 2017, included the following Vision and three Strategic Focus Areas.

"Healthy water resources, for all, forever,"

- **Strategic Area 1: Protecting for People and Nature:** Focusing primarily on management of streamflow, water quality, habitat and riparian zones related to riverine, wetland, estuarine and groundwater resources, to maintain important ecosystem goods and services and biodiversity.
- **Strategic Area 2: Sharing for Equity and Development:** Focusing primarily on management of water use from surface and groundwater resources through the operation of infrastructure, in order to provide water for productive and social purposes within and outside of the WMA.
- **Strategic Area 3: Co-operating for Compliance and Resilience:** Focusing primarily on co-operation and management of institutional aspects to enable and facilitate the protection and sharing of water, including the more co-operative stakeholders, partnerships, information sharing, disaster risk and adaptation elements of the strategy.

TOPIC 1: SETTLEMENTS AND DEMOGRAPHICS

Table C.1.1: Settlement Demographics and Public Amenities

Section	Intervention Required	% (1)	Solution description as identified by Master Plan	% (2)	Is there an Existing project/activity addressing this problem?	Current Demand Overall Scoring % (3)
Settlements Summary	No	100	Continue with the implementation of the spatial and non-spatial proposals for the various areas as included in the SDF of 2023 and Stellenbosch Municipality's Housing Pipeline and ensure that all new developments are aligned with these proposals.	100	Yes	78.6
	No	100	All resources, especially surface water resources, need to be re-evaluated, especially where demand is close to the safe one in twenty year yields. Establish assurance of supply levels of all water sources. Ensure that the provision of bulk water and sewerage infrastructure are aligned with the Housing Pipeline and that housing projects only continue once the required bulk water and sewerage infrastructure are in place, as indicated in the Water and Sewer Master Plans and this WSDP.	100	Yes	78.6
Summary by Settlement Group	No	100	-	100	-	100
Assessment Score by Settlement Type	No	100	-	100	-	100
Amenities Summary	No	100	-	100	-	100

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

Stellenbosch and Klapmuts are the settlements where significant development over the short to medium term is foreseen. The potential of Klapmuts for economic development and associated housing is particularly significant, located as it is on the metropolitan area's major freight route. Over the longer term, the Muldersvlei / Koelenhof and Vlottenburg / Lynedoch areas can potentially develop into significant settlements. Although considerably smaller than Stellenbosch and Klapmuts, these expanded settlements are nevertheless envisaged as balanced, inclusive communities. Over the longer term, these expanded settlements are foreseen to fulfil a role in containing the sprawl of Stellenbosch town, threatening valuable nature and agricultural areas. Importantly, they should not grow significantly unless parallel public transport arrangements can be provided.

The remainder of settlements are not proposed for major growth, primarily because they are not associated with movement routes and other opportunity than can support substantial livelihood opportunity for all community groups. The focus in these settlements should be on on-going improvements to livelihood opportunity for residents, and the management of services and places. The largest of these settlements is Franschhoek, a significant tourism destination.

The Engineering Services Department supports the focus on Stellenbosch and Klapmuts as priority development areas as appropriate bulk service networks exist which could be expanded upon. The secondary investment areas identified along Baden Powell Drive and the R304 will require significant bulk infrastructure development. Extensive development is not supported in these areas until sufficient capital funding is available to fund the required infrastructure.

Engineering Services also support the principle that development in these secondary areas should only be supported once appropriate public transport services are available.

The **objective of Stellenbosch Municipality's Housing Pipeline** is to place more emphasis on the following housing types of programmes:

- Social housing (the National Minister of Human Settlements approved Stellenbosch as a restructuring town and restructuring zones in November 2016;
- Provision of serviced sites;
- Access to affordable housing (GAP housing);
- Upgrading of informal settlements; and
- Mixed-use housing (which includes formalised homeownership, especially employer housing).

The estimated cost of this programme will be approximately R10 billion over 15 years.

- Upgrading of informal settlements (La Rochelle, Klapmuts, Langrug, and Franschhoek);
- Access to basic services (ABS);
- Jamestown, Farm 527 (Phases 2, 3, and 4);
- Upgrading of Zone O, Kayamandi;
- Enumeration of people on farms and backyarders;
- Erf 64, Kylemore;
- Erf 7001, Cloetesville (known as "Soek-mekaar");
- Upgrade of the Kayamandi CBD;
- Adam Tas Corridor Precinct 10 (Northern Extension); and
- Social Housing.

Upgrading of Informal Settlements: The Municipality manages and coordinates the upgrading of informal settlements through the following broad objectives:

- In-situ upgrading of informal settlements;
- Upgrade informal settlements through the provision of basic services;
- Develop emergency housing sites geared to accommodate evictees;
- Enumerate / undertake demographic surveys of identified informal settlements;
- Facilitate tenure security in informal settlements;
- Assist in short-term job creation through linkages with the Expanded Public Works Programme (EPWP) and longer-term job creation through upgrading programmes;
- Facilitate capacity-building and training for residents and stakeholders through direct service provision and partnerships with outside agencies; and
- Manage the provision of services and development programmes to informal settlements.

Informal Backyard Dwellings: The municipality, through the Housing Pipeline, is actively attempting to address the needs and plight of backyard dwellers within the municipal area. Currently, it is required to be registered on the Housing Demand Database, and hopefully, this will result in a permanent dwelling in one of the Council's housing projects. This process is long and tedious, and the chance of actually obtaining a formal house is very slim. Therefore, the Council is actively researching ways in which the service (and basic services) to backyard dwellers can be improved through its various housing programmes, especially Social Housing (affordable rental).

Social Housing: Stellenbosch Municipality was approved as a Restructuring Town in March 2017 by the National Minister of Human Settlements. This approval included the confirmation of the various Restructuring Zones within the municipality, and the latter culminated in a Council decision instructing the administration to attract social housing institutions (SHIs) and / or other development agencies (ODAs) to effect the municipality's social housing programme.

This programme aims to ensure improved quality of life for communities through a rental housing programme. This process of integration speaks to the importance of:

- Economic sustainability: affordability, access to economic opportunities, and promoting job creation via the multiplier effect associated with building medium-density housing stock, etc.;
- Social sustainability: social integration between various income groups, access to educational, recreational, and health facilities, etc.; and
- Ecological sustainability: conservation of scarce resources.

The aim and objective of Social Housing is to offer safe and affordable rental units for families with monthly incomes ranging from R1 850 to R22 000.

Stellenbosch Municipality's housing pipeline and existing housing projects, as summarised in the Priority Housing Projects and Upgrading of Informal Settlements Implementation Plan is summarised in the table below (2025/2026 IDP).

Table C.1.2: Priority housing projects and upgrading of informal settlements in Stellenbosch Municipality.

Key Activity/ Project/ Programme/ Initiative	Description of Unit of Measurement	Project Phase	Number of Housing Opportunities	5-year target 2022 - 2027
Construction of Longlands, Vlottenburg (144 Serviced sites)	Percentage of the Longlands, Vlottenburg Capital Budget actually spent by 30 June	Construction	144	90%
Rectification of Cloetesville: The Steps / Orlean Lounge Houses	Percentage of Cloetesville: The Steps / Orlean Lounge Houses rectification capital budget actually spent by 30 June	Construction	161	90%
Upgrading of Zone O in Kayamandi	Percentage of the Zone O (in Kayamandi) capital budget actually spent by 30 June	Construction will be dealt with in phases	711	90%
Development of the Kayamandi Town Centre	Percentage of the Kayamandi Town Centre development capital budget actually spent by 30 June	Implementation	±1 854	90%
Development of Erf 64 Kylemore	Percentage of the Erf 64 Kylemore development capital budget actually spent by 30 June	Implementation	±171	90%
Development of Erf 2183, La Rochelle, Klapmuts	Percentage of Erf 2183, La Rochelle, Klapmuts development capital budget actually spent by 30 June	Planning (service sites)	±100	N/A
Development of the Stellenbosch Extension	Percentage of Stellenbosch extension, development Capital Budget actually spent by 30 June	Planning (Mix-used development)	± 5 000 - 6 000	90%
To obtain development rights on Erf 7001, Cloetesville to establish GAP housing	Percentage of the Erf 7001, Cloetesville annual capital budget actually spent by 30 June	Planning	360 GAP housing	90%
Finalise the sub-division plan for Jamestown (Phase 2 and 3)	Percentage of the Jamestown, Phase 2 and 3 annual capital budget actually spent by 30 June	Planning	±2 000 housing opportunities (to be determined per phase)	90%
Obtain development rights for mixed-use development for Jamestown Phase 4	Percentage of the Jamestown, Phase 4 annual capital budget actually spent by 30 June	Planning		90%
Submit status reports on Social Housing (affordable rental accommodation) on Farm 81/2 and 81/9, Stellenbosch to the Executive Mayor	Number of quarterly status reports on Social Housing submitted to the Executive Mayor	Planning (SHIs and / or ODAs attract)	±250	20
Submission of Land Use Rights Application for the Northern Extension to the Municipal Planning Terminal (MPT)	Number of Land Use Rights Applications for the Northern Extension submitted to MPT by 30 June	Planning (Mix-used development)	± 5 000 - 6 000	1
Submission of Land Use Rights Applications for the Kayamandi Town Centre to the MPT.	Number of Land Use Rights Applications for the Kayamandi Town Centre submitted to MPT by 30 June	Planning (Mix-used development)	±1 854	1
To obtain development rights for Erf 64 Kylemore	Percentage of the Erf 64 Kylemore annual capital budget actually spent by 30 June	Planning	±171	90%

Table C.1.2: Priority housing projects and upgrading of informal settlements in Stellenbosch Municipality.				
Key Activity/ Project/ Programme/ Initiative	**Description of Unit of Measurement**	**Project Phase**	**Number of Housing Opportunities**	**5-year target 2022 - 2027**
To obtain development rights La Motte: Farm 1339, Farm 1158 and Farm 1158/1	Percentage of the La Motte: Farm 1339, Farm 1158 and Farm 1158/1 annual capital budget actually spent by 30 June	Planning (Mix-used development)	±1 100	90%
To obtain development rights Erf 2183, La Rochelle, Klapmuts	Percentage of the Erf 2183, La Rochelle, Klapmuts annual capital budget actually spent by 30 June	Planning (service sites)	±100	N/A

TOPIC 2: SERVICE LEVELS

Topic C.2.1: Service Levels Profile						
Section	**Intervention Required?**	**% (1)**	**Solution description as identified by Master Plan**	**% (2)**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring % (3)**
Direct Backlog Water	Yes	100	Install communal water services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 25 or less households per tap.	100	Yes	78.6
	Yes	100	Assist private landowners as far as possible with the provision of basic water services to all the households in the Municipality's Management Area with existing water service levels below basic water supply services.	100	No	57.1
Direct Backlog Sanitation	Yes	100	Install communal sanitation services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 5 of less households per toilet facility.	100	Yes	78.6
	Yes	100	Assist private landowners as far as possible with the provision of basic sanitation services to all the households in the Municipality's Management Area with existing sanitation service levels below basic sanitation services	100	No	57.1
Water Services Infrastructure Supply Level Profile	No	100	-	100	-	100
Water Reliability Profile	Yes	100	Install communal water services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 25 or less households per tap.	100	Yes	78.6
	Yes	100	Assist private landowners as far as possible with the provision of basic water services to all the households in the Municipality's Management Area with existing water service levels below basic water supply services.	100	No	57.1
Sanitation Service Infrastructure Supply Level Profile	No	100	-	100	-	100
Sanitation Reliability Profile	Yes	100	Install communal sanitation services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 5 of less households per toilet facility.	100	Yes	78.6
	Yes	100	Assist private landowners as far as possible with the provision of basic sanitation services to all the households in the Municipality's Management Area with existing sanitation service levels below basic sanitation services	100	No	57.1
Water Services: Education	Yes	100	Confirm the water service levels of the schools in the rural areas. Provide basic water services to the schools if the current water service levels are below basic water supply services.	100	No	57.1
Water Services: Health	Yes	100	Confirm the water service levels of the clinics in the rural areas. Provide basic water services to the clinics if the current water service levels are below basic water supply services.	100	No	57.1
Sanitation Services: Education	Yes	100	Confirm the sanitation service levels of the schools in the rural areas. Provide basic sanitation services to the schools if the current sanitation service levels are below basic sanitation services.	100	No	57.1
Sanitation Services: Health	Yes	100	Confirm the sanitation service levels of the clinics in the rural areas. Provide basic sanitation services to the clinics if the current sanitation service levels are below basic sanitation services.	100	No	57.1

Topic C.2.1: Service Levels Profile						
Section	**Intervention Required?**	**% (1)**	**Solution description as identified by Master Plan**	**% (2)**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring % (3)**
Health and Educational Facilities	No	100	-	100	-	100

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

A separate water and sanitation service level policy is not in place, but the water and sanitation service levels to be provided by the Municipality to the consumers in their Management Area are, however, included in the Water Services By-law. All water services provided by Stellenbosch Municipality to consumers within the Municipal Management Area are linked to the Municipality's Tariff Policy and poor households are incorporated through Stellenbosch Municipality's Indigent Policy.

The large number of residents in the lowest income groups (living in informal areas) places a major challenge on Stellenbosch Municipality to provide suitable housing. Stellenbosch Municipality works towards providing all households in the towns with a water connection inside the erven and connecting all households to a waterborne sanitation system. It is however important to consider the Municipality's capacity (financial and institutional) to operate and maintain complex sewage systems if opting for higher service levels and in particular waterborne sanitation.

Water and Sanitation Services on Privately Owned Land Policy (November 2023)

The roles and responsibilities of the WSA are as follows:

- The role of the WSAs is to comply with the regulatory and support mandates of DWS over provision of water services and resources to residents living on privately owned land.
- WSAs must integrate this policy with their respective local mandates in terms of the Strategic Framework for Water Services.
- WSAs must ensure Water Service Providers perform their responsibilities, which include Operation, maintenance and capital development of water and sanitation services infrastructure outside the boundary and / or within the servitude / of the end user.
- WSAs must identify, register and regulate Water Service Intermediaries / Providers according to their policies, bylaws, national norms and standards.

The roles and responsibilities of the Private Landowner / Water Services Intermediary are as follows:

- Private landowners must provide basic water services to their employees (and the families of employees) living on their land.
- WSAs must ensure that this policy is implemented and must identify, register and regulate water services intermediaries according to their bylaws and national norms and standards.
- Landowners must make an appropriate contribution to the capital cost of basic services.
- While water and sanitation assets, which WSAs install, remain under the ownership of the State, landowners will however have economic rights to the infrastructure once they become intermediaries, and those economic rights will be linked to a contract term.
- Operations and maintenance (and capital development of water and sanitation services on privately owned land) remain the responsibility of property owners.

- The private landowner is encouraged to enter into a contract with the WSA and perform the duties of a Water Services Provider as stipulate din Section 25(1) and (2) of the Water Services Act.

- Private Landowners / Water Services Intermediaries / Water Services Providers should:
  - Support the regulatory and support mandates of DWS over the water services and resources provided to residents living on privately owned land.
  - Integrate and implement this policy in terms of their planning and implementation to ensure compliance with all relevant legislation concerning provision of water services on private land; and to
  - Ensure that this policy is communicated to any person, party or organization affiliated to the "private land" sector.
  - The employers is responsible for providing water and sanitation services to their labourers / employees as per Section 8(1) of the Occupational Health and Safety Act (Act 85 of 1993).

National Sanitation Policy, 2016.

Problem Statement: The ineffectual interpretation and implementation of the Section 78 of the Municipal Systems Act (No. 32 of 2000) process has contributed to municipalities primarily keeping the sanitation provision function in-house, even when the capacity to do so adequately was lacking. They are not appropriately implementing Section 78 provisions. WSAs are not responding to key responsibilities assigned to them in legislation and the SFWS.

Where a WSA has contracted a WSP to provide sanitation services, the responsibility of the two parties is not always clear in the contracts. There is a need for effective contract regulation.

A WSA have the following responsibility:

- Implementation of the Municipal Systems Act (Act 32 of 2000) and Water Services Act (Act 108 of 1997) provisions.

- Prepare sanitation plans such as WSDPs etc., aligned to national sanitation planning.

- Ensure the realisation of the right to access to sanitation services, particularly basic sanitation services, subject to available resources. This includes people living on privately-owned land, in recognised permanent informal settlements and vulnerable groups and others who are provided services by Water Services Intermediaries. Wherever practical and sustainable, Water Services Authorities are expected to plan for and provide higher levels of service.

- Ensure the provision of effective, efficient and sustainable sanitation services. The provision of sanitation services also includes communication activities related to, amongst other things, Hygiene Education, end-user education and the wise use of water.

- Develop an asset management strategy, a maintenance and rehabilitation plan and a register of sanitation services assets and must then put in place a system to manage these assets.

- Provide information concerning the provision of sanitation services as reasonably requested by the Provincial or National governments, end-users and / or organisations.

- Develop an appropriate institutional structure to adequately respond to key WSA functions and responsibilities.

- Account, as per the Municipal Finance Management Act (No. 56 of 2003), to the province and National Treasury for resource allocation (financial, human etc.).

- Provide sanitation hygiene and end user education.

WSAs have a right but not an obligation to accept industrial, agricultural and mining wastewater within their area of jurisdiction.

WSAs must adhere to the following requirements in a transparent manner and in close contact with end-users:

- Sanitation services must be designed, planned and implemented to consider operations and maintenance requirements and to reduce the environmental impact of unmanaged grey-water, human excreta and wastewater disposal.
- Sanitation services must be appropriate and minimise impact on and use of water resources. WSA should strive for systems which utilise minimal water resources.
- Sanitation technologies which consider settlement types.
- Geo-hydrological testing before use of on-site groundwater sources or on-site sanitation services. Exceptional situations may require independent review and advice.
- Technology choices must be appropriate and affordable.
- Roles and responsibility for payments for operations and maintenance must be clear.
- Only appropriate sanitation technologies must be adopted.
- The quality of all building materials used for construction must be durable and fully compliant with the requirements, norms and standards
- Local availability of materials and skills must be part of the choice of technology or construction method. The design of sanitation services facilities must maximise the use of local resources.
- Sanitation technology selection should include resources to develop the necessary local institutional capacity to manage the day to day and future operational needs. In some circumstances there may be considerable merit in engaging a sanitation services provider to carry out certain functions on behalf of a local authority. Government does encourage local authorities to consider various options in this regard.
- Social and cultural practices and preferences should be considered in the selection of appropriate sanitation technology.

WSA must have the billing systems in place to raise sufficient revenue for sanitation services.

WSA must ensure sufficient funds are transferred for a WSP to perform the agreed functions.

WSA must regulate all aspects of sanitation services provision locally.

The WSA is accountable to its citizens.

Sanitation services planning by WSAs should be in conjunction with municipal Environmental Health Practitioners, as well as other stakeholders and departments involved in the sector.

The Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, make provision for the following standards for basic water and sanitation supply services.

Table C.2.2: Basic water and sanitation supply services
Basic water supply services
• A WSA is responsible for the provision of basic water supply services to all consumers or potential consumers in its jurisdictional area inclusive of people residing on privately owned land as guided by the Water and Sanitation Services Policy on Privately Owned Land (2023). • The minimum standard for basic water services must consist of: ➢ Within two years of promulgation of these regulations an access or delivery point which must be at least at the end boundary of the yard (user connection point) of the existing settlement. ➢ A minimum quantity of drinking water of 6 kl/household per month - ▪ at a minimum flow rate of not less than 10 litres per minute. ▪ with an effectiveness such that water is made available for at least 358 days per year.

Table C.2.2: Basic water and sanitation supply services

- not interrupted for longer than 48 consecutive hours.
- at no cost to indigent households, upon depletion of the initial 6 kl per month allocation, qualifying indigent household will be subject to usage restrictions and will be responsible for payment based on the adopted tariff policy for any additional water consumed.

- Water provided which complies with the requirements of SANS 241.

- Maintenance of the infrastructure up to the user connection is the responsibility of the Water Services Institution and the maintenance of the infrastructure within the boundary of the property is the responsibility of the owner.
- All new users applications for water connections must be completed within 21 calendar days by a WSA in areas where the infrastructure allows or exist.
- All user connections for water supply must be metered or measured, controlled and tariffed by the relevant Water Services Institution.
- A Water Services Institution must replace stolen meters and or repair or replace damaged meters within 30 days of it being reported or detected.
- Water meters must be managed and replaced within their asset lifespan.
- The Water Services Institution must ensure the provision of appropriate education in respect of safe, effective and efficient water use, hygiene and groundwater use management.
- Within two years after promulgation of these Regulations, WSA must submit plans to the Department, using the WSDP platform as part of their WSDP on how they are going to upgrade all consumers in formal settlements to basic services (yard connection; user connection point).

Basic sanitation supply services

- A WSA is responsible for the provision of basic sanitation services to all consumers or potential consumers in its jurisdictional area inclusive of people residing on privately owned land as guided by the Water and Sanitation Services Policy on Privately Owned Land (2023).
- The standard for basic sanitation services must include the provision of a toilet with functional hand washing facility in the yard, which is safe, reliable for 24 hours a day, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum and prevents the entry and exit of flies and other disease-carrying pests, providing for an effective and acceptable sanitation technology.
- A WSA must ensure that human excreta and wastewater is safely contained at all times, throughout the sanitation service chain.
- Faecal sludge management must be an integral part of the sanitation service.
- Each household must have uninterrupted access to an adequate, appropriate sanitation facility.
- Hygiene and user education must be an integral part of sanitation service. Households should be supported with knowledge and any other relevant resources to take responsibility for the correct and consistent use of the sanitation service, including but not limited to the toilet facility.
- In providing basic sanitation service, a WSA must consider the following requirements:
  - The need for everyone, including persons with a disability to have a reasonable quality of life.
  - Water efficient sanitation solutions.
  - Groundwater pollution risks in accordance with the Protocol to manage the potential groundwater contamination from on-site sanitation (2003).
  - Water use authorisation in terms of the NWA.
  - Surface water pollution risks and the management thereof.
  - Population density.
  - Economies of scale.
- Subject to the above, a WSA must consider-
  - In high and medium density formal settlements:
    - waterborne sewered sanitation provided that the wastewater treatment system and works have adequate capacity and is performing to acceptable standards under the National Water Act (read with regulation 10); or
    - alternative water efficient sanitation solutions instead of waterborne sewered systems in areas of dense formal and medium settlement where there is resource scarcity and or inadequate capacity or functionality in the sewer system and or the wastewater treatment works.
  - In low density or sparsely populated settlements: water efficient sanitation solutions.
- Water efficient sanitation solutions, as described above, must be shown to include off-grid, on-site sanitation options such as Non-sewered Sanitation Systems (NSSS) as well as Decentralised Wastewater Treatment Systems (DWWTS).
- A WSA may not unreasonably decline a property development to have a water efficient sanitation solution that is not connected to the central system where development will manage the system as a Water Services Intermediary and where the water uses of the system is authorised under the National Water Act.
- Whenever a Water Services Institution is providing new innovative non-sewered sanitation systems, such must be guided by the requirements of SANS 30500 for Non-Sewered Sanitation Systems or the “SANS 24521:2020 Guidelines for the management of basic on-site domestic wastewater services”, whichever is applicable.

Table C.2.2: Basic water and sanitation supply services
• WSA must monitor and regulate safe emptying, transportation, treatment and disposal of faecal sludge to faecal sludge treatment facilities or any other authorised facility. • Faecal sludge treatment plants must be guided by ISO 31800 for prefabricated units or similar standards for non-prefabricated faecal sludge treatment units. • WSA must have community participation procedures of informing communities about the emptying processes, routes and health risks. • Within two years after promulgation of these Regulations, the WSA must submit plans as part of their WSDP, using the WSDP platform, on measures to eradicate unimproved pit toilets and open defaecation in human settlements.

The Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, also make provision for the following standards for interim water and sanitation supply services.

Table C.2.3: Interim water and sanitation supply services
Interim water supply services

• A WSA must take reasonable measures to provide interim water supply services in informal settlements.
• Upon realisation of a new informal settlement, the WSA must provide interim water supply services within 90 days of becoming aware thereof.
• A WSA is responsible for the capital, operation, maintenance and refurbishment actions and cost pertaining to interim water services.
• Where an informal settlement is formalised, a WSA must ensure access to basic water services.
• The minimum standard for interim water services must consist of:
  ➢ An access or delivery point which must be a communal standpipe, within a reasonable walking distance of no more than 200m from the furthest household.
  ➢ A minimum quantity of drinking water of 6 kl/household per month -
  ▪ at a minimum flow rate of not less than 10 litres per minute.
  ▪ with an effectiveness such that water is made available for at least 358 days per year.
  ▪ not interrupted for longer than 48 consecutive hours.
  ➢ Water provided which complies with the requirements of SANS 241.
• All areas supplied with interim water supply services must have zonal meters and measured by the relevant Water Services Institution.
• Whenever interim water supply services are provided through water tankers, it must not exceed 12 consecutive months and WSAs need to keep accurate records as specified in Regulation 4(3)(c).

Interim sanitation supply services

• A WSA is responsible for the capital, operation, maintenance and refurbishment actions and cost pertaining to interim sanitation services including the management of faecal sludge in the entire sanitation service chain.
• A WSA must take reasonable measures to provide appropriate interim sanitation services in informal settlements and during a disaster.
• Upon realisation of a new informal settlement, the WSA must provide interim sanitation services within 90 days.
• Interim sanitation services must provide at least the following:
  ➢ Communal and shared facilities in accordance with the following:
  ▪ Communal toilet: Toilet seat – 1 seat per 10 households; Urinal units – 1 unit per 20 households; Hand washing – 1 basin per 10 households.
  ▪ Shared toilets: Toilet seat – 1 unit per 4 households; Urinal units – 1 unit per 10 households; Hand washing – 1 basin per 4 households.
  ➢ The WSA must put measures in place to keep the toilets hygienic.
  ➢ The toilets must be separated according to gender to meet the needs for women, girls and persons with disability.
  ➢ All portable and mobile toilets must be emptied at least twice a week to appropriate licensed facilities for treatment.
• If the sanitation facility is communal, the maximum walking distance should be 100m, wherever possible.
• Parents and care givers must be provided with information by the Water Services Institution regarding safe disposal of infant's faeces, laundering practices and use of nappies, potties or scoops for effectively managing safe disposal.
• A WSA through its Environmental Health Practitioners are responsible for promoting hygiene and user education for ensuring an environmentally safe approach to sanitation and for monitoring the impact of sanitation processes on the environment.

All the formal households in the urban areas of Stellenbosch Municipality's Management Area are provided with water and sanitation connections inside the erven. Areas without waterborne sewer systems are required to make use of conservancy tanks. Standpipes and communal ablution facilities are provided in the informal areas as a temporary emergency service. The current water and sanitation service levels are included under Sections 2.1 and 2.2 of the Administration, Information and Comprehensive Overview Report.

Communal standpipes represent probably the weakest part of a network's water supply services. Standpipes must be constructed in ways that can withstand excessive use and should not be neglected in terms of operation and maintenance. Malfunctioning standpipes may adversely affect the health of its already vulnerable and poor users. Communal standpipes are also used by poor households who normally don't pay for water. Poor people are the ones that suffer the most from water-related diseases due to:

- Poor quality and maintenance of standpipes and their surroundings. Standpipes are often leaking and poor drainage around standpipes results in standing pools of water and muddy soil.
- Standpipes are not protected and animals lick the taps.
- When people have to walk long distances to fetch water, it is used sparingly and not enough water is used for hygiene.
- Even if water is clean when it leaves the standpipe tap, it is often contaminated by dirty containers used for carrying and storage.

Stellenbosch Municipality is committed to support the private landowners as far as possible with regard to addressing the basic water services backlog that might still exist on the farms in the rural areas once the 2022 Census data becomes available for the farms and the locations of households without basic water services are known. Water Service Levels in the WSDP for the farms are based on the 2011 Census data, because the 2022 Census Community Profiles per subplace are not yet available.

The Cape Winelands District Municipality takes various water quality samples on the farms in the rural areas of Stellenbosch Municipality's Management Area and the water quality information needs to be shared with the private landowners and any Water Services Intermediaries, also the risks associated with storage of water in open reservoirs or tanks and where no filtration or disinfection takes place.

Stellenbosch Municipality is faced with various challenges with regard to the provision of services on private owned land in a financial sustainable manner (enabling the on-going operation of services and adequate maintenance and rehabilitation of the assets), which include the following:

<u>Free basic water policy:</u>

- The provision of the infrastructure (facilities) necessary to provide access to water to all households in a sustainable and economically viable manner.
- The development of subsidy mechanisms which benefit those who most need it.

<u>Free basic sanitation policy:</u>

- Provision of the most viable sanitation facility to the poor household.
- Health and hygiene promotion must be provided in a co-ordinated manner and must be properly managed and adequately funded if free basic sanitation is to become a reality. This requires close collaboration between the EHPs of the Cape Winelands District Municipality responsible for environmental health and Stellenbosch Municipality.
- Subsidising the operating and maintenance costs. If the basic service is to be provided free to the poor then Stellenbosch Municipality must ensure that the costs of providing the service are covered by the local government equitable share and / or through cross-subsidies within Stellenbosch Municipality's Management Area.

The ownership of water services assets may be in the hands of the person owning the land where an "on-site" water or sanitation facility is provided to a household. There is no legal impediment to the use of government grants to fund infrastructure for a poor household on private land not owned by that household, provided that the intermediary (the private land owner) makes a financial contribution (This is because the intermediary

becomes the owner of the infrastructure once it is installed). Government is looking at specific policies with regard to the appropriate level of contribution.

Stellenbosch Municipality needs to put the following measures in place with regard to water and sanitation services in their Management Area:

- A Water and Sanitation Service Level Policy needs to be compiled, which is aligned with the requirements of the National Sanitation Policy (2016), Water and Sanitation Services on Privately Owned Land Policy (November 2023) and the Compulsory National Water and Sanitation Services Standards, 2024 (Gazette No.52814, 6 June 2025).

- Stellenbosch Municipality must comply with the regulatory and support mandates of DWS over provision of water services and resources to residents living on privately owned land.

- Stellenbosch Municipality must ensure that the "Water and Sanitation Services on Privately Owned Land Policy" is implemented and must identify, register and regulate Water Service Intermediaries / Providers according to their policies, bylaws, national norms and standards.

- Stellenbosch Municipality must make provision for private landowners to enter into a contract with them to perform the duties of a Water Services Provider as stipulated in Section 25(1) and (2) of the Water Services Act.

- Stellenbosch Municipality must comply with the Basic water and sanitation supply services requirements as included in Table 2.4 and the Interim water and sanitation supply services requirements as included in Table 2.5 (Compulsory National Water and Sanitation Services Standards, 2024, Gazette No.52814, 6 June 2025).

- Stellenbosch Municipality must ensure the realisation of the right to access to water and sanitation services, particularly basic water and sanitation services, subject to available resources. This includes people living on privately-owned land, in recognised permanent informal settlements and vulnerable groups and others who are provided services by Water Services Intermediaries. Wherever practical and sustainable, WSAs are expected to plan for and provide higher levels of service.

- Stellenbosch Municipality must ensure the provision of effective, efficient and sustainable water and sanitation services. The provision of sanitation services also includes communication activities related to, amongst other things, hygiene education, end-user education and the wise use of water.

- Provide information concerning the provision of water and sanitation services as reasonably requested by the Provincial and National governments, end-users and / or organisations.

- Provide sanitation hygiene and end user education.

- Stellenbosch Municipality must adhere to the sanitation requirements listed on page 2.7 in a transparent manner and in close contact with end-users.

- The billing system must make provision for the sufficient raising of revenue for water and sanitation services. Stellenbosch Municipality must ensure sufficient funds are transferred for a WSP to perform the agreed functions when it becomes applicable.

- Stellenbosch Municipality must regulate all aspects of water and sanitation services provision locally and is accountable to their citizens.

- The provision or distribution of bucket toilets to communities in both formal and informal settlements are prohibited.

- Stellenbosch Municipality is prohibited from approving bulk user connections to existing water and wastewater systems without having the necessary capacity to service such user connections. This means that a municipality may not approve new / additional bulk user connections to an existing water or wastewater treatment system unless that system has the capacity to deal with the additional load (ability to operate according to technical specifications).

- Stellenbosch Municipality may not approve any new developments that will connect to an existing wastewater treatment system unless such a system has the capacity to deal with the load from the development.

- Stellenbosch Municipality must only accept the quantity and quality of industrial wastewater or any other substance into a sewerage system that the sewage treatment works linked to that system is capable of purifying or treating to ensure that any discharge to a water resource complies with the required authorisation and standard prescribed under the National Water Act.

- Stellenbosch Municipality shall prescribe pre-treatment of any effluent to the required standard its wastewater treatment systems can process prior to it being disposed into municipal infrastructure.

All the clinics and hospitals in Stellenbosch Municipality's Management Area have adequate and safe water supply and sanitation services. All the tertiary education facilities and schools in the urban areas of Stellenbosch Municipality's Management Area have adequate and safe water supply and sanitation services. The water and sanitation service levels of the primary schools in the rural areas need to be verified.

It is important for the schools to focus on Water Demand Management activities and for Stellenbosch r Municipality to support the schools with WDM initiatives. This will not only aid in Stellenbosch Municipality's demand management initiative directly by reducing the water consumption, but the education of learners at a young age regarding wise water use is a key component for sustainable supply in the long term.

TOPIC 3: WATER SERVICES ASSET MANAGEMENT

Topic C.3.1: Water Services Asset Management						
Section	**Intervention Required?**	**% (1)**	**Solution description as identified by Master Plan**	**% (2)**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring % (3)**
General Information	Yes	100	Develop an Asset Management Plan.	100	Partially	64.3
	No	100	Implement Groundwater Management Plan for all production boreholes (Water levels, abstraction volumes and water quality).	100	Partially	78.6
Operation	No	100	Implement recommendations from the Water Safety Plans and WTW Process Audits. Implement proposed interim solutions for improving the operation of the WTW, as well as proposed refurbishment and upgrade and extension work. Ensure adequate budget is allocated for the future upgrading and refurbishment work.	100	Partially	85.7
	No	100	Implement recommendations from the W_2RAPs and WWTW Process Audits. Implement proposed interim solutions for improving the operation of the WWTW, as well as proposed refurbishment and upgrade and extension work. Ensure adequate budget is allocated for the future upgrading and refurbishment work.	100	Partially	85.7
Functionality Observation	No	100	Provide additional reservoir storage capacity for the towns with inadequate storage capacity. Upgrade existing water pump stations and provide new water pump stations for the identified areas. Upgrade existing WTWs and WWTWs as recommended. Upgrade existing sewer pump stations and provide new sewer pump stations for the identified areas.	100	Partially	85.7
Asset Assessment Spectrum	No	100	Increase O&M budget for repairs and maintenance of infrastructure. A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of the existing water and sewerage infrastructure (Best Practice). In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice).	100	Partially	85.7
Water and Sanitation schemes	No	100	Upgrade sections of the water reticulation network and sewer drainage network as proposed in the Water and Sewer Master Plans.	100	Partially	85.7

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

Asset Management Plan: Stellenbosch Municipality's Asset Register needs to be updated to include all the water and sewerage infrastructure as included in the WSDP and the CRC of the assets also needs to be included in the Asset Register. It is essential for any service delivery organisation to compile an Asset Management Plan (AMP) to ensure efficient, effective and optimal management, operation and maintenance of all assets, which includes treatment plants, reservoirs, structures, buildings, pipelines, sites, etc. The purpose of the AMP is to:

- Ensure the operation and maintenance functions are well planned.
- Demonstrate responsible management.
- Justify and communicate funding requirements.
- Service provisioning complies with regulatory requirements.

An AMP normally includes the following:

- documents the nature, extent, age, utilisation, condition, performance and value of the infrastructure work;
- identifies existing and target levels of service, as well as expected changes in demand;
- identifies the life-cycle management needs of the infrastructure (development, renewal, operations and maintenance);
- assesses capital and operational budget needs; and
- identifies infrastructure asset management improvement needs.

Stellenbosch Municipality needs to differentiate between budget allocated towards the operation and maintenance of the water and sewerage infrastructure and the budget allocated towards the replacement of the water and sewerage infrastructure (Best Practice). A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of the existing water and sewerage infrastructure. In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice).

The objective of an Asset Management Plan is to support the achievement of the strategic goals of the Municipality and facilitate prudent technical and financial decision-making. It is also a vehicle for improved internal communication and to demonstrate to external stakeholders the Municipality's ability to effectively maintain its existing infrastructure as well as the new infrastructure to be developed over the next 20 years.

Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increase in (operational) services level coverage's most rapidly. The preparation of maintenance plans and the allocation of sufficient funding for maintenance are required to prevent the development of a large condition backlog. The potential renewal projects for water and sanitation infrastructure need to be identified from the Asset Register. All assets with a condition grading of "poor" and "very poor" need to be prioritised.

The Asset Management Plan must be based on the principle of preventative maintenance in order to ensure that, as far as this is practical, damage to assets is prevented before it occurs. Stellenbosch Municipality must ensure that the maintenance and rehabilitation plan is part of the WSDP and that the plan is implemented. Assets must be rehabilitated and / or replaced before the end of their economic life and the necessary capital funds must be allocated for this purpose.

One of the key challenges of Stellenbosch Municipality is to identify adequate funds for the rehabilitation and maintenance of their existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality. It is important for the Municipality to secure adequate funding for major refurbishment and maintenance work, the provision of bulk water and sewerage infrastructure and the augmentation of the existing water resources in order to keep up with the high demand for services.

Disaster Management Plan: A Disaster Management Plan is in place for Stellenbosch Municipality.

Untreated Effluent Management Plan: There are no known untreated effluent discharge to the environment. The W_2RAPs include Management Procedures and Incident Response and Emergency Protocols for the management of all effluent.

Future Water and Sewerage Infrastructure Requirements: The Water and Sewer Master Plans indicate the future water and sewerage requirements to accommodate the future developments and are regularly updated by the Municipality. The sections below indicate the future water and sewerage requirements, as included in the 2025 Water and Sewer Master Plans, but it is important to note that it can change as the Municipality might reprioritise some of the developments.

GROUNDWATER INFRASTRUCTURE

Stellenbosch Municipality will implement a Groundwater Monitoring Programme for all their production boreholes when these boreholes are utilised in the future. The groundwater monitoring data will then be processed, analysed and reported on by an experienced hydrogeologists in order to ascertain whether the resources are being sustainably utilised and to ensure compliance with the approved Groundwater Monitoring Programmes and water use licenses. Managing groundwater for water supply purposes should have the following three main functions:

- Ensure that the aquifer is used optimally: The aquifer should not be over-pumped as that would negatively impact on its long-term sustainable yield or on the environment. It also means that if the aquifer is being under-utilised, this will become known.

- Ensure that the water quality in the aquifer is not negatively affected: This may be as a result of high abstraction from the aquifer, or from poor groundwater protection (from latrines, animal enclosures, etc.).

- Optimise borehole pumping rates so that the pumping equipment operates efficiently: Pumping rates are frequently set too high and this cause unnecessarily high pumping heads, a waste of energy, and at times, pump failure.

An additional function, which is usually captured in the first two points, is to ensure that environmental integrity is maintained. A botanical and streamflow monitoring programme is therefore also required. It is important for Stellenbosch Municipality to focus on aquifer protection, groundwater monitoring and wellfield management, in order to meet the town's future water requirements. The table below gives an overview of the key groundwater management functions.

Table C.3.2: Key Groundwater Management Functions (Best Practice)

Activity	Responsible Person	Skills and qualifications required	Resources, tools and equipment	Remarks
Measuring and recording of water levels.	Pump operator	Literacy, numeracy, trained in taking water levels	Dip meter, ruler, log book, pen.	Done as part of operators' regular O&M activities.
Measuring and recording abstraction	Pump operator	Literacy, numeracy, trained in reading water meters.	Log book, pen	Done as part of operators' regular O&M activities.
Providing data to the authority that is responsible for water supply on a regular basis.	Pump operator and pump operator supervisor	Literacy, numeracy, keeping records.	Postal service or public transport.	Including as part of the reporting requirements of the pump operator.
Taking water samples	The authority that is responsible for water supply.	Trained in taking water samples, driving license.	Transport, sample bottles, cooler box.	Sampling routine defined by sampling plan.
Sending water samples for testing.	The authority that is responsible for water supply.	Keeping records.	Transport to laboratory	Sent to nearest accredited laboratory.
Defining the monitoring requirements of an individual borehole.	Technical manager of operations or hydrogeologist.	Hydrogeological degree or diploma, experience of hydrogeological conditions.	Reports and records on borehole, monitoring data.	
Ensuring that boreholes are equipped with piezometer tubes for measuring water levels and water meters for measuring abstraction.	The authority that is responsible for water supply.	Project management	In house technical staff, suppliers, contractors, specifications.	
Ensuring that operators have the equipment and skills to do monitoring.	The authority that is responsible for water supply.	Project management	Trainers, suppliers, specifications.	

Table C.3.2: Key Groundwater Management Functions (Best Practice)				
Activity	**Responsible Person**	**Skills and qualifications required**	**Resources, tools and equipment**	**Remarks**
Monitoring the pump operator's competence to collect and record data.	Pump operator supervisor	Staff supervision, knowledge of pump operators' tasks.	Transport	Done as part of the supervision of O&M activities.
Processing data collected at the local level	Data clerk	Data capture, record keeping, filing, trained in operating software.	Computer, spreadsheet or groundwater management software, files.	Maintains an electronic and physical record of data.
Studying water level, water quality and abstraction data on a regular basis.	Technical manager of operations.	Technical training, operations experience.	Project files, monitoring data	Done as part of the management of O&M
Revising pumping recommendations, and adjusting the monitoring requirements. Ensuring the recommendations are carried out and monitoring the implementation of the recommendations.	Technical manager with hydrogeologist as required.	Technical training, operations experience.	Reports and records on borehole, monitoring data, operational information.	Ongoing management of operations and groundwater resources.
Reporting to council and pump operator, providing summary data to the CMA.	Data clerk with supervision from technical manager.	Training in operating software.	Computer, spreadsheet or groundwater management software, printer.	Summary data defined by license (frequency, what data, form of data)

The Future groundwater infrastructure required is indicated in the table below.

Table C.3.3: Future groundwater infrastructure required					
System	**Recommendations included in the Water Master Plan**	**Item**	**Capacity**	**Year**	**Estimated Cost**
Stellenbosch	Potential new production borehole for system, detailed investigation required first	SSW.B56	864 m³/d @ 60m EGL	2035	R614 000
	Potential new production borehole for system, detailed investigation required first	SSW.B57	864 m³/d @ 60m EGL	2035	R614 000
	Potential new production borehole for system, detailed investigation required first	SSW.B58	864 m³/d @ 60m EGL	2035	R614 000
Total					**R1 842 000**

SURFACE WATER INFRASTRUCTURE (ABSTRACTION POINTS)

The preventative maintenance activities, as included under Section 4.1.2 of the Future Demand and Functionality Requirements Report, are to be implemented by Stellenbosch Municipality for their surface water infrastructure.

BULK WATER PIPELINE AND RETICULATION NETWORK INFRASTRUCTURE

The Water Master Plan (June 2025) has indicated that based on the most likely land-use development scenario, the following future bulk water pipeline and water reticulation infrastructure components will be necessary.

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Stellenbosch					
Required to control inflow into reservoir.	SSW.B13	200	FCV	2025	R489 000
Required to augment supply to Paradyskloof no. 2 reservoir.	SSW.B8	400	37	2025	R601 000
Supply pipe to network.	SSW13.1	315	126	2025	R652 000
Required to improve network conveyance when new 7.0 Ml reservoir in constructed.	SSW14.1	160	39	2025	R111 000
Remove old PRV from the network.	SSW8.6	160	8	2025	R59 000
Dedicated supply from Idas Valley to Papegaaiberg.	SSW.B20a	450	4582	2026	R45 218 000
Required to improve network conveyance.	SSW4.1	700	443	2026	R9 189 000
Required to improve network conveyance (Item can be implemented earlier with item SPW.B7).	SSW4.2	550	956	2026	R14 082 000
Inter-connection pipe.	SSW4.3	355	10	2026	R383 000

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Inter-connection pipe.	SSW4.4	250	6	2026	R119 000
Required to improve network conveyance (Item can be implemented earlier with item SPW.B7).	SSW4.5	500	173	2026	R2 256 000
Inter-connection pipe to improve network conveyance in Central zone.	SSW6.1	200	25	2026	R115 000
Required to improve network conveyance.	SSW6.11	315	445	2026	R1 892 000
Inter-connection pipe to improve network conveyance in Central zone.	SSW6.2	200	21	2026	R110 000
Network upgrade to improve network conveyance to area (Replace existing 90Ø).	SSW6.3	200	577	2026	R1 199 000
Required to improve network conveyance (Replace existing 90Ø and 100Ø).	SSW6.5	160	226	2026	R382 000
Replace existing 75Ø pipe to improve fire flow capacity.	SSW6.6	160	260	2026	R473 000
Required to augment supply from Idas Valley to Papegaaiberg.	SSW6.8a	450	238	2026	R1 950 000
Required to improve network conveyance.	SSW6.8b	450	1556	2026	R11 298 000
Required when future areas S77 to S79 develop.	SSW1.4	200	241	2027	R522 000
Required when future areas S77 to S79 develop.	SSW1.5	160	237	2027	R397 000
Required to reduce high pressure in Techno Park.	SSW3.7	100	PRV	2027	R291 000
Required to reduce high static pressures in Uniepark 1 zone.	SSW7.1	100	PRV	2027	R291 000
Required to rezone network.	SSW7.2g	100	Valve	2027	R114 000
Required to improve network conveyance.	SSW7.4	160	134	2027	R245 000
Required to improve network conveyance.	SSW7.6	110	47	2027	R84 000
Dedicated bulk supply pipe to Uniepark and Helshoogte reservoirs	SSW.B11	450	1088	2028	R10 707 000
Supply pipe from Helshoogte reservoir to Papegaaiberg system.	SSW.B20b	450	854	2028	R8 515 000
Required to augment supply from Helshoogte to Rosendal.	SSW.B35	450	687	2028	R4 698 000
Inter-connection pipe to Uniepark reservoirs.	SSW.B36	450	48	2028	R824 000
Required to augment bulk supply to Rozendal reservoir.	SSW.B37	400	338	2028	R2 341 000
Inter-connection pipe to Arbeidslus supply.	SSW.B38	315	19	2028	R238 000
Network upgrade to improve network conveyance to area (Replace existing 150Ø AC pipe).	SSW15.3	200	260	2028	R614 000
Network upgrade to improve network conveyance to area (Replace existing 50Ø pipe).	SSW15.4	160	16	2028	R72 000
Network upgrade to improve network conveyance to area (Replace existing 160Ø pipe).	SSW15.5	200	406	2028	R919 000
Network upgrade to improve network conveyance to area (Replace existing 110Ø pipe).	SSW15.6	160	55	2028	R136 000
Required to reduce pressure in the Brandwacht area.	SSW22.4	100	PRV	2028	R291 000
Replace existing network pipe (Existing pipe reported to be in disrepair).	SSW23.1	110	163	2028	R227 000
New supply pipe to supply Plankenburg from Papegaaiberg reservoir	SSW4.18	355	1194	2028	R5 939 000
Network upgrade to improve network conveyance to area	SSW4.19	315	528	2028	R2 214 000
Inter-connection pipe	SSW4.22a	160	4	2028	R53 000
Inter-connection	SSW1.9b	200	14	2030	R95 000
Required when future areas S1 & S2 develop.	SSW13.10	110	135	2030	R180 000
Required when future areas S1 & S2 develop.	SSW13.11	160	131	2030	R260 000
Required when future area S120 develops (Replace existing 75Ø).	SSW13.15	110	184	2030	R252 000
Required to improve network conveyance (Replace existing 110Ø).	SSW13.16	160	122	2030	R246 000
Required when future area S5 develops.	SSW13.9a	110	269	2030	R354 000
Required when future area S5 develops.	SSW13.9b	110	85	2030	R134 000
Required when Kayamandi A develops.	SSW15.10	200	297	2030	R628 000
Required to accommodate Kayamandi town centre redevelopment (Replace existing 50Ø and 75Ø).	SSW15.12	160	123	2030	R248 000
Required to accommodate Kayamandi town centre redevelopment (Replace existing 50Ø and 75Ø).	SSW15.13	200	233	2030	R558 000
Inter-connection pipe required to accommodate Kayamandi town centre redevelopment.	SSW15.14	200	76	2030	R229 000
Required to accommodate Kayamandi town centre redevelopment (Replace existing 75Ø and 100Ø AC pipes).	SSW15.7	160	228	2030	R389 000
Required to accommodate Kayamandi town centre redevelopment (Replace existing 75Ø).	SSW16.1	160	293	2030	R526 000
Required to accommodate Kayamandi town centre redevelopment (Replace existing 50Ø and 75Ø).	SSW16.2	160	312	2030	R558 000
Required when future areas S15, S17, S80 & S82 develop.	SSW18.1	400	203	2030	R1 436 000
Required when future areas S15, S17, S80 & S82 develop.	SSW18.2	400	206	2030	R1 453 000
Required when future areas S17, S81 & S82 develop.	SSW18.3	200	851	2030	R1 669 000
Required when future areas S15 and S99 develop.	SSW18.4	355	115	2030	R818 000
Required when future areas S15 and S99 develop.	SSW18.5	250	827	2030	R2 152 000
Required when future areas S15, S17, S80 & S82 develop.	SSW18.6	200	986	2030	R1 921 000
Required when future areas S15, S17, S80 & S82 develop.	SSW18.7	160	331	2030	R538 000
Require to reduce high static pressures.	SSW19.1a	200	PRV	2030	R489 000
Require to reduce high static pressures.	SSW19.1b	150	PRV	2030	R376 000

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Required when future areas S15 and S99 develop.	SSW19.2	250	443	2030	R1 201 000
Required when future area S15 develops.	SSW19.3	150	PRV	2030	R376 000
Required when future areas S15 and S99 develop.	SSW19.4	250	243	2030	R706 000
Required when future area S81 develops.	SSW20.1	160	66	2030	R143 000
Required when future areas S56 & S57 develop.	SSW3.2a	200	106	2030	R4 184 000
Required as interim connection until supply from Adam Tas corridor development is constructed.	SSW3.2b	100	PRV	2030	R291 000
Required when future areas S56 & S57 develop.	SSW3.3	200	510	2030	R1 028 000
Required when future area S58 develops.	SSW3.4	200	1110	2030	R2 155 000
Required when future area S55 develops.	SSW4.10	250	501	2030	R1 346 000
Required to improve network conveyance to future area S91.	SSW4.14	200	1095	2030	R2 304 000
Required when future areas S115 and S133 develop.	SSW4.16	200	131	2030	R316 000
Required when future area S115 develops.	SSW4.17	110	185	2030	R235 000
Required when future area S131 develops.	SSW5.3	160	342	2030	R554 000
Required when future area S36 develops.	SSW7.5	110	368	2030	R435 000
Required when higher lying erven of future area S34 develops.	SSW8.1	160	431	2030	R686 000
Required when higher lying erven of future area S34 develops.	SSW8.2	110	492	2030	R571 000
Isolate 200Ø from network (200Ø to be utilised as bulk pipeline for groundwater from boreholes)	SSW.B48	200	Valve	2035	R194 000
Inter-connection pipe to improve network conveyance & redundancy when 200Ø is isolated from the network.	SSW.B49	160	8	2035	R67 000
New raw water pipeline between boreholes in Stellenbosch Centre wellfield and existing 225Ø to Papegaaiberg reservoir site.	SSW.B50	200	628	2035	R1 386 000
Required to accommodate supply from Van der Stel & Stb Centre BH1 boreholes.	SSW.B51	160	164	2035	R315 000
Required to dedicate existing 225Ø pipe to Papegaaiberg borehole scheme.	SSW.B54	250	Valve	2035	R239 000
Required to accommodate supply from Stb Centre BH10 & Stb Centre BH12 boreholes.	SSW.B55	160	371	2035	R655 000
Required to improve network conveyance when future area S79 develops.	SSW1.3	315	246	2035	R1 011 000
Required to improve network conveyance when area S74 develops.	SSW1.6	160	153	2035	R297 000
Required to improve network conveyance when area S74 develops.	SSW1.7	160	1007	2035	R1 698 000
Required when Snake Valley is formalised	SSW15.1	100	PRV	2035	R291 000
Required when Snake Valley is formalised	SSW15.2	100	PRV	2035	R291 000
Required to improve network conveyance (Replace existing 150Ø AC pipe).	SSW22.2	200	435	2035	R945 000
Required to improve network conveyance (Replace existing 150Ø AC pipe).	SSW22.3	200	266	2035	R590 000
Required to improve network redundancy.	SSW3.5	200	682	2035	R1 500 000
Required to reduce high pressure in Techno Park.	SSW3.6	100	PRV	2035	R291 000
Required when future area S79 develops.	SSW1.8	200	485	2040	R980 000
Required when future area S14 develops.	SSW16.3	160	403	2040	R707 000
Required when future areas S49 - S52, S55, S57 & S58 develop.	SSW4.6	450	503	2040	R6 184 000
Required when future areas S50 & S52 develop.	SSW4.7	160	1087	2040	R1 659 000
Required when future areas S51, S55, S57 & S58 develop.	SSW4.8	315	186	2040	R804 000
Required when future areas S51, S55, S57 & S58 develop.	SSW4.9	250	889	2040	R2 307 000
Required to improve network conveyance.	SSW5.1	250	253	2040	R730 000
Required to improve network conveyance.	SSW5.2	200	284	2040	R603 000
New supply pipe from borehole to old Kayamandi sump & PS.	SSW.B64	160	233	2045	R372 000
New supply pipe from borehole to proposed package plant.	SSW.B69	160	74	2045	R155 000
Required when future area S99.1 develops	SSW18.9	100	PRV	2045	R291 000
Required when future areas S55, S57 & S58 develop.	SSW4.11	200	768	2045	R1 512 000
Required when future area S58 develops.	SSW4.12	160	812	2045	R1 250 000
Network upgrade to improve network conveyance to area.	SSW4.20	200	110	2045	R299 000
Network upgrade to improve network conveyance to area.	SSW4.21	160	119	2045	R241 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW.B16	160	1062	2055	R2 801 000
Required to control inflow into reservoir (Outside urban edge, potential longer term item).	SSW.B17	100	FCV	2055	R291 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW11.1	250	371	2055	R1 024 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW11.2	250	615	2055	R1 629 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW12.1	150	PRV	2055	R376 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW12.2	200	40	2055	R145 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW12.3	160	380	2055	R609 000

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW12.4	110	100	2055	R142 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW13.6	200	56	2055	R1 547 000
Required when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term item).	SSW13.7	200	Valve	2055	R194 000
Required when future areas S66 & S67 develop (Outside urban edge, potential longer term item).	SSW2.1	200	283	2055	R601 000
Required when future area S67 develops (Outside urban edge, potential longer term item).	SSW2.2	160	402	2055	R642 000
Required when future area S66 develops (Outside urban edge, potential longer term item).	SSW2.3	160	289	2055	R476 000
Required when higher lying areas of future areas S66 & S67 develop.	SSW22.1	160	182	2055	R317 000
Telemetry at reservoirs, PRVs and bulk water meters	SSW.M1	-	-	Next 3 yrs	R800 000
Sub-Total					**R201 808 000**
Klapmuts					
Replace existing 200Ø PS inlet manifold (to Lower & Upper pumps).	SKW.B2a	500	10	2026	R657 000
Replace existing 200Ø PS inlet & outlet manifold (Upper pump).	SKW.B2b	400	17	2026	R511 000
Required to improve network conveyance.	SKW1.18	200	398	2028	R1 303 000
Required to improve network conveyance.	SKW1.19	200	224	2028	R2 068 000
Required to improve network conveyance.	SKW1.20	200	39	2028	R142 000
Required to improve network conveyance.	SKW1.35	200	437	2028	R986 000
Inter-connection pipeline from Klapmuts boreholes to Koelenhof PS.	SKW.B19	160	1025	2030	R1 567 000
Required when future areas K24.1 and K24.2 develop.	SKW1.10	250	674	2030	R1 773 000
Required when future areas K24.1 and K24.2 develop.	SKW1.11	200	735	2030	R1 450 000
Required when future area K24.1 develops.	SKW1.15	250	166	2030	R514 000
Required to improve network conveyance.	SKW1.16	200	261	2030	R559 000
Required when future area K24.1 develops.	SKW1.27	160	353	2030	R570 000
Required when future areas K13 and K22 develop.	SKW1.28	160	415	2030	R661 000
Required when future area K1.4 develops.	SKW1.31	250	133	2030	R432 000
Required when future area K1.3 develops.	SKW1.34	200	356	2030	R739 000
Required when future areas K24.1 and K24.2 develop.	SKW1.9a	315	160	2030	R713 000
Required when future area K24.1 develops.	SKW1.9b	250	140	2030	R451 000
Required to improve network conveyance.	SKW2.3	200	134	2030	R321 000
Required when future areas K24.1 and K24.2 develop.	SKW3.1	355	377	2030	R1 905 000
Required when future areas K15.2, K17 and K24.2 develop	SKW3.12	250	54	2030	R237 000
Required when future areas K16 and K24.2 develop.	SKW3.2	355	639	2030	R2 992 000
Required when future area K24.2 develops.	SKW3.3	250	311	2030	R874 000
Required when future area K24.2 develops.	SKW3.4	160	606	2030	R945 000
Replace existing 200Ø bulk pipe to Klapmuts Upper reservoir.	SKW.B4a	250	68	2040	R364 000
Inter-connection between existing 200Ø and existing 250Ø Klapmuts Upper reservoir feeder main.	SKW.B4b	250	4	2040	R118 000
Isolate existing 250Ø from Klapmuts Lower reservoir zone.	SKW.B4c	250	Valve	2040	R239 000
Inter-connection between existing 200Ø and existing 250Ø Klapmuts Upper reservoir feeder main.	SKW.B4d	250	3	2040	R113 000
Replace existing 200Ø feeder main to Klapmuts Upper reservoir.	SKW.B4e	250	355	2040	R1 092 000
Required to improve network conveyance (parallel reinforcement).	SKW1.13	200	255	2040	R548 000
Required when future areas K8. K9, K11, K12 and K24.1 develop.	SKW1.21	250	310	2040	R2 177 000
Required when future areas K8, K11 and K12 develop.	SKW1.22	250	591	2040	R1 568 000
Required when future area K12 develops.	SKW1.26	200	501	2040	R1 011 000
Required when future areas K15.2 and K17 develop	SKW3.14	250	924	2040	R2 393 000
Required when future areas K14.1, K21.1 and K21.2 develop.	SKW1.23	200	471	2045	R955 000
Required when future area K9 develops.	SKW1.25	160	161	2045	R285 000
Required to improve network conveyance.	SKW1.7	250	152	2045	R481 000
Required to improve network conveyance.	SKW2.4	200	546	2045	R1 095 000
Required when future areas K15.2 and K17 develop.	SKW3.15	200	401	2045	R822 000
Required when future areas K15.2 and K20 develop.	SKW3.16	160	1567	2050	R2 371 000
Telemetry at reservoirs, PRVs and bulk water meters	SKW.M1	-	-	Next 3 yrs	R460 000
Sub-Total					**R38 462 000**
Franschhoek					
Required to utilise storage capacity in Franschhoek reservoir for Groendal zone.	SFW1.2	250	728	2025	R1 907 000
Required as interim connection until Central Lower reservoir is constructed.	SFW1.6	100	PRV	2025	R291 000
Required when future area FH5 develops.	SFW1.7	200	253	2025	R544 000

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New PRV installation.	SFW11.1	100	PRV	2026	R291 000
Required to implement Franschhoek PRV 1 zone.	SFW11.13	110	6	2026	R38 000
New PRV installation.	SFW11.2	100	PRV	2026	R291 000
Required to implement Franschhoek PRV 2 zone.	SFW12.10	150	Valve	2026	R153 000
Inter-connection pipe.	SFW12.13	160	14	2026	R67 000
Required to implement Franschhoek PRV 2 zone	SFW12.2	75	Valve	2026	R100 000
Required to implement Franschhoek PRV 2 zone	SFW12.7	150	Valve	2026	R153 000
Move connection over to higher pressure zone when Franschhoek PRV 1 zone is implemented.	SFW2.11	110	12	2026	R44 000
New bulk supply pipeline to new reservoir.	SFW.B24	200	267	2028	R570 000
Required when Langrug Upper reservoir is constructed.	SFW.B7	110	331	2028	R395 000
Required when future area LM3 develops.	SFW13.1	160	386	2028	R619 000
Required when future area LM4 develops.	SFW13.2	160	473	2028	R748 000
Required when Langrug Upper reservoir is constructed.	SFW7.1	160	337	2028	R546 000
New supply pipe for network.	SFW7.2	160	253	2028	R421 000
Inter-connection pipe for Upper reservoir network.	SFW7.3	110	15	2028	R48 000
Required to implement Langrug Upper reservoir zone.	SFW7.4	110	Valve	2028	R114 000
Required to implement Langrug Upper reservoir zone.	SFW7.5	110	Valve	2028	R114 000
Required when La Motte Upper reservoir is constructed.	SFW9.1	250	272	2028	R779 000
Implement with construction of new reservoir.	SFW9.2	250	259	2028	R745 000
Required to improve flow through the PS inlet/outlet manifold	SFW.B12	355	31	2030	R469 000
Required to augment bulk supply to Franschhoek.	SFW.B18	450	4158	2030	R35 072 000
Required when future area FH4 develops.	SFW1.9	160	153	2030	R274 000
Required to supply sufficient fire flow to Wemmershoek (after old supply to town is transferred to the raw water system).	SFW10.1a	250	86	2030	R316 000
Required to supply sufficient fire flow to Wemmershoek (after old supply to town is transferred to the raw water system).	SFW10.1b	200	306	2030	R644 000
Required to supply sufficient fire flow to Wemmershoek (after old supply to town is transferred to the raw water system).	SFW10.2	200	256	2030	R550 000
Required when future areas WH2 and WH3 develop.	SFW10.3	200	316	2030	R663 000
Insert valve and close to transfer network pipe to raw water system.	SFW10.5	200	Valve	2030	R194 000
Required to improve network conveyance.	SFW2.2	160	38	2030	R103 000
Replace existing 75Ø pipe.	SFW2.3	160	61	2030	R137 000
Required to improve network conveyance and redundancy.	SFW2.4	110	240	2030	R295 000
Inter-connection pipe.	SFW6.4	160	13	2030	R65 000
Required when future areas FH19 and FH20 develop.	SFW8.1	200	198	2030	R441 000
Required when future area FH19 develops.	SFW8.2	200	216	2030	R475 000
Required when future area FH22 develops.	SFW8.3	160	120	2030	R223 000
Required when future areas LM1 to LM6 develops.	SFW9.3	250	254	2030	R733 000
Required to augment bulk supply to Franschhoek.	SFW.B11	355	2909	2035	R12 413 000
Bulk pipe to transfer water from Bagatelle reservoir to FH Estate reservoirs.	SFW.B27	160	1349	2035	R2 047 000
Replace existing 100Ø feeder main to Bagatelle reservoir.	SFW2.1	160	114	2035	R215 000
Dedicated bulk supply from Franschhoek Lower reservoir to old Franschhoek Upper reservoir.	SFW.B10	250	14	2040	R138 000
Required to control flow into Groendal reservoir when Franschhoek Lower reservoir is constructed.	SFW.B39	200	FCV	2040	R489 000
Inter-connection pipe for dedicated bulk supply to Franschhoek Lower reservoir	SFW.B4	250	19	2040	R151 000
Inter-connection pipe to pump directly from La Motte bulk PS to new Franschhoek Lower reservoir.	SFW.B40	315	20	2040	R240 000
Required when Franschhoek Lower reservoir is constructed.	SFW1.10	315	662	2040	R2 441 000
Inter-connection pipe.	SFW1.3	160	42	2040	R109 000
Required when Franschhoek Lower reservoir is constructed.	SFW1.8	200	898	2040	R1 757 000
Required when future area LM2 develops.	SFW14.1	110	132	2040	R176 000
Required when future areas LM2, LM5 and LM6 develop.	SFW14.2	200	168	2040	R385 000
Required when future areas LM5 and LM6 develop.	SFW14.3	200	316	2040	R662 000
Required when future areas LM1 to LM6 develops.	SFW9.4	200	306	2040	R643 000
Required when future area LM6 develops.	SFW14.4	200	1079	2045	R2 097 000
Required when future area FH22 develops (Replace existing 200Ø AC pipe).	SFW2.5	160	325	2045	R528 000
Telemetry at reservoirs, PRVs and bulk water meters	SFW.M1	-	-	Next 3 yrs	R860 000
Sub-Total					**R74 983 000**
Dwars River					
Replace existing 150 Ø CCT connection.	SDW.B20	400	45	2026	R670 000
Replace existing 250Ø PS inlet manifold.	SDW.B4	300	8	2026	R143 000

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Required to improve flow through the PS outlet manifold.	SDW.B7	300	14	2026	R157 000
Replace existing supply to Pniel Upper reservoir.	SDW.B29	110	124	2027	R181 000
Required to improve network conveyance.	SDW9.1	110	191	2027	R241 000
Required bulk supply to Lanquedoc reservoir.	SDW.B23	250	3238	2028	R9 114 000
Emergency connection from Lanquedoc reservoir to Kylemore PS 3.	SDW.B8	315	80	2028	R440 000
Emergency connection from Lanquedoc reservoir to Kylemore PS 3.	SDW.B9	200	PRV	2028	R489 000
New Lanquedoc PRV.	SDW10.1	200	PRV	2028	R489 000
Required when future areas DR19 - 21 & DR27 - 29 develop.	SDW10.10	200	440	2028	R896 000
Required when future areas DR19 - 21 & DR27 - 29 develop.	SDW10.11	200	586	2028	R1 171 000
New supply pipeline to Boschendal Village.	SDW10.2	315	1616	2028	R5 725 000
New supply pipeline to Boschendal Village.	SDW10.3	315	774	2028	R2 826 000
Required to reduce high static pressures.	SDW6.1	100	PRV	2028	R291 000
Required to rezone network.	SDW6.2	110	Valve	2028	R114 000
Required to improve network conveyance.	SDW6.3	160	33	2028	R95 000
Required to improve network conveyance.	SDW6.4	110	152	2028	R198 000
Required to improve network conveyance.	SDW7.1	160	267	2028	R442 000
Required to improve network conveyance.	SDW7.2	160	220	2028	R373 000
New supply pipe from Lanquedoc reservoir.	SDW8.0	400	536	2028	R3 114 000
New supply pipe from Lanquedoc reservoir.	SDW8.1	355	1116	2028	R4 972 000
New supply pipeline to Boschendal Village.	SDW8.2	315	699	2028	R2 570 000
Required when future areas DR14 & DR20 develop.	SDW10.8	200	366	2030	R756 000
Required when future area DR14 develops.	SDW10.9	160	603	2030	R940 000
New supply pipeline to Lanquedoc.	SDW8.3	200	625	2030	R1 244 000
New supply pipeline to Lanquedoc.	SDW8.4	160	452	2030	R716 000
New supply pipeline to Lanquedoc.	SDW8.5	200	499	2030	R1 007 000
New supply pipeline to Lanquedoc.	SDW8.6	160	306	2030	R548 000
Required to improve network redundancy when future area DR4 develops.	SDW2.4	160	33	2035	R95 000
Required to improve network conveyance.	SDW5.1	160	447	2035	R709 000
Replace existing 300Ø supply pipeline when it reaches capacity or reaches end of operational life.	SDW.B21	400	2887	2040	R16 872 000
Required when future areas DR3 & DR5 develop.	SDW1.1	200	416	2040	R851 000
Required when future area DR15 develops.	SDW10.13	110	381	2040	R450 000
Required when future areas DR16 - 18 & DR21 develop.	SDW10.14	200	389	2040	R800 000
Required when future area DR16 develops.	SDW10.15	110	265	2040	R322 000
Required when future areas DR17, DR18 & DR21 develop.	SDW10.16	160	407	2040	R650 000
Required when future area DR21 develops.	SDW10.17	160	382	2040	R613 000
Required when future areas DR13 & DR25 develop.	SDW8.7	200	615	2040	R1 224 000
Required when future area DR31 develops.	SDW10.18	160	294	2045	R482 000
Required when future area DR29 develops.	SDW10.4	160	174	2045	R304 000
Required when future areas DR27, DR28 and DR31 develop.	SDW10.5	200	326	2045	R937 000
Required when future area DR28 develops.	SDW10.6	160	51	2045	R122 000
Required when future area DR27 develops.	SDW10.7	160	275	2045	R454 000
Telemetry at reservoirs, PRVs and bulk water meters.	SDW.M1	-	-	Next 3 yrs	R580 000
Sub-Total					**R65 387 000**
Raithby					
Required to improve network conveyance (Replace existing 75Ø pipes).	SRW1.3	200	695	2026	R1 375 000
Inter-connection pipe to booster zone (after Raithby reservoir & booster PS are decommissioned).	SRW1.4	160	16	2026	R70 000
Close supply but maintain for emergencies.	SRW.B2	150	Valve	2030	R153 000
Dedicated bulk supply to CCT Faure service reservoir from Raithby bulk PS.	SRW.B3	160	219	2030	R616 000
Inter-connection pipe with bulk meter from Faure service reservoir to Raithby supply pipe.	SRW1.1	250	9	2030	R138 000
Required when future area R5 develops.	SRW1.6	110	118	2030	R161 000
Replace existing 150Ø pipe when pressure problems occur.	SRW1.2	250	3414	2045	R8 564 000
Telemetry at bulk water meter to town.	SRW.M1	-	-	Next 3 yrs	R20 000
Sub-Total					**R11 097 000**
Faure					
Required when Welmoed future area develops.	RFW1.1	250	254	2030	R812 000
Required when Welmoed future area develops.	RFW1.2	200	1534	2030	R3 286 000
Required when Welmoed future area develops.	RFW1.5	160	287	2030	R517 000
Required when Welmoed future area develops.	RFW1.6	200	23	2030	R118 000
Sub-Total					**R4 733 000**
Polkadraai					

Table C.3.4: Future bulk water pipeline and water reticulation infrastructure required					
Recommendations included in the Water Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New supply pipe to Papegaaiberg from Polkadraai.	SPW.B7	400	5210	2026	R41 264 000
Network upgrade to accommodate development along Vlottenburg Road.	SPW1.8	315	1070	2027	R4 319 000
Implement new PRV to manage high static pressures.	SPW1.7	200	PRV	2030	R489 000
Required when Welmoed future area develops.	SPW3.1	200	2116	2030	R4 506 000
Required when Welmoed future area develops.	SPW3.2	100	PRV	2030	R291 000
Required when Welmoed future area develops.	SPW3.3	200	257	2030	R609 000
Emergency supply to Welmoed from Skilpadsvlei.	SPW3.4	200	137	2030	R356 000
Required when future area PD4.1 develops.	SPW4.1	160	209	2030	R390 000
Telemetry at reservoirs, PRV and bulk water meters.	SRW.M1	-	-	Next 3 yrs	R120 000
Sub-Total					**R52 344 000**
Koelenhof					
Required to augment bulk supply to Koelenhof area.	RKW.B6a	560	4143	2028	R57 387 000
Required to augment supply to Sonop and Devon Valley reservoirs.	RKW2.2	315	1206	2030	R4 844 000
Required when future area KP6 develops.	RKW2.5	160	219	2030	R370 000
Required to improve network conveyance.	RKW4.1	110	518	2030	R600 000
Required to improve network conveyance.	RKW4.2	110	763	2030	R870 000
Required when future area KP20 develops (Replace existing 75Ø pipe).	RKW5.1	110	680	2030	R779 000
Required when future area KP20 develops (Replace existing 50Ø pipe).	RKW5.2	110	237	2030	R292 000
Bulk supply pipeline to Kriekbult reservoir.	RKW.B10	315	1446	2035	R5 777 000
Required to control flow into the Kriekbult sump.	RKW.B7	300	FCV	2035	R797 000
Supply pipeline from Kriekbult reservoir to network.	RKW2.1	355	1463	2035	R6 411 000
Isolate Koelenhof and Kriekbult zones.	RKW2.4a	200	Valve	2035	R194 000
Isolate Koelenhof and Kriekbult zones.	RKW2.4b	355	Valve	2035	R335 000
Isolate Koelenhof and Kriekbult zones.	RKW2.4c	315	Valve	2035	R335 000
Isolate Kriekbult and Sonop zones.	RKW2.7a	160	10	2035	R62 000
Isolate Kriekbult and Sonop zones.	RKW2.7b	160	Valve	2035	R153 000
Isolate Kriekbult and Sonop zones.	RKW2.7c	300	Valve	2035	R285 000
Inter-connection pipe required to supply areas east of R304 from Kriekbult reservoir.	RKW2.8	315	9	2035	R200 000
Isolate Kriekbult and Sonop zones.	RKW2.9a	200	Valve	2035	R194 000
Inter-connection bulk pipeline between Koelenhof and Kayamandi systems.	RKW.B14	355	7578	2040	R35 885 000
Required when future areas KP10 & KP11 develop.	RKW1.2	250	89	2040	R323 000
Required when future areas KP10 & KP11 develop.	RKW1.3	200	968	2040	R1 888 000
Second bulk connection for Koelenhof rural water scheme.	RKW.B1	560	-	2045	R2 175 000
Required to isolate the bulk supply from existing Koelenhof system.	RKW.B16	250	Valve	2045	R239 000
Dedicated bulk supply to Koelenhof.	RKW.B2	560	934	2045	R13 539 000
Required to control flow from CCT.	RKW.B3	300	FCV	2045	R797 000
Dedicated bulk supply to Koelenhof.	RKW.B6b	560	1154	2045	R16 541 000
Telemetry at reservoirs, PRVs and bulk water meters.	SRW.M1	-	-	Next 3 yrs	R700 000
Sub-Total					**R151 972 000**
Muldersvlei					
Inter-connection pipe between Koelenhof and Muldersvlei systems to improve residual pressure in the Muldersvlei system.	RMW1.1	160	423	2026	R740 000
Sub-Total					**R740 000**
Total					**R601 526 000**

WATER TREATMENT WORKS INFRASTRUCTURE

The table below gives a summary of the existing hydraulic design capacities and average daily flows and peak month average daily flows for the 2023/2024 financial year for each of the WTWs.

Table C.3.5: Existing hydraulic design capacities and average flows at each of the WTWs and water quality failures in network					
WTW	**Existing Hydraulic Capacity**	**Peak Month Average Daily Flow (2023/2024)**	**Average Daily Flow (Jul 2023 – Jun 2024)**	**Required Treatment Capacity (1.5 x AADD10yr)**	**2023/2024 Water Quality Failures for Network (SANS0214:2015)**
	Ml/d	**Ml/d**	**Ml/d**	**Ml/d**	
Idas Valley	21.000	16.309 (Oct)	11.872	21.708	Microbiological, Operational
Paradyskloof	17.000	15.040 (Jan)	12.004	22.001	Microbiological, Operational
Franschhoek	2.000	0.680 (Dec)	0.516	0.943	Microbiological

Note: The Idas Valley WTW was originally designed for a hydraulic capacity of 27.0 Ml/d, but due to the age of the plant the current available hydraulic capacity is only 21.0 Ml/d.

The Idas Valley WTW was operating at 56.5% (AADD) of its design capacity of 21.0 Ml/d for the 2023/2024 financial year. 42.9% of the 2023/2024 System Input volume of the Greater Stellenbosch system was treated at the Idas Valley WTW. The peak monthly flows at the WTW for the 2022/2023 and 2023/2024 financial years were 10.979 Ml/d (Aug.) and 19.991 Ml/d (Oct). The existing reduced hydraulic capacity of 21.0 Ml/d for the Idas Valley WTW is inadequate for the future required treatment capacity.

The Paradyskloof WTW was operating at 70.6% (AADD) of its design capacity of 17.0 Ml/d for the 2023/2024 financial year. 43.5% of the 2023/2024 System Input volume of the Greater Stellenbosch system was treated at the Paradyskloof WTW. The peak monthly flows at the WTW for the 2022/2023 and 2023/2024 financial years were 11.358 Ml/d (Febr.) and 15.040 Ml/d (Jan.). The existing hydraulic capacity of 17.0 Ml/d for the Paradyskloof WTW is inadequate for the future required treatment capacity.

The upgrading of both the Idas Valley WTW and the Paradyskloof WTW depends on increased allocations from the Eerste River and the WCWSS and no costs were therefore linked to these upgrades at this stage.

The Franschhoek WTW was operating at 25.8% (AADD) of its design capacity of 2.0 Ml/d for the 2023/2024 financial year. 14.9% of the 2023/2024 System Input volume of the Franschhoek system was treated at the Franschhoek WTW. The peak monthly flows at the WTW for the 2022/2023 and 2023/2024 financial years were 0.772 Ml/d (Nov.) and 0.602 Ml/d (Febr). The existing hydraulic capacity of 2.0 Ml/d for the Franschhoek WTW is adequate for the future treatment requirements.

The WTWs are all operational and the treatment plants are in a good condition, with no non-functional treatment processes. Some of the minor items to be addressed at the WTWs, as identified through the WSDP inspection process during May 2023, are as follows.

Idas Valley WTW:

- Inadequate water quality testing equipment.
- Raw water inflow meters faulty for Tower 1 and Tower 3. No final water outflow meter.
- Valve of Filter No.13 is problematic.
- Lime stone tank No.2 not in use. Safety railings of lime stone tanks to be repaired, safety risk.

Paradyskloof WTW:

- Lime feeder for filters No.5-8 not operational.
- No final water outflow meter.
- Only one of the sodium aluminate dosing pumps is operational.

Franschhoek WTW: No access.

The following upgrades are required with regard to the WTWs.

Table C.3.6: Future upgrades of the WTWs

WTW	Short description	Time Frame	Estimated cost
All WTWs	Upgrade chlorination installations	2025-2027	R750 000
Idas Valley WTW	Upgrade Idas Valley WTW	2025-2028	R52 000 000
Total			**R52 750 000**

WATER PUMP STATIONS

The water pump stations, as inspected during the WSDP site visits in May 2023, are all operational and well maintained. Duty and Standby pumps are available for most of the pump stations. Leaks were observed at some of the pumps during the site visits. The pump stations are fenced and locked and some are supplied with alarms to prevent any possible theft or vandalism. Key issues to be addressed at the water pump stations, as identified through the WSDP inspection process, are as follows:

- Pump stations without any standby pumps: Brandwacht PS (at WTW), Paradyskloof PS, Pniel PS and Winery Booster PS.

- Pump No.2 of the Rozendal PS was removed for repairs.
- Ceiling of Welgelegen PS building needs to be replaced.
- Motor No.2 at Blackheath PS not connected.
- Pump stations with leaks: Kylemore PS No.3, Pniel PS, Uniepark PS, Pappegaaiberg and Kleinvallei PS, Blackheath PS, De Zalze PS, Koelenhof PS and Devon Valley PS.
- Kleinvallei and Kayamandi PS: Not fenced and electrical installations were vandalised.

The Water Master Plan (June 2025) has indicated that based on the most likely land-use development scenario, it will be necessary for the following future water pump stations.

Table 3.7: Future water pump stations required

System	Recommendations included in the Water Master Plan	Item	Year	Capacity (l/s)	Head (m)	Cost (R Million)
Stellenbosch	170 L/s to new Helshoogte reservoir	SSW.B10a	2028	170	71	R10 323 000
	80 L/s to Rozendal reservoir	SSW.B10b	2028	80	15	R1 191 000
	Required to augment bulk supply to Polkadraai (Pumps only)	SSW.B26	2030	50	35	R4 132 000
	Required when future area S81 develops	SSW20.2	2030	7	30	R2 843 000
	Required when future areas S17 and S82 develop	SSW21.1	2030	7	30	R2 843 000
	Sub-Total					**R21 332 000**
Klapmuts	Add second pump as standby for Upper pump	SKW.B3	2026	60	40	R1 616 000
	Upgrade capacity of pumps to 185 L/s	SKW.B7	2035	185	55	R4 259 000
	Sub-Total					**R5 875 000**
Franschhoek	Existing pump station at capacity	SFW.B2	2025	40	50	R749 000
	Required when Langrug Upper reservoir is constructed	SFW.B6	2028	10	55	R3 039 000
	Required to augment bulk supply to Franschhoek	SFW.B13	2030	185	56	R3 242 000
	Required to augment bulk supply to Franschhoek	SFW.B19	2030	160	123	R5 517 000
	Pump station to pump water from Bagatelle reservoir to FH Estate reservoirs	SFW.B26	2035	6	110	R3 148 000
	Dedicated bulk supply from Franschhoek Lower reservoir to Franschhoek Upper reservoir	SFW.B9	2040	50	57	R4 676 000
	Sub-Total					**R20 371 000**
Dwars River	Required to augment bulk supply to Pniel & Johannesdal	SDW.B11	2026	66	60	R2 144 000
	Required to augment bulk supply to Pniel & Johannesdal	SDW.B6	2026	70	70	R1 847 000
	Required when existing pump station reaches capacity	SDW.B28	2027	5	12	R839 000
	Required bulk supply to Lanquedoc reservoir	SDW.B22	2028	64	155	R7 371 000
	Required when existing pump station reaches capacity	SDW.B15	2035	12	77	R413 000
	Sub-Total					**R12 614 000**
Raithby	Decommission Raithby booster (Raithby is supplied from Faure service reservoir)	SRW1.7	2026	2	30	R2 771 000
	Required for dedicated bulk supply to CCT Faure service reservoir	SRW.B1	2030	10	40	R3 897 000
	Sub-Total					**R6 668 000**
Koelenhof	Upgrade/refurbish Sonop and Devon Valley pumps (Sonop pumps currently not operational)	RKW.B12	2026	45	100	R2 327 000
	New sump for Kriekbult pump station	RKW.B8	2035	100	150	R1 408 000
	Required when Kriekbult reservoir is constructed	RKW.B9	2035	90	76	R6 874 000
	Required to supply bulk water from the Koelenhof system to the Kayamandi system	RKW.B15	2040	60	120	R3 252 000
	New sump for Koelenhof bulk pump station no. 2	RKW.B4	2045	100	150	R1 408 000
	New Koelenhof bulk PS	RKW.B5	2045	150	30	R7 328 000
	Sub-Total					**R22 597 000**
Total						**R89 457 000**

RESERVOIR INFRASTRUCTURE

Most of the reservoirs and water towers in Stellenbosch Municipality's Management Area are in a good condition and well maintained. The levels of the reservoirs are monitored through the scada systems. No leaks were noticed at any of the reservoirs during the WSDP site visits in May 2023. Most of the reservoir sites are fenced and locked, the reservoir covers are locked and the air vents are covered.

Some of the issues to be addressed at the water reservoirs and towers, as identified through the WSDP inspection process, are as follows.

- Reservoirs not fenced: La Motte and Pniel Upper.
- Reservoirs with covers not locked: Wemmershoek, La Motte, Bagatelle, Pniel Lower and Upper and Uniepark No.2
- Roof of Uniepark No.1 vandalised and needs to be repaired.

The 2023/2024 storage factors of the total reservoir storage capacity for the various systems, based on 1 x PDD (24 hours storage capacity), are 1.31 for Stellenbosch, 1.86 for Franschhoek, 2.27 for Dwars River and 3.05 for Klapmuts. Even though the overall storage capacity might be adequate for all of the towns there can be distribution zones within some of the towns with inadequate storage capacity, which require additional reservoirs.

The Water Master Plan (June 2025) has indicated that based on the most likely land-use development scenario, it will be necessary for the following future reservoirs.

Table 3.8: Future reservoir storage capacities required

System	Recommendations included in the Water Master Plan	Item	Capacity (Ml)	Year	Estimated Cost
Stellenbosch	Additional reservoir capacity at Cloetesville	SSW.B14	7.000	2025	R25 308 000
	Required to augment bulk supply to Stellenbosch	SSW.B19	30.000	2028	R79 170 000
	Additional reservoir storage capacity for Papegaaiberg zone (20.0 ML as first phase, additional 20.0 ML required in future))	SSW.B21	20.000	2028	R58 290 000
	Additional reservoir storage capacity for Papegaaiberg zone (Phase 2)	SSW.B22	20.000	2045	R58 290 000
	Required when future areas S19, S20.1 and S20.2 develop (Outside urban edge, potential longer term item)	SSW.B18	1.500	2055	R8 255 000
	Additional reservoir storage capacity for Brandwacht zone	SSW.B32	1.500	2055	R8 255 000
	Additional reservoir capacity at Paradyskloof 2 (Potential longer term upgrade)	SSW.B6	1.500	2055	R8 255 000
	Sub-Total				**R245 823 000**
Klapmuts	Additional reservoir storage capacity for Klapmuts Lower reservoir site	SKW.B10	9.000	2035	R30 798 000
	Additional reservoir storage capacity for Klapmuts Upper	SKW.B5	5.000	2040	R19 575 000
	Sub-Total				**R50 373 000**
Franschhoek	Additional reservoir storage capacity for Langrug (Existing storage capacity insufficient. Additional 1.0 ML higher lying reservoir also proposed for Langrug area)	SFW.B3	1.000	2025	R6 192 000
	New reservoir storage capacity for La Motte (can be phased)	SFW.B25	3.000	2028	R13 398 000
	Decommission existing La Motte reservoir once La Motte Upper reservoir is constructed.	SFW.B23	0.500	2028	-
	Reservoir storage capacity for Langrug Upper zone (required to service higher lying structures in Langrug)	SFW.B8	1.000	2028	R6 192 000
	Additional reservoir storage capacity for Wemmershoek	SFW.B17	0.750	2030	R5 132 000
	Additional reservoir capacity for future areas	SFW.B5	5.000	2040	R19 575 000
	Sub-Total				**R50 489 000**
Dwars River	Additional reservoir capacity for Pniel area	SDW.B27	1.000	2027	R6 192 000
	Reservoir storage capacity for Lanquedoc reservoir development area (3.5 ML as phase 1; 5.0 ML as phase 2)	SDW.B5	3.500	2028	R15 149 000
	Additional reservoir capacity for future areas	SDW.B16	1.500	2035	R8 255 000
	Additional reservoir storage capacity for Lanquedoc reservoir development areas (Longer term)	SDW.B24	5.000	2040	R19 575 000
	Sub-Total				**R49 171 000**
Raithby	Decommission Raithby reservoir (Raithby is supplied from Faure service reservoir)	SRW.B5	0.180	2026	-

Table 3.8: Future reservoir storage capacities required					
System	**Recommendations included in the Water Master Plan**	**Item**	**Capacity (Ml)**	**Year**	**Estimated Cost**
	Sub-Total				-
Koelenhof	Additional reservoir storage capacity for Devon Valley (replace old Devon Valley tank)	RKW.B13	0.500	2030	R3 886 000
	Required to augment bulk supply to Koelenhof	RKW.B11	4.000	2035	R16 762 000
	Sub-Total				**R20 648 000**
Total					**R416 504 000**

BULK SEWER PIPELINE AND SEWER DRAINAGE NETWORK INFRASTRUCTURE

The Sewer Master Plan (June 2025) has indicated that based on the most likely land-use development scenario, it will be necessary for the following bulk sewer pipeline and sewer drainage network infrastructure.

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Stellenbosch WWTW					
Investigate existing Gravity pipelines	SSS12.1, SSS12.2, SSS12.3, SSS14.3, SSS14.4, SSS17.12, SSS17.13, SSS17.14, SSS17.6, SSS18.10, SSS18.14, SSS18.6, SSS18.7, SSS19.4, SSS19.5, SSS19.7, SSS19.8, SSS20.12, SSS20.4, SSS20.8, SSS26.2, SSS26.4, SSS9.1, SSS9.5	-	-	2025	R96 000
Investigate existing Flow Diversion	SSS17.3	-	-	2025	R11 000
Investigate existing Rising pipelines	SSS23.1, SSS24.1, SSS6.1, SSS8.1, SSS8.3	-	-	2025	R20 000
Upgrade existing 225mm dia. outfall gravity sewer to a 315mm uPVC sewer	SSS1.8	315	183	2026	R886 000
Upgrade existing 160mm dia. outfall gravity sewer to a 315mm dia. uPVC sewer	SSS1.9	315	427	2026	R1 830 000
Replace existing rising main (Existing pipe in bad state of repair)	SSS14.1	315	325	2026	R3 442 000
Upgrade existing 160mm dia. gravity section to 250mm dia. uPVC. Replace existing 200mm dia. Vitrified Caly pipe to a 250mm dia. uPVC if existing pipe is in a bad state of repair.	SSS19.2a	250	317	2027	R1 192 000
Upgrade existing 250mm dia. gravity Vitrified Caly pipe with a 250mm dia. uPVC pipe if the existing pipe is in a bad state of repair.	SSS19.2b	250	367	2027	R1 358 000
Upgrade existing Gravity (To address operational problems)	SSS19.3	200	844	2027	R2 520 000
New gravity sewer when future areas S64, S65 and S66 develop.	SSS17.1	160	463	2028	R1 030 000
Upgrade existing bulk Gravity when existing outfall sewer reaches capacity.	SSS1.2	600	757	2030	R7 141 000
Upgrade existing Flow Diversion	SSS1.4	-	-	2030	R638 000
Upgrade existing bulk Gravity when existing outfall sewer reaches capacity	SSS1.5	600	186	2030	R1 952 000
Upgrade existing Flow Diversion	SSS1.6	-	-	2030	R638 000
Upgrade existing bulk Gravity when existing outfall sewer reaches capacity	SSS1.7	600	449	2030	R4 339 000
New gravity sewer when future areas S36 develops	SSS17.18	160	379	2030	R856 000
Upgrade existing Gravity when existing collector sewer reaches capacity.	SSS19.1	400	875	2030	R4 532 000
New bulk rising main when future areas in the Fleurbaix PS drainage area develop.	SSS2.1	400	29	2030	R373 000
New gravity sewer when future area S58 develops	SSS2.17	250	1329	2030	R3 622 000
New rising main to divert flow to the Fleurbaix PS	SSS2.4	355	19	2030	R261 000
New gravity sewers when Kayamandi Northern extensions develop	SSS27.10	160	679	2030	R1 473 000
	SSS27.11	160	708	2030	R1 533 000
	SSS27.13	160	650	2030	R1 413 000
	SSS27.2	160	307	2030	R708 000
	SSS27.3	400	198	2030	R915 000
	SSS27.4	315	891	2030	R2 940 000
	SSS27.5	250	411	2030	R1 177 000
	SSS27.6	200	433	2030	R1 072 000
	SSS27.8	200	206	2030	R553 000

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New gravity sewer when future areas S47 and S91 develop.	SSS3.3	160	111	2030	R305 000
New gravity sewer when future area KP19 develops	SSS30.10	160	2053	2030	R4 299 000
New gravity sewer when future area KP17 develops	SSS30.11	160	350	2030	R797 000
Upgrade existing Gravity when overflow problems occur.	SSS30.3	250	17	2030	R221 000
Investigate existing Gravity	SSS30.4	-	-	2030	R4 000
New gravity sewer when future areas KP8.1, KP8.2, KP9, KP10 and KP11 develop	SSS30.5	250	278	2030	R823 000
New gravity sewer when future areas KP8.1, KP8.2 and KP11 develop	SSS30.6	160	190	2030	R469 000
New gravity sewer required when future areas KP8.2 and K9 develop	SSS30.8	200	323	2030	R820 000
New gravity sewer when future areas PD3.1 and PD3.2 develop	SSS4.4	160	1066	2030	R2 268 000
New gravity sewer when future areas PD4.1 to PD4.3 develop.	SSS4.5	160	380	2030	R859 000
New rising main when future areas in the Welmoed PS drainage area develop	SSS5.1	160	4084	2030	R6 082 000
New gravity sewers when future areas in the Welmoed PS drainage area develop	SSS5.3	200	8	2030	R98 000
	SSS5.5	160	554	2030	R1 216 000
	SSS5.6	200	395	2030	R985 000
	SSS5.7	160	116	2030	R316 000
	SSS5.8	160	236	2030	R562 000
	SSS5.9	160	382	2030	R863 000
New gravity sewers when future area S78 develop	SSS7.5	160	263	2030	R618 000
	SSS7.6	160	338	2030	R772 000
Upgrade existing Gravity when existing collector reaches capacity	SSS9.2	200	35	2030	R257 000
New gravity sewers when future areas S115 and S133 develop	SSS9.6	200	37	2030	R165 000
	SSS9.7	160	300	2030	R694 000
Upgrade existing gravity (Investigate first)	SSS19.6	250	561	2030	R1 982 000
Upgrade existing Gravity when existing collector sewer reaches capacity	SSS17.2	250	42	2035	R300 000
Investigate existing Flow Diversion when existing collector sewer reaches capacity	SSS17.4	-	-	2035	R11 000
Upgrade existing Gravity when existing collector sewer reaches capacity	SSS17.5	200	545	2035	R1 685 000
Upgrade existing Gravity when existing collector sewer reaches capacity	SSS18.1	200	75	2035	R368 000
New gravity bulk sewer required when future areas in the Fleurbaix PS drainage area develop.	SSS2.5	600	918	2035	R6 981 000
New gravity sewer Eerste River crossing from Droe Dyke to Fleurbaix drainage area	SSS2.6	525	154	2035	R4 117 000
New gravity sewer required when future area S127 develops	SSS2.7	450	418	2035	R2 506 000
New gravity sewer when future area S127 develop	SSS2.8	400	247	2035	R1 119 000
New gravity sewer when future area S126 develop	SSS2.9	355	909	2035	R3 392 000
Upgrade existing Gravity when future areas S1 and S3 develop.	SSS22.1	355	130	2035	R750 000
New gravity sewer. Rail crossing required when future areas S1 and S3 develop	SSS22.2	160	57	2035	R474 000
Upgrade existing Gravity (Investigate first) when Kayamandi E is formalised.	SSS25.3	315	49	2035	R372 000
	SSS25.4	250	279	2035	R1 070 000
	SSS25.5	200	49	2035	R302 000
	SSS25.6	200	68	2035	R355 000
New gravity sewer when Kayamandi H is formalised.	SSS26.5	160	243	2035	R577 000
New gravity sewer required when Kayamandi Northern extensions develop.	SSS27.9	160	366	2035	R831 000
Upgrade existing Gravity when existing collector reaches capacity	SSS7.1	315	535	2035	R2 253 000
Upgrade existing Gravity when existing collector reaches capacity	SSS7.2	250	174	2035	R731 000
New gravity sewer when future areas S40.1 and S40.2 develop	SSS9.4	160	432	2035	R965 000
Decommission existing rising when the outfall sewer to Fleurbaix PS is complete.	SSS3.1	-	-	2040	R11 000
New gravity sewers when future area S127 develop	SSS2.12	315	769	2040	R2 550 000
	SSS2.13	250	80	2040	R296 000

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New gravity sewer when future area S127 develop and to by-pass the Wood Mill PS	SSS2.15	200	203	2040	R545 000
New gravity sewer required to by-pass the Wood Mill PS	SSS2.16	160	99	2040	R280 000
New rising main when future areas in the Droe Dyke PS drainage area develop.	SSS2.23	160	1085	2040	R1 634 000
New gravity sewers when future areas S52.1, S52.2 and S127 develop.	SSS2.25	250	21	2040	R140 000
	SSS2.26	200	302	2040	R772 000
	SSS2.29	200	263	2040	R684 000
Investigate existing Rising capacity of Plankenburg pumping system, potentially upgrade pump station.	SSS25.1	-	-	2040	R4 000
New gravity sewer when future area S14 develops	SSS26.1	160	526	2040	R1 159 000
New gravity sewer when future are KP11 develop	SSS30.7	160	327	2040	R749 000
New gravity sewer when future area KP10 develop	SSS30.9	200	53	2040	R203 000
New gravity sewer when future area PD1 develop.	SSS4.6	160	139	2040	R364 000
Upgrade existing Gravity when existing collector reaches capacity.	SSS7.3	200	606	2040	R1 858 000
New gravity sewer required when area S78 develop.	SSS7.7	160	453	2040	R1 009 000
New gravity sewer when future area S42 develop	SSS9.3	160	298	2040	R691 000
New gravity sewers required when future area S67 develops (Outside urban edge, potential longer term)	SSS14.6	250	87	2045	R314 000
	SSS14.7	200	241	2045	R632 000
	SSS14.8	160	1045	2045	R2 226 000
	SSS14.9	160	1052	2045	R2 241 000
New gravity sewer when future areas S55, S57 and S58 develop.	SSS2.18	200	1121	2045	R2 650 000
New rising main discharge at WWTW when Fleurbaix PS is upgraded to 285 l/s	SSS2.2	400	2464	2045	R14 257 000
New gravity sewer when future areas S55, S57 and S58 develop	SSS2.20	160	270	2045	R633 000
New gravity sewer when future areas S20.1 and S20.2 develop (Outside urban edge, potential longer term)	SSS20.7	160	260	2045	R611 000
Upgrade existing Gravity when existing collector sewer reaches capacity.	SSS20.9	200	238	2045	R825 000
New gravity sewer when future area S1 develops	SSS22.3	160	159	2045	R404 000
	SSS22.4	160	207	2045	R504 000
New gravity sewer when future area S99.1 develop.	SSS28.1	250	180	2045	R563 000
	SSS29.1	110	346	2045	R396 000
Upgrade existing Gravity required when overflow problems occur.	SSS30.2	450	74	2045	R637 000
New gravity sewer when future area S74 develops	SSS7.4	160	150	2045	R386 000
Upgrade existing gravity when existing collector sewer reaches capacity when future areas S20.1 and S20.2 develop.	SSS1.10	315	319	2050	R1 412 000
Upgrade/install telemetry at existing PSs and install bulk meters	SSS.T1	-	-	Next 3 yrs	R760 000
Sub-Total					**R145 555 000**
Wemmershoek WWTW					
Upgrade existing Gravity when overflow or operational problems occur at existing 160mm dia. outfall sewer.	SFS1.8	200	941	2028	R2 795 000
New gravity required to decommission La Motte PS	SFS3.1	200	280	2028	R722 000
Abandon existing rising. Decommission La Motte PS & rising main when item SFS3.1 is implemented.	SFS3.3	-	-	2028	R11 000
New gravity sewer required when future area FH25 develop	SFS1.12	160	324	2030	R744 000
New gravity sewer when future area LM7 develop	SFS2.4	160	117	2030	R318 000
New rising required when future area LM1, LM2, LM5 and LM6 develop	SFS4.1	110	239	2030	R279 000
New gravity sewer when future area LM2, LM5 and LM6 develops.	SFS4.3	160	532	2030	R1 172 000
New gravity sewer when future area LM5 and LM6 develops	SFS4.4	160	256	2030	R603 000
New gravity sewer when future area LM6 develops	SFS4.5	160	1023	2030	R2 181 000
New gravity sewer when future area LM4 develops	SFS4.6	160	573	2030	R1 256 000
New gravity sewer when future areas FH4, FH16 and FH17 develop.	SFS1.1	160	202	2035	R494 000
	SFS1.3	160	352	2035	R802 000
	SFS1.4	160	245	2035	R581 000
New gravity sewer when future areas FH13 and FH18 develop	SFS1.5	160	124	2035	R332 000
New gravity sewer when future area FH19 develop	SFS1.6	160	118	2035	R320 000

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New gravity sewer to divert incoming flow from Akademie street midblock sewer.	SFS1.7	160	45	2035	R170 000
New gravity sewer required when future area FH22 develop.	SFS1.9	160	103	2035	R288 000
New gravity sewer when future area FH18 develops	SFS1.2	160	786	2040	R1 693 000
Upgrade/install telemetry system	SFS.T1	-	-	Next 3 yrs	R100 000
Sub-Total					**R14 861 000**
	Pniel WWTW				
New rising main required when future Boschendal PS is constructed.	SDS4.13	200	2694	2026	R5 098 000
New gravity sewer when Boschendal Village area develops	SDS4.7	315	211	2026	R763 000
New gravity sewer for future development areas	SDS4.8	160	471	2026	R1 046 000
New gravity sewer to new Banhoek bulk PS	SDS8.1	315	390	2026	R1 336 000
New gravity sewer to Dwars River WWTP when Banhoek PS is commissioned.	SDS8.4	450	837	2026	R4 071 000
New 200mm dia. rising main as first phase when Banhoek PS is constructed, reinforce with parallel 200mm dia. rising main in the future.	SDS8.3a	200	2954	2026	R5 586 000
Decommission rising mains when proposed Banhoek PS is commissioned.	SDS2.7	-	-	2027	R11 000
	SDS3.1	-	-	2027	R11 000
New gravity by-pass for Pniel and Sports Field PSs	SDS8.6	315	876	2027	R2 894 000
New gravity by-pass for Pniel and Sports Field PSs (river crossing)	SDS8.7	315	71	2027	R541 000
New gravity by-pass for Pniel and Sports Field PSs	SDS8.8	200	512	2027	R1 255 000
	SDS8.9	160	383	2027	R865 000
Upgrade existing Gravity when overflow problems occur when upstream PS is operational	SDS1.2	200	269	2028	R915 000
Decommission rising main when proposed Banhoek PS is commissioned.	SDS7.1	-	-	2028	R11 000
Upgrade existing gravity by-pass for Lanquedoc PS	SDS8.10	200	642	2028	R1 632 000
New gravity sewer when future area DR1 develops	SDS1.3	160	426	2030	R952 000
Upgrade existing Gravity sewers (Investigate first). Required when existing outfall sewers reaches capacity	SDS2.1	250	402	2030	R1 470 000
	SDS2.2	200	870	2030	R2 597 000
New gravity sewer when future area DR22 develops	SDS4.2	160	344	2030	R785 000
New gravity sewer when future areas DR14, DR20 and DR25 develops	SDS4.3	160	513	2030	R1 132 000
New gravity sewer when future area DR25 develops	SDS4.4	160	1 361	2035	R2 875 000
Upgrade existing Gravity. Required when collector sewer reaches capacity when upstream areas DR1, DR2 and DR5 develop.	SDS1.1	200	528	2035	R1 008 000
New gravity sewer when future area DR5 develops	SDS1.4	160	503	2035	R1 112 000
	SDS1.6	160	1103	2035	R2 346 000
	SDS1.7	160	935	2035	R2 000 000
New gravity sewer for future development areas	SDS4.1	200	340	2035	R861 000
Interim PS and rising main to service upstream areas (decommission PS and rising main when flow is diverted in future to Allee Bleue PS)	SDS9.1	90	801	2035	R822 000
New gravity collector sewers for future development areas	SDS9.3	160	39	2035	R157 000
	SDS9.4	160	821	2035	R1 766 000
New gravity sewer to re-direct flow from interim PS to Allee Bleue PS (after proposed Allee Bleue PS is commissioned)	SDS9.7	160	852	2035	R1 856 000
New rising main required when future Allee Bleue PS is constructed (including main road crossing)	SDS5.1	160	1052	2040	R1 584 000
New gravity sewer when future area DR11 develops	SDS8.5	160	521	2040	R1 149 000
New gravity collector sewers for future development areas	SDS9.5	160	638	2040	R1 390 000
New gravity sewer required when future areas DR27, DR28 and DR29 develop	SDS5.3	250	43	2040	R197 000
	SDS5.4	200	119	2040	R352 000
New gravity sewers when future area DR27 develops	SDS5.5	160	203	2040	R495 000
	SDS5.6	160	271	2040	R634 000
New gravity sewer required to decommission Meerlust CT	SDS5.7	160	297	2040	R689 000
New gravity sewer when future area DR14 develops	SDS4.5	160	852	2045	R1 830 000
New gravity sewer required when future areas DR27, DR28 and DR29 develop.	SDS6.1	160	165	2045	R416 000
New gravity sewer when future area DR29 develops	SDS6.2	160	315	2045	R724 000

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
Parallel 200mm dia. rising main as second phase when pumping rate from PS exceeds 40 l/s.	SDS8.3b	200	2954	2045	R6 230 000
New gravity collector sewers for future development areas	SDS9.6	160	1449	2045	R3 056 000
Upgrade/install telemetry at existing PSs and install bulk meters	SDS.T1	-	-	Next 3 yrs	R540 000
Sub-Total					**R67 060 000**
Klapmuts WWTW					
New rising main when Rozenmeer bulk PS is constructed	SKS1.14	315	1267	2026	R4 444 000
New bulk gravity sewers to decommission Klapmuts PSs 2 and 3	SKS1.8	400	319	2026	R1 418 000
	SKS1.9	450	443	2026	R2 204 000
New gravity sewer required to divert flow to proposed Rozenmeer bulk PS	SKS5.2	160	42	2026	R163 000
Abandon existing rising sewers. Decommission when by-pass to Rozenmeer PS is complete.	SKS5.1	-	-	2026	R11 000
	SKS6.1	-	-	2027	R11 000
New gravity bulk sewer to decommission Klapmuts PS2	SKS1.7	400	216	2027	R991 000
New gravity sewer required to divert flow to Rozenmeer bulk PS	SKS6.2	315	61	2027	R326 000
New gravity sewer required to decommission Klapmuts PS1	SKS1.12	250	1043	2028	R2 860 000
New gravity rail crossing: Klapmuts	SKS1.12R	160	30	2028	R201 000
New gravity sewer required to by-pass Anura package plant	SKS5.9	160	547	2028	R1 202 000
New gravity road crossing: Simondium Road	SKS5.9R	160	25	2028	R179 000
Abandon existing rising sewer. Decommission when by-pass to Rozenmeer PS is complete.	SKS7.1	-	-	2028	R11 000
New gravity sewer required when future areas K6, K24.1 and K24.2 develop.	SKS12.2	315	229	2030	R823 000
New gravity sewer required when future areas K6 and K24.2 develop.	SKS12.3	250	516	2030	R1 456 000
New gravity sewer required when future areas K17, K24.1 and K24.2 develop.	SKS14.1	315	282	2030	R992 000
New gravity sewer required when future areas K1.4, K2 and K15.2 develop.	SKS18.1	160	303	2030	R701 000
New gravity sewer required when future areas K14.4 and K20 develop.	SKS19.1	160	805	2030	R1 733 000
New gravity sewer required when future area K22 develop	SKS20.1	160	95	2030	R272 000
Upgrade existing Gravity required when existing collector sewer reaches capacity.	SKS10.1	355	435	2035	R2 084 000
Upgrade existing Gravity. Road crossing Old Paarl Road (R101)	SKS10.1R	355	47	2035	R593 000
New gravity sewer required when future areas K24.1 and K24.2 develop.	SKS14.2	250	145	2035	R469 000
Upgrading existing Gravity. Required when existing collector sewer reaches capacity when upstream future development areas develop.	SKS16.2	200	791	2035	R2 375 000
New gravity required when future areas K2 and K15.2 develop.	SKS17.1	160	178	2035	R444 000
New gravity sewer required when future areas K24.2 develops	SKS14.3	200	354	2040	R891 000
New gravity sewer required when future areas K17 and K24.1 develop.	SKS15.1	160	710	2040	R1 538 000
Upgrading existing Gravity. Required when existing collector sewer reaches capacity when upstream future development areas develop.	SKS16.4	315	280	2040	R1 261 000
New gravity sewer when future areas K21.1 and K21.2 develop.	SKS20.2	160	125	2040	R335 000
New gravity sewer when future areas K21.1 and K21.2 develop.	SKS20.4	160	377	2040	R853 000
New gravity sewer when future areas K18 and K19 develop	SKS21.1	160	916	2040	R1 960 000
New rising main required if future areas K8, K9, K11 or K12 develop prior to the new Klapmuts WWTW and outfall sewer.	SKS8.1	110	262	2040	R304 000
New rising main required when future areas K21.1 and K21.2 develop.	SKS20.6	110	199	2040	R235 000
New gravity sewer required when future areas K8, K9 and K12 develop.	SKS9.1	200	120	2040	R355 000
New gravity sewer required when future area K8 develops	SKS9.2	160	444	2040	R991 000
New gravity sewer. Road crossing Old Paarl Road (R101)	SKS9.2R	160	62	2040	R334 000
New gravity sewer required when future areas K9 and K12 develop.	SKS9.3	160	495	2045	R1 095 000
New gravity sewer when future area K21.2 develops	SKS20.3	160	213	2045	R514 000

Table 3.9: Future bulk sewer pipeline and sewer drainage network infrastructure required					
Recommendations included in the Sewer Master Plan	**Item**	**Diameter (mm)**	**Length (m)**	**Year**	**Estimated Cost**
New gravity sewers when future area K19 develops	SKS21.2	160	252	2045	R595 000
	SKS21.3	160	82	2045	R246 000
New gravity sewer. Road crossing: Adam Tas Road (R44)	SKS21.3R	160	44	2045	R257 000
New gravity sewer required to divert flow to Regional WWTP for larger Klapmuts area.	SKS1.1	675	364	2050	R3 498 000
	SKS1.2	525	2954	2050	R19 251 000
	SKS1.2R	525	97	2050	R2 621 000
	SKS1.3	525	3217	2050	R20 953 000
	SKS1.3R	525	171	2050	R4 560 000
Upgrade/install telemetry at existing pump stations and install bulk meters and install bulk meters at rising main outlets and measure sewage inflow at WWTP.	SKS.T1	-	-	Next 3 yrs	R540 000
Sub-Total					**R89 150 000**
Raithby WWTW					
New gravity sewer when future area R5 develop	SRS1.1	160	171	2030	R429 000
Upgrade / install telemetry (Measure sewage inflow at WWTP)	SRS.T1	-	-	Next 3 yrs	R100 000
Sub-Total					**R529 000**
Total					**R317 155 000**

SEWER PUMP STATIONS

Most of the sewer pump stations, as inspected during the WSDP site visits in May 2023, are operational and well maintained. Duty and Standby pumps are available for most of the pump stations. No spillages were observed at any of the sewer pump stations during the site visits. Most of the pump stations are also fenced and locked and some are supplied with alarms to prevent any possible theft or vandalism. Some of the issues to be addressed at the sewer pump stations, as identified through the WSDP inspection process, are as follows.

- Pump Stations where the electrical fence is not working: Klapmuts PSs No.1, No.2 and No.3.
- Mechanical screen at Klapmuts PS No.2 not operational.
- Erosion and part of fence at Digteby PS to be repaired.

The Sewer Master Plan (June 2025) has indicated that based on the most likely land-use development scenario, it will be necessary for the following future sewer pump stations.

Table 3.10: Future sewer pump stations required					
Drainage System	**Recommendations included in the Sewer Master Plan**	**Item**	**Capacity (l/s)**	**Year**	**Estimated Cost**
Stellenbosch WWTW	Investigate existing Pump Station (Distell 1 system)	SSS10.3	-	2025	R32 000
	Investigate existing Pump Station (KWV system)	SSS12.4	-	2025	R32 000
	Investigate existing Pump Station (Distell 2 system)	SSS13.3	-	2025	R32 000
	Investigate existing Pump Station (Stellentia (Gilbeys) system)	SSS16.2	-	2025	R32 000
	Investigate existing Pump Station (Nuutgevonden system)	SSS21.1	-	2025	R32 000
	Investigate existing Pump Station (Welgevonden 2 (Stellenvista) system)	SSS23.2	-	2025	R32 000
	Investigate existing Pump Station (Welgevonden 1 system)	SSS24.2	-	2025	R32 000
	Investigate existing Pump Station (De Zalze 3 system)	SSS6.2	-	2025	R32 000
	Investigate existing Pump Station (Audacia PS 2 system)	SSS8.2	-	2025	R32 000
	Investigate existing Pump Station (Audacia PS 1 system)	SSS8.4	-	2025	R32 000
	Investigate existing Pump Station (Die Boord system, potentially downsize pump station)	SSS14.2	-	2026	R32 000
	New Pump Station required when future areas in the Fleurbaix PS drainage area develop (Initial capacity of 150 l/s, ultimate capacity of 285 l/s)	SSS2.3	150	2030	R12 551 000
	New Pump Station required when future areas in the Welmoed PS drainage area develop.	SSS5.2	-	2030	R2 834 000
	New Pump Station required when future areas in the Droe Dyke PS drainage area develop.	SSS2.24	-	2040	R3 443 000
	Upgrade existing Pump Station (Investigate the capacity of the Plankenburg pumping system first, potentially upgrade pump station)	SSS25.2	-	2040	R1 178 000
	Abandon existing Pump Station when the outfall sewer to Fleurbaix PS is complete.	SSS3.2	-	2040	R286 000

Table 3.10: Future sewer pump stations required					
Drainage System	**Recommendations included in the Sewer Master Plan**	**Item**	**Capacity (l/s)**	**Year**	**Estimated Cost**
	Upgrade capacity of PS when future areas in the Fleurbaix PS drainage area develop (Initial capacity of 150 l/s, ultimate capacity of 285 l/s)	SSS2.30	135	2045	R2 580 000
	New Pump Station when future area S99.1 develop.	SSS29.2	-	2045	R2 533 000
	Sub-Total				**R25 757 000**
Wemmershoek WWTW	Decommission La Motte PS & rising main when item SFS3.1 is implemented.	SFS3.2	-	2028	R286 000
	New PS required when future area LM1, LM2, LM5 and LM6 develops.	SFS4.2	-	2030	R2 684 000
	Sub-Total				**R2 970 000**
Pniel WWTW	New Pump Station when Boschendal Village develops (16 l/s as first phase, 37 l/s ultimate capacity).	SDS4.12	-	2026	R4 070 000
	New 16 l/s Banhoek bulk PS required when Boschendal Village develops (16 l/s as first phase, 87 l/s ultimate capacity)	SDS8.2	16 - 87	2026	R6 443 000
	Abandon existing Pump Station when proposed Banhoek PS is commissioned.	SDS2.6	-	2027	R286 000
	Abandon existing Pump Station when proposed Banhoek PS is commissioned.	SDS3.2	-	2027	R286 000
	Abandon existing Pump Station when proposed Banhoek PS is commissioned.	SDS7.2	-	2028	R286 000
	Interim PS & rising main to service upstream areas (decommission PS & rising main when flow is diverted in future to Allee Bleue PS)	SDS9.2	-	2035	R2 483 000
	New Pump Station for future development areas DR27, DR28 and DR29 (re-direct flow from Meerlust to new PS)	SDS5.2	-	2040	R3 034 000
	Sub-Total				**R16 888 000**
Klapmuts WWTW	New PS required to decommission Klapmuts PSs 1, 2 and 3	SKS1.13	-	2026	R4 702 000
	Decommission when by-pass to Rozenmeer PS is complete.	SKS5.3	-	2026	R286 000
	Decommission when by-pass to Rozenmeer PS is complete.	SKS6.3	-	2027	R286 000
	Decommission when by-pass to Rozenmeer PS is complete.	SKS7.3	-	2028	R286 000
	New PS required if future areas K8, K9, K11 or K12 develop prior to the new Klapmuts WWTW and outfall sewer.	SKS8.2	-	2040	R2 834 000
	New PS required when future areas K21.1 and K21.2 develop.	SKS20.5	-	2040	R2 633 000
	Sub-Total				**R11 027 000**
Total					**R56 642 000**

WASTE WATER TREATMENT INFRASTRUCTURE

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 C.3.11 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 (April to September)**	**Average Daily Flow as a % of Design Capacity**	**Final Effluent Compliance for 2023/2024**
	Ml/d	**Ml/d**	**Ml/d**	**Ml/d**	**%**	
Stellenbosch	35.000	36.963 (Sept)	23.718	25.978	67.77	Stellenbosch 1 Microbiological: 0.0% Chemical: 25.0% Physical: 44.4% Stellenbosch 2 Microbiological: 0.0% Chemical: 50.0% Physical: 69.4%
Wemmershoek	3.600	11.442 (Jun)	4.120	5.327	114.44	Microbiological: 33.3% Chemical: 27.1% Physical: 66.7%
Pniel	4.500	3.856 (Sept)	2.347	2.649	52.16	Microbiological: 0.0% Chemical: 47.9% Physical: 91.7%
Klapmuts	2.400	2.209 (Nov)	1.537	1.593	64.04	Microbiological: 50.0% Chemical: 62.5% Physical: 77.8%
Raithby	0.150	0.206 (Oct)	0.065	0.062	43.33	Microbiological: 33.3% Chemical: 77.1% Physical: 88.6%

Note: The Wemmershoek WWTW was originally designed for a hydraulic capacity of 5.0 Ml/d, but due to design errors the current hydraulic capacity of the plant is only 3.6 Ml/d.

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

Table C.3.12: Existing organic design capacities and loadings at the WWTWs

WWTW	Organic Design Capacity	2022/2023		2023/2024	
		Average Load	% of Organic Design Capacity	Average Load	% of Organic Design Capacity
	kg COD/d	kg COD/d	%	kg COD/d	%
Stellenbosch	35 000	17 201	49.15	24 237	69.25
Wemmershoek	4 350	1 953	44.90	2 979	68.48
Pniel	4 500	1 511	33.58	937	20.82
Klapmuts	2 700	1 372	50.81	1 715	63.52
Raithby	53	61	115.09	39	73.58

The projected future WWTW flows are included in the future water requirement projection models. The table below gives an overview of the average daily future projected WWTW flows.

Table C.3.13: Average daily and peak month future projected WWTW flows (Ml/d)

WWTW	Existing Hydraulic Capacity	Average Daily Future Projected WWTW Flows					Peak Month Average Daily Future Projected WWTW Flows				
		2028	2033	2038	2043	2048	2028	2033	2038	2043	2048
Stellenbosch	35.000	26.535	31.769	38.165	43.690	50.301	33.434	40.029	48.088	55.049	63.379
Wemmershoek	3.600	3.723	4.409	5.252	6.288	7.566	5.585	6.614	7.878	9.432	11.349
Pniel	4.500	2.212	2.334	2.478	2.646	2.839	2.765	2.918	3.098	3.308	3.549
Klapmuts	2.400	1.759	2.127	2.748	3.381	4.425	1.935	2.340	3.023	3.719	4.868
Raithby	0.150	0.087	0.117	0.156	0.209	0.280	0.134	0.180	0.240	0.322	0.431

Note: The peak month factors used in the above table is 1.26 for Stellenbosch, 1.50 for Wemmershoek, 1.25 for Pniel, 1.10 for Klapmuts and 1.54 for Raithby.

Stellenbosch WWTW: The 2022 Green Drop Score for the Stellenbosch WWTW was 84% and the DWS's Wastewater Risk Rating increased from 55.6% (Medium Risk) in 2021 to 86.4% in 2023 (High Risk). The capacity of the WWTW is adequate to meet the short term future treatment requirements (Next three years), but the Municipality will need to budget for the upgrading of the WWTW in the nearby future. The following operational problems were noticed during the WSDP site visit in May 2023.

- Inlet works: Only one of the three mechanical front raked screens was operational. One of the wash compactors was not operational. Seepage pump was not operational due to blockages from the broken wash compactor. Odour system not operational. One of the degritters was not operational.
- Four rotating brush fine screens: Screens No.1 and No.4 were not working.
- Bio-reactor: One of the five aerators was not operational.
- MBR: Valve broken off, to be repaired. The shaft of one of the actuators was broken. Hach inline sampler not operational. Membrane pumps No.2 and No.4 not working.
- SST No.1 and No.3: Scum plates were removed at various sections. SST No.2 leaking at floor and bridge wheel was removed.
- UV disinfection system: Not operational due to broken sensor.
- Belt press: Only one of the two sludge pumps was operational. Pumps need to be operated manually.

The conclusions and actions for consideration included in the 2021 Process Audit Report for the Stellenbosch WWTW were as follows:

- The plant is in general in a good condition and seems well managed.
- The plant is not fully compliant with the stringent special limits, but comply well within the general limits.
- The application for relaxing for effluent limits of Conductivity, COD, Ammonia, E.Coli and Nitrate limits with DWS should be followed up . It is reported that the application has been in review by DWS since 2018.

Wemmershoek WWTW: The 2022 Green Drop Score for the Wemmershoek WWTW was 83% and the DWS's Wastewater Risk Rating increased from 63.6% (Medium Risk) in 2021 to 82.4% in 2023 (High Risk). The reduced capacity of 3.6 Ml/d of the Wemmershoek WWTW is inadequate to meet the current and future treatment requirements and the capacity of the WWTW needs to be increased. The following operational problems were noticed during the WSDP site visit in May 2023.

- Lighting at plant not adequate, which is a safety and security risk.
- Office building: Geyser is not working. No sampling equipment for operational sampling.
- Inlet works: Two mechanical front raked screens were not operational. Service water pumps for water at inlet works not operational.
- Raw feed tank: Level sensors were faulty. One of the three submersible pumps was not operational.
- SBR: Valve malfunctioning (SBR No.2). One of the four blowers was not working.
- Two linear screen and belt wash pumps were not operational (Alignment). One of the service water pumps was not operational. Compressor for linear screen and belt wash pumps was not operational.
- Silo for belt press: No control valve, dried sludge push out when full. Level sensor also faulty.
- Chlorine Disinfection: Door of chlorine building to be replaced. No BA sets or other chlorine safety equipment. No water at emergency shower. Vacuum regulator for second chlorine cylinder not operational, only one cylinder can be used. Extraction fan is not operational.
- Electrical fence was vandalised, not operational.
- No final effluent flow meter.

The conclusions and actions for consideration included in the 2021 Process Audit Report for the Wemmershoek WWTW were as follows:

- The plant is generally in good condition regarding civil structures, but various mechanical equipment is not operational.
- The works is organically overloaded and additional to this, the works was never designed to achieve Special Limits at these high organic loads.
- Phase 1 of the planned upgrade was underway during writing which will address most of the short falls and operational challenges.

Pniel WWTW: The 2022 Green Drop Score for the Pniel WWTW was 83% and the DWS's Wastewater Risk Rating increased from 58.8% (Medium Risk) in 2021 to 82.4% in 2023 (High Risk). The capacity of the WWTW is adequate to meet the medium to long term future treatment requirements (Next ten years). The WWTW was in a very good condition during the WSDP site visit in May 2023. Only two items were noticed during the site visit.

- Bio-reactor: Anoxic Basin: One of the two mixers were removed for repairs.
- Sludge drying beds to be cleaned of weeds and grass.

The conclusions and actions for consideration included in the 2021 Process Audit Report for the Pniel WWTW were as follows (Before upgrade):

- The plant is generally in good condition regarding civil structures, but various mechanical equipment is not operational.
- The works is organically overloaded and additional to this, the works was never designed to achieve Special Limits at these high organic loads.
- Upgrade is currently underway which will address most of the short falls and operational challenges.

Klapmuts WWTW: The 2022 Green Drop Score for the Klapmuts WWTW was 82% and the DWS's Wastewater Risk Rating increased from 41.2% (Low Risk) in 2021 to 70.6% in 2023 (High Risk). The capacity of the WWTW is adequate to meet the short to medium term future treatment requirements (Next three to five years), but the Municipality will need to budget for the upgrading of the WWTW in the nearby future. The Klapmuts WWTW was in a very poor condition during the WSDP site visit in May 2023 and the following operational problems were noticed.

- General: WWTW terrain overgrown with grass, inadequate maintenance. Grass also to be removed from sludge holding tank.
- No sampling equipment for operational sampling.
- Inlet works: Mechanical front raked screen was removed for repairs.
- Bio-reactor: Only one of the a-cycle pumps was operational. Both submersible waste sludge pumps were not operational. Inline DO and Turbidity meters were not working.
- SST No.2 not operational, because of faulty RAS PS valve. One of the submersible pumps is not working.
- Chlorine disinfection: No disinfection was done at the time of the site visit, due to chlorine shortage. The chlorine tablet disinfection system was also not operational.
- Only one of the pumps for the final effluent for the Belt Press was operational, the other pump was removed for repairs. The Belt Press was not operational due to loose belt.
- Maturation pond to be cleaned and full of scum on the surface. Sludge lagoon also overgrown with grass and needs to be cleaned.

The conclusions and actions for consideration included in the 2021 Process Audit Report for the Klapmuts WWTW were as follows:

- There is a serious theft problem at the works in spite of the presence of 24 hours security present. Due to this, and lengthy parts/ equipment replacement period, the operation of the works is affected resulting in violating the license effluent limits.
- The emergency sludge lagoon remains filled to capacity resulting in zero sludge handling capacity in case of belt press breakdowns.
- The security on site needs to be tighten and emergency sludge handling capacity needs to be created.

Raithby WWTW: The 2022 Green Drop Score for the Raithby WWTW was 73% and the DWS's Wastewater Risk Rating increased from 64.7% (Medium Risk) in 2021 to 76.5% in 2023 (High Risk). The capacity of the WWTW is adequate to meet the short term future treatment requirements (Next three years), but the Municipality will need to budget for the upgrading of the WWTW in the nearby future. The following operational problems were noticed during the WSDP site visit.

- Inlet works: Mechanical front raked screen needs to be reset after each load shedding period.
- Only one of the six rotating biological contactors was operational.
- Back-up emergency sludge lagoon needs to be cleaned, also overgrown with grass and reeds.

The conclusions and actions for consideration included in the 2021 Process Audit Report for the Raithby WWTW were as follows:

- The plant is generally in good condition regarding civil structures with only few mechanical equipment not operational.
- The works is organically overloaded and require additional treatment capacity.
- An upgrade for the works was at planning state.

The following future upgrades are required with regard to the WWTWs.

Table C.3.14: Future upgrades of the WWTWs			
WWTW	**Short description**	**Time Frame**	**Estimated cost**
Stellenbosch	Pond rehabilitation and pond pumping systems construction	2025-2028	R4 400 000
Stellenbosch	Extension of WWTW	2025-2028	R82 200 000
Wemmershoek	Upgrade of WWTW	2025-2027	R31 000 000
Klapmuts	Upgrade of WWTW	2025-2028	R81 000 020
Raithby	Refurbish plant and equipment	2025-2027	R10 000 000
Stellenbosch	Upgrade WWTW with an additional 15 Ml/d	2030	R375 000 000
Stellenbosch	Upgrade WWTW with an additional 15 Ml/d	2040	R375 000 000
Wemmershoek	Upgrade WWTW with an additional 4.5 Ml/d	2034	R112 500 000
Total			**R1 071 100 020**

WATER SCHEMES

The Water Master Plan (July 2025) indicates the future water reticulation network components that will be necessary for the various developments and the required changes to the existing networks (Proposed distribution zones, future systems and required works).

SANITATION SCHEMES

The Sewer Master Plan (July 2025) indicates the future sewer drainage network components that will be necessary for the various developments and the required changes to the existing networks (Proposed drainage zones, future systems and required works).

TOPIC 4: WATER SERVICES OPERATION AND MAINTENANCE

Table C.4.1: Water Services O&M						
Section	**Intervention Required?**	**% (1)**	**Solution description as identified by Master Plan**	**% (2)**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring % (3)**
O&M Plan Is There an O&M Plan?	No	100	Operation and Maintenance tasks for the various water and sewerage infrastructure components, as indicated under Sections 4.1.1 to 4.1.10 of the "Future Demand and Functionality Requirements" WSDP Master Plan should be implemented. Ensure the required O&M schedules are in place and signed off.	100	Partially	78.6
Resources	No	100	A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of existing water and sewerage infrastructure (Best Practice). In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice).	100	Partially	92.9
	No	100	Stellenbosch Municipality needs to ensure that the number of process controllers at each of the WTWs and WWTWs and the class of process controller complies with the required number of process controllers and class of process controller per plant (New Regulation 3630).	100	Partially	78.6
Information	No	100	All incidents at the WTWs and WWTWs and on the water reticulation networks and sewer drainage networks need to be recorded and Incident Management Protocols, as included in the Water Safety Plans and W_2RAPs, need to be followed after an incident.	100	Yes	85.7
	No	100	Ensure that the required O&M Manuals are in place for all the water and sewerage infrastructure.	100	Partially	78.6
Activity Control & Management	No	100	Groundwater: Implement recommended daily, weekly, monthly and six monthly O&M activities for the boreholes.	100	Partially	85.7
	No	100	Surface water infrastructure: Implement preventative maintenance procedures.	100	Partially	85.7
	No	100	Bulk and water reticulation networks and fittings: Compile daily, weekly, monthly and annual maintenance checklists for the maintenance activities for the water reticulation networks and fittings.	100	Partially	85.7

Table C.4.1: Water Services O&M						
Section	**Intervention Required?**	**% (1)**	**Solution description as identified by Master Plan**	**% (2)**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring % (3)**
	No	100	WTWs: Evaluate the existing O&M schedules for the WTWs against the recommended O&M tasks and ensure all required activities are adequately monitored and recorded.	100	Partially	85.7
	No	100	Water PSs: Compile weekly and monthly maintenance checklists for the recommended activities for all the water PSs and all PSs need to be inspected on at least a weekly basis.	100	Partially	85.7
	No	100	Reservoirs: Compile maintenance checklists for the recommended reservoir maintenance activities and document all inspections.	100	Partially	85.7
	No	100	Remote monitoring and Control Systems: Ensure adequate maintenance is carried out on the SCADA systems and compile maintenance checklists for the recommended activities.	100	Partially	85.7
	No	100	Sewer PSs: Compile weekly and quarterly maintenance checklists for the recommended activities for all the sewer PSs and all centrifugal pump stations need to be inspected on at least a weekly basis.	100	Partially	85.7
	No	100	Bulk and sewer drainage networks: Annual, monthly and weekly schedules for maintenance should be drawn up for the bulk and sewerage networks. Regular cleaning of sewer lines and all blockages and their precise locations should be recorded.	100	Partially	85.7
	No	100	WWTWs: Evaluate the existing O&M schedules for the WWTWs against the recommended O&M tasks and ensure all required activities are adequately monitored and recorded.	100	Partially	85.7

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

It is important for Councils to understand the value of maintenance and provide the necessary funding to properly operate and maintain infrastructure. It is the responsibility of the municipal and technical managers to educate and inform Councils on this and help councillors explain these issues to their communities. **Successful municipalities depend to a large extent on a single principle – effective and efficient management!**

Much of the routine work of technical departments involves managing and undertaking the O&M of services that is done in-house by municipal staff. A second major aspect of work is managing O&M undertaken by external service providers. The third major area is new or capital projects, also usually undertaken by external service providers.

Each service area in Stellenbosch Municipality needs an O&M system that monitors and assesses infrastructure condition and plans for the required preventative maintenance, and when necessary, rehabilitation, upgrading or replacement of the infrastructure. This is a major part of an overall Asset Management System, which

- records, describes all infrastructure assets;
- monitors and assesses their condition;
- plans and monitors maintenance;
- plans upgrading, rehabilitation and replacement; and
- values assets and the costs of maintenance, upgrading, rehabilitation and replacement.

There is a wide range of **desirable objectives** that should be achieved with the help of maintenance.

- Retain an asset in a serviceable condition during its designed life span.
- Optimize the reliability of equipment and infrastructure.
- Ensure that the equipment and infrastructure are kept in a good condition.
- Ensure prompt emergency repair of equipment and infrastructure to sustain service delivery.
- Take action before repair costs become too high.

- Ensure operation by eliminating breakdown risks or limiting them as much as possible.
- Improve delivery by upgrading infrastructure.
- Enable repairs under the best possible conditions.
- Improve operational safety and remove causes of accidents.
- Reduce the overall management burden through better work preparation and reduced unforeseen production stoppages.
- Protect the environment.

To achieve these objectives, it is necessary to train personnel in specific maintenance skills and to influence their attitudes, as better operational results depend on motivated staff who are committed to proper maintenance procedures and standards.

Setting up a preventative maintenance programme is one of the most effective ways of reducing breakdowns and keeping equipment and infrastructure in good condition. It is important to implement such a programme as soon as new equipment or infrastructure is put into service.

Implementing a preventative maintenance programme requires a **maintenance plan**, with particular emphasis placed on the following:

- Periodic inspection of equipment according to a pre-established programme so that working conditions may be checked.
- Systematic servicing – the first step in devising this programme is to forecast the life of parts and components subject to wear, i.e. the study of reliability, failure modes and effects and fault analysis.
- Overhauls, which often require considerable work, should be planned during low production periods.

The complexity of maintenance activities should be analysed to set up an efficient maintenance plan and to take management decisions, e.g. regarding use of own resources and unskilled or skilled resources. **Five levels of maintenance** can be distinguished, depending on the complexity of the work and the urgency of action.

- Simple adjustments are generally applicable to accessible components and require no dismantling or opening of the equipment. These adjustments involve the completely safe replacement of accessible consumable components such as signal lights or some types of fuses. Servicing of this type may be performed by the operator on site, without tools, following the instructions for use. The stock of consumable parts required is very small.

- Troubleshooting entails minor preventative maintenance operations such as greasing or checking for proper functioning. Servicing of this type may be performed on site by an authorised technician. An authorised technician has received training that enables him/her to perform such maintenance work safely and is well aware of potential problems.

- Breakdowns require identification, diagnosis and repairs by replacing components or working parts. Servicing of this type must be carried out by trained persons, on site or in the maintenance shop, using the documentation (manuals, spare part lists, etc.) necessary for maintenance of equipment.

- Major maintenance work covers all major corrective or preventative work except modernization and rebuilding. Servicing of this type must be carried out by a team that comprises highly skilled technical specialists, using the relevant documentation.

- Modernising and rebuilding equipment or executing major repairs is usually done by the manufacturer or builder. Resources are specified and usually very similar to those used in the original manufacturing or construction.

In order to ensure **good quality O&M**, technical managers firstly need to ensure that staff responsible for in-house O&M

- understand equipment and infrastructure;
- understand and implement the proper O&M requirements and procedures;
- understand the required service and operating standards;
- have and develop the necessary O&M skills;
- assess equipment and infrastructure conditions;
- understand and identify typical defects and problems;
- solve problems and make necessary repairs, or engage experts to do so; and
- record all activities to provide data for planning and analysis of O&M.

Secondly technical managers must ensure that they contact competent external service providers.

The bulk of O&M activities should be of a preventative nature. That is regular checking all the water and sewerage infrastructure and ensuring that everything is in good operational condition. There are a number of standard recommended O&M tasks, for the various water and sewerage infrastructure components, which should be implemented by Stellenbosch Municipality.

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 (Best Practice).

The table below gives an overview of the Opening Cost and Book Value of the water and sewerage infrastructure included in Stellenbosch 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 Opening Cost, are also indicated.

Table C.4.2: Recommended budgets for the replacement and the operation and maintenance of the existing water and sewerage infrastructure.

Asset Type	Asset Register June 2024		CRC	Recommended Annual Replacement Budget (Best Practice)	Recommended Annual O&M Budget (Best Practice)	Depreciation and Amortisation: Actual Expenditure
	Opening Cost	Book Value		2.0% of CRC	1.5% of CRC	2023/2024
Borehole	R86 227 551	R61 774 220	R60 000	R45 000	R60 000	R32 615 905
Water Mains	R225 179 114	R178 123 277	Incl. under Ret.	Incl. under Ret.	Incl. under Ret.	
Dams and Weirs	R16 166 313	R12 038 177	R2 449 000	R1 836 750	R2 449 000	
Water Reticulation Pipeline	R1 305 772 600	R919 260 997	R28 310 000	R21 232 500	R28 310 000	
Water Pump Station	R2 905 428	R679 144	R2 613 980	R1 960 485	R2 613 980	
Reservoirs & Tanks	R214 592 898	R188 575 179	R9 394 260	R7 045 695	R9 394 260	
WTW	R107 159 498	R88 391 666	R16 330 000	R12 247 500	R16 330 000	
Sub Total Water	**R1 958 003 402**	**R1 448 842 660**	**R59 157 240**	**R44 367 930**	**R59 157 240**	**R32 615 905**
Outfall sewers	R356 008 567	R293 722 404	Incl. under Ret.	Incl. under Ret.	Incl. under Ret.	R24 557 267
WWTW	R185 948 308	R289 122 875	R26 384 000	R19 788 000	R26 384 000	
Sewer Reticulation Pipeline	R760 668 957	R448 129 150	R27 065 080	R20 298 810	R27 065 080	
Sewer Pump Station	R11 921 015	R2 042 856	R1 076 580	R807 435	R1 076 580	
Toilet Facilities	R2 048 200	R1 921 640	-	-	-	
Sub Total Sewerage	**R1 316 595 047**	**R1 034 938 925**	**R54 525 660**	**R40 894 245**	**R54 525 660**	**R24 557 267**
Total Water and Sewerage	**R3 274 598 449**	**R2 483 781 585**	**R113 682 900**	**R85 262 175**	**R113 682 900**	**R57 173 172**

TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

Table C.5.1: Conservation and Demand Management - Water Resource Management

Section	Intervention Required?	% (1)	Solution description as identified by Master Plan	% (2)	Is there an existing project/activity addressing this problem?	Current Demand Overall Scoring % (3)
Reducing unaccounted water and water inefficiencies	No	100	Implement the proposed WC/WDM Strategy and the 25 WC/WDM items. Ensure adequate budget is allocated under the Capital and Operational budgets towards the implementation of the WC/WDM initiatives.	100	Partially	85.7
	No	100	Set up meeting with the Large Water Users to discuss water consumption status, potential water saving volumes and to cultivate a water saving awareness within each large water user.	100	Partially	85.7
Leak and meter repair programmes.	No	100	Implement a Leak Repair and Assistance Programme that investigates and repairs leaks at all domestic households in low cost housing developments and poor areas with consumption above 15 kl/month. An exercise could also be initiated to check for visual leakage at public buildings, using more than 60 kl/month.	100	No	71.4
	No	100	Continue with the implementation of the pipeline replacement programme. The location of pipe failures should in the future be recorded preferably with accurate GPS coordinates. This improves the integrity of the output of the pipe failure model. If a longer and more comprehensive pipe failure record could be established, the integrity of the output could be further enhanced. Pipes with the highest PRP values should be considered to be replaced first.	100	Partially	92.9
	No	100	Install water meters at all the unmetered erven and inspect metered erven with zero consumption.	100	Partially	85.7
Consumer/end-use demand management: Public Information & Education Programmes	Yes	100	At least once a year, a schools education programme on water conservation should be undertaken. The Municipality should assist the school(s) with the monitoring (water audit) of their water consumption. Stellenbosch Municipality can also focus on the implementation of an extensive schools WDM programme, which can include annual competitions between schools (Say with a prize for the lowest consumption, the lowest per capita consumption and for the best WDM Strategy poster design, etc.). A schools WDM programme should receive a high priority.	100	Partially	85.7
	Yes	100	Continue to focus on the installation of water saving devices (specific water efficient toilets) and raising awareness regarding conservation projects and the installation of these products in order to reduce water demand. The use and installation of these fittings should be included as a condition for the approval of building plans as well as provided for in the Water Services By-law.	100	Partially	85.7
Conjunctive use of surface - and groundwater	No	100	-	100	-	100
Working for Water	No	100	-	100	-	100

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

Table C.5.2: Conservation and Demand Management - Water Balance

Section	Intervention Required?	%	Solution description as defined by topic situation assessment	%	Is there an Existing project/activity addressing this problem?	Current Demand Overall Scoring %
Water Balance	No	100	Ensure that the volume of water supplied from all water resources are metered (each individual source separately), the raw water and final water at the WTWs and the volume of water supplied to the various zones (at Reservoirs). The inflow at the WWTWs, the volume of treated effluent re-used and the volume of treated effluent returned to the water resource system also need to be metered at all the WWTWs.	100	Partially	85.7

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?

(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

The Revised Compulsory National Water and Sanitation Standards, as published in Government Gazette No.52814 of 6 June 2025, include the following WC/WDM requirements:

- Where spillages or leaks in its water supply network are detected or reported, a Water Services Institution must record such cases and ensure that they repair all leaks within 48 hours of becoming aware thereof.
- A Water Services Institution must isolate 95% of detected or reported water pipe bursts in its water supply system within a maximum of four (4) hours of becoming aware thereof.
- Where spillages or sewer blockages in its wastewater collection network are detected or reported, a Water Services Institution must record such cases and ensure that they are contained and must be repaired within 24 hours of becoming aware thereof. The affected surface area must be cleaned and or disinfected.
- A Water Services Institution must have a 24-hour consumer care facility supported by the system to which leaks, spillages or water service related enquiries and complaints can be reported and feedback be given to the consumer.
- Whenever emergency or alternative water supply is provided in terms of Regulation 4(1), the Water Services Institution must ensure that taking of water from a bulk line, if applicable, is appropriately metered and recorded (i.e. if alternative water is provided through tankering the number of tankers and their volume must be recorded when taking from a bulk metered pipeline).
- A Water Services Institution must implement a Pressure Management Programme allowing water reticulation systems to be operated at a minimum pressure of 20 m and maximum of 90 m.
- Where water pressure in a water reticulation system could rise above 90 m, a Water Services Institution must install a pressure control device to prevent the pressure at any domestic consumer connection from rising above 90m.
- A Water Services Institution must take steps to measure and progressively reduce losses, maintain the water use efficiency KPIs including the quantity of water losses, the quantity of NRW, ILI and per capita usage to within international accepted standards as follows:
  - NRW 20% – 30%;
  - Water Losses 10% - 20%;
  - Infrastructure Leakage Index 2 – 4; and
  - Per Capita Usage 120 l/c/d – 180 l/c/d
- Water Services Institutions must develop and implement a 10-year Council approved WC/WDM Strategy and an Annual Plan within 6 months of the publication to be uploaded on the IRIS system and must consist of at least the following:
  - Situation Assessment;
  - Key issues and challenges;
  - Focus areas of interventions;
  - List of proposed interventions;
  - Set targets for demand, NRW, water losses (commercial and real losses), ILI and per capita usage in line with subsection above; and
  - Budgets and Multi-year Implementation timelines.

- WSAs must require greenfield developments or major brownfield redevelopments, prior to planning approval, to indicate the manner and extent in which WC/WDM and water efficient sanitation solutions (WESS) has been accommodated and accounted for in their selected technology options, in terms of efficient water use and off-grid sanitation.

DWS's Municipal Scorecard for assessing the potential for WC/WDM efforts in Municipalities was used to assess the potential for WC/WDM efforts in Stellenbosch Municipality. The proposed WC/WDM Strategy for Stellenbosch Municipality is based on the 25 items included in the Scorecard and the sections below discuss each of these items in detail.

Table C.5.3: Proposed WC/WDM Strategy items for Stellenbosch Municipality

Item 1: Development of a Standard Water Balance

Recommendation and Strategy:

- Continue with the monthly updating of the IWA Water Balances for all the systems and reporting on the NRW and Water Losses for each of the systems to management. Continue to manage NRW analysis on a monthly basis.
- Continue with the drafting of an annual WSDP Performance and Water Services Audit Report, as required by the Water Services Act, which include the IWA Water Balances.
- Implement the recommended WC/WDM activities in order to reduce the NRW and Water Losses even further.
- Determine all unbilled authorized consumption by firstly identify all the relevant consumers, e.g. Municipal buildings, parks, fire services, sport fields, etc. Unbilled consumption do not generate income, but will enable the municipality to better quantify their actual water losses.

Funding and Budget Requirements:

The IWA Water Balances for the systems are updated on a monthly basis by the municipality.

Item 2: Pressurised System at all times

Recommendation and Strategy:

- Adequate human resources, technical skills and O&M budgets need to be allocated towards the operation, maintenance and refurbishment of the existing infrastructure, in order to ensure that systems are always pressurised.
- Ensure proper maintenance of the existing PRVs.
- The Water Master Plans to be consulted in conjunction with the WC/WDM priority projects to identify future areas where pressure reduction can be implemented. Recommended future PRV zones are included in Table 5.1.1.3.2. of the Future Demand and Functionality Requirements Report.

Funding and Budget Requirements:

- Budgets as indicated under the individual items of the WC/WDM Strategy.
- Increase O&M budget allocations towards the refurbishment and replacement of old water infrastructure.
- An estimated budget of R3 500 000 is required for the implementation of the future recommended PRV zones.

Items 3 and 4: Metering System

Recommendation and Strategy:

- All un-metered water connections need to be provided with water meters. Meters need to be read on a monthly basis and consumers need to be billed monthly according to their actual water usage. In addition to water theft, many water accounts go unnoticed in the system or have some type of data inconsistency that results in no revenue being generated for the particular water use event. The SWIFT data needs to be used to clean the Treasury data and the municipality needs to identify and correct any inaccurate data in the system (Linkage of Treasury data with cadastral data).
- Consumer consumption checks / investigations need to be carried out where water usage are very low, but there are households on the property (Use SWIFT data). This project will give a clear indication of where illegal or unregistered connections is being made and whether the meter is under reading the actual consumption, thus water is being used but not billed or recorded.
- Use the SWIFT data to identify all unmetered erven and all meters with zero consumption. All illegible / broken / old meters should be replaced. Any un-metered stands should be metered and meter readings in the billing system should be updated where required. All meter chambers should also be cleaned as part of the inspections.
- Municipality needs to continue with the implementation of their Meter Management / Replacement program. An effective Meter Management / Replacement Program needs to achieve the following objectives:
  - Determine the on-going meter replacement programme;
  - Determine exception reports on meters which are suspected to be faulty;
  - Test and replace faulty meters; and
  - Size meters correctly.

  The activities of this program that needs to be budgeted for are as follows:
  - SWIFT analysis of treasury data.
  - Research and development of a meter replacement policy and meter management / replacement programme;
  - Implementation of a uniform meter management information system;
  - Testing and replacing faulty meters reported by consumers (Part of reticulation function).
  - Replacement of domestic meters with AMR enabled format (where appropriate) in accordance with meter management / replacement programme.

Funding and Budget Requirements:

Table C.5.3: Proposed WC/WDM Strategy items for Stellenbosch Municipality

Allow a budget of approximately R200 000 for an annual SWIFT analysis to identify unmetered erven and erven with no or very low consumption. Estimated budget of R4 070 000 is necessary for the installation of water meters at the potential unmetered erven and the erven with a meter, but with zero demand (814 connections).

Item 5: Effective and Informative Billing System

Recommendation and Strategy:

- Municipality needs to continue to ensure that all customer's meters are read on a monthly basis and that the customers are billed on a monthly basis according to the actual volume of water used for the specific month.
- Municipality needs to continue with the commercial data analysis done on the billed metered consumption data, which include the identification of un-metered erven, investigating meters with zero consumption, investigating abnormal low and high consumption readings, oversized / undersized meters, etc.
- The Municipality can consider the following additional measures to make the current consumer bills more informative.
  - Adding a graph of the previous 12 months' consumption and helpful hints on effective water usage on the monthly bills.
  - Alert consumers of possible leaks on their properties. For instance if the consumption for a particular month is >25% than the average consumption of the previous months the consumer may be alerted of a possible leak on the property.
  - Monitor trends and follow up telephonically.

Funding and Budget Requirements:

Estimated cost to enhance the user friendliness of the municipal bill is R450 000.

Items 6 and 7: General Complaints System

Recommendation and Strategy:

The municipality needs to ensure that all consumers are familiar with the telephone numbers to lodge complaints and report leaks. Telephone numbers to lodge complaints and report leaks are included on the monthly water bills and on the Municipality's website. Suggestions would be to also include it on strategically located notice boards, radio broadcasts, etc.

The projects and measures that can be implemented for passive leakage control are as follows:

- Improve the help-line and install an automated answering system.
- Advertise the help-line.
- Investigate current problems in responding to leaks and allocate adequate resources to avoid lengthy delays.
- Review and develop a policy regarding responses to leaks with the aim of reducing response time, prioritising and keeping consumers informed.
- Develop a monitoring system and quality assurance measures to ensure problems are resolved adequately. Link such a KPI to the SDBIP.

The Customer Care Service Charter should include the following information:

- Commitment to deliver excellent services to our clients (Executive Mayor and Municipal Manager).
- Standards of services (Enquiries written and telephonic; Accounts enquiries and distribution of accounts).
- Response times for different services (Water: Repairs to networks, installation of new household water connections, etc.)
- Contact details for different areas.

Funding and Budget Requirements:

Budget requirement for improved customer awareness raising with regard to the Municipality's Customer Complaints System R150 000/annum.

Item 8: Asset Register for Water Infrastructure

Recommendation and Strategy:

- Continue with the annual updating of the Asset Register.
- Continue to ensure that all the existing water and sewerage infrastructure are included in the Asset Register.
- The Conditions of the assets need to be included in the Asset Register.

Funding and Budget Requirements:

None - To be done as part of the annual updating of the Asset Register by the municipality.

Item 9: Asset Management Capital Works

Recommendation and Strategy:

Allocate a budget of at least 2% of the total water asset value per annum towards the replacement of existing infrastructure. Municipality needs to differentiate in their capital budget between new projects and projects that are for the replacement of existing infrastructure, in order to accurately calculate the annual percentage allocated towards the replacement of existing infrastructure.

Funding and Budget Requirements:

Capital budget of at least 2% of the total water and sewerage asset value allocated towards the replacement of the existing water and sewerage infrastructure.

Item 10: Asset Management Operation and Maintenance

Recommendation and Strategy:

The municipality needs to differentiate between budget allocated towards the operation and maintenance of the water infrastructure and the budget allocated towards the replacement of the water and sewerage infrastructure. A budget of approximately 1% to 2% of the value of the system is typically required for the operations and maintenance of the system to ensure that the system remains in good condition.

Table C.5.3: Proposed WC/WDM Strategy items for Stellenbosch Municipality

The municipality needs to compile an Asset Management Plan (AMP) to ensure efficient, effective and optimal management, operation and maintenance of all assets, which includes treatment plants, reservoirs, structures, buildings, pipelines, sites, etc. The purpose of the AMP is to:

- Ensure the operation and maintenance functions are well planned.
- Demonstrate responsible management.
- Justify and communicate funding requirements.
- Service provisioning complies with regulatory requirements.

An AMP normally includes the following:

- documents the nature, extent, age, utilization, condition, performance and value of the infrastructure work;
- identifies existing and target levels of service, as well as expected changes in demand;
- identifies the life-cycle management needs of the infrastructure (development, renewal, operations and maintenance);
- assesses capital and operational budget needs; and
- identifies infrastructure asset management improvement needs.

It is important for the municipality to develop an AMP from their Asset Register. The objective of an AMP is to support the achievement of the strategic goals of the Municipality and facilitate prudent technical and financial decision-making. It is also a vehicle for improved internal communication and to demonstrate to external stakeholders the Municipality's ability to effectively manage its existing infrastructure as well as the new infrastructure to be developed over the next 20 years.

This plan must be based on the principle of preventative maintenance in order to ensure that, as far as this is practical, damage to assets is prevented before it occurs. The municipality needs to ensure that the maintenance and rehabilitation plan is part of the WSDP and that the plan is implemented. Assets must be rehabilitated and / or replaced before the end of their economic life and the necessary capital funds must be allocated for this purpose. Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increase in (operational) services level coverage's most rapidly. The preparation of maintenance plans and the allocation of sufficient funding for maintenance are required to prevent the development of a large condition backlog. The potential renewal projects for the water infrastructure need to be identified from the Asset Register. All assets with a condition grading of "poor" and "very poor" need to be prioritised.

The O&M Budget allocated towards repairs and maintenance should include the replacement of malfunctioning and old bulk water meters and consumer water meters, clearing of meter chambers, buying replacement mechanisms for bulk water meters, speedy repair of leaks, leak detection in areas with high water losses and NRW and higher than expected night flows, etc. The budget should also be used for preventative maintenance, which include the following:

- Inspection of isolation valves and packing.
- Control valve inspection and maintenance.
- Inspection of cathodic protection of steel pipes.

Funding and Budget Requirements:

Additional budget should be allocated towards the repairs and maintenance of the existing water and sewerage infrastructure. The additional budget should be determined by the municipality once an AMP is developed. A budget of approximately 1% to 2% of the value of the system is typically required for the operations and maintenance of the system to ensure that the system remains in good condition (Best Practice).

An estimated budget for the drafting of an AMP for all the water and sewerage infrastructure is R1 000 000.

Item 11: Dedicated WC/WDM Support

Recommendation and Strategy:

The municipality should allocate at least one (1) person to head WC/WDM for a start. The number of people involved with WC/WDM measures can later be increased as and when required.

Funding and Budget Requirements:

The municipality may be able to use one of their existing staff members. If a new person has to be appointed the municipality can determine the costs involved with such an appointment.

Item 12: Active Leakage Control

Recommendation and Strategy:

The following process needs to be followed for active leakage control of the reticulation network:

Decide on how the work will be undertaken:

- The appointment and training of additional staff.
- The training of existing staff.
- Appoint an external contractor in the first few years with the objective of using this contractor to train the internal teams and build capacity to do all work internally.
- The above three options need to include the purchase or re-allocation of equipment.
- Complete outsourcing of the activity.

Leak detection: Identify areas with highest leaks and send teams into the field to detect leaks.

Repair of leaks once identified: Once leaks were detected they will need to be repaired. Depending on the extent of the leaks and other workloads, the leak repairs need to be carried out by either the internal teams or a contractor.

Funding and Budget Requirements:

R1 000 000 to undertake leak detection in zones with high excess night flows. In addition allocate approximately R350 000 per year for general visual leak inspections.

Table C.5.3: Proposed WC/WDM Strategy items for Stellenbosch Municipality
Item 13: Sectorization of Reticulation Systems
Recommendation and Strategy: The billed metered data is currently linked to the distribution systems and should also be linked to the different zones in the future where possible, in order to accurately determine the NRW and water losses for the specific zones in the future. Faulty bulk water meters need to be replaced and new meters need to be installed for the zones with no bulk water meters. The Financial Department needs to continue to provide the billed metered consumption data separately for each of the systems. Sectorization will assist with the following: • Clear indication of how much water is being used per area / zone. • Areas with high NRW and water losses can easily be identified. • Leakage and pressure control can be better managed. • Water demand per area / zone can be determined. Night flows need to be measured for zones with expected high water losses. It is recommended to re-log the night flows every few years to determine if there was an increase in leakage.
Funding and Budget Requirements: The estimated cost for the logging of flows and pressures for zones with expected high water losses is R1 000 000. The logging exercise should be repeated at least every three years. A budget should be allocated to investigate and resolve possible zone interconnections. It is, however, difficult to price such investigations at this stage.
Item 14: Effective Bulk Metering Management System
Recommendation and Strategy: • Municipality needs to continue to read all the bulk water meters at the existing sources, WTWs, reservoirs and pump stations and need to record the readings on at least a monthly basis. • All bulk water meters need to be installed in lockable meter chambers and reservoir sites and water pump stations need to be secured in order to prevent unauthorised access and possible damage to the water meters. • New bulk water meters need to be installed correctly. Ideally a straight pipe section upstream of the meter of at least 5x the meter dia. and 3x the meter dia. downstream of the meter. Strainers need to be installed to protect the meters. These strainer elements must be removable from the top, for ease of cleaning. Gate valves are required for maintenance before and after meters. • Every informal area with unmetered communal services to be supplied with a bulk water meter in order to determine the unbilled metered consumption. All discrete zones are to be supplied with a bulk water meter. The meter readings must be recorded on at least a monthly basis. The readings can be used to quantify both the water supplied and the leakage for a specific area.
Funding and Budget Requirements: Allow an annual budget of approximately R800 000 for the installation of new bulk water meters, the replacement of faulty bulk water meters and to adequately protect existing bulk water meters.
Item 15: Effective Zone Meter Management and Assessment of Night Flows
Recommendation and Strategy: See recommendations under Item 14 “Effective bulk metering management system”.
Recommendation and Strategy: See funding and budget requirements under Item 14 “Effective bulk metering management system”.
Item 16: Pressure Management
Recommendation and Strategy: See recommendations under Item 2 “Pressurised System at all times”.
Funding and Budget Requirements: See funding and budget requirements included under Item 2 “Pressurised System at all times”.
Item 17: As-built Drawings of Bulk and Reticulation Infrastructure
Recommendation and Strategy: Continue with the updating of as-built drawings on an ongoing basis. Continue also with the regular updating of the Water and Sewer Master Plans.
Funding and Budget Requirements: Allow a budget of approximately R2.000 million for the updating of the Water and Sewer Master Plans every three to five years.
Item 18: Schematic Layouts of Water Reticulation Systems
Recommendation and Strategy: Municipality needs to continue to update the schematic layouts on a regular basis, in order to ensure they remain accurate.
Funding and Budget Requirements: None
Item 19: Regulation and Bylaws
Recommendation and Strategy: Allocate sufficient budget and personnel for the enforcement of the Water Services By-law.
Funding and Budget Requirements: To be determined by Municipality.
Item 20: Tariffs
Recommendation and Strategy:

Table C.5.3: Proposed WC/WDM Strategy items for Stellenbosch Municipality
See Section 7.3 under Topic 7 of the Future Demand and Functionality Requirements Report.
Funding and Budget Requirements: Financial study to determine the impact of changing the sanitation tariff structure from a fixed monthly amount, which is based on the size of the erf, to a stepped tariff based on water consumption in the future. Estimated cost of a financial analysis is R400 000.
Item 21: Technical Support to Customers
Recommendation and Strategy: The objective of a Technical Support programme is not limited to assisting consumers in reducing their water demand, but is also to look at wastewater, monitor compliance with by-laws and service conditions and offer general customer support. Once a dedicated person has been allocated to WC/WDM it is recommended to engage with large customers and to identify areas where the municipality can provide assistance. The proposed activities of this programme that can be budgeted for are as follows: • Train existing staff; • Identify and visit large consumers (Checking that large consumers are correctly metered and billed, providing tips on WC/WDM, test the accuracy of all large consumer meters, install data-loggers on all large consumer meters and informing consumers of any sudden change in consumption patterns). • Arrange leakage inspections in public buildings; • Provide assistance and technical know-how for large consumers; and • Introduce compulsory water management plans for large consumers.
Funding and Budget Requirements: No additional funding – pending the appointment of a dedicated person for WC/WDM.
Item 22: Removal of Un-authorised Connections
Recommendation and Strategy: Stellenbosch Municipality should continue to remove un-authorised connections as and when they are detected. See Section 5.1.1.5. of the Future Demand and Functionality Requirements Report.
Funding and Budget Requirements: Estimated annual budget of R500 000 is required to install water meters at any unmetered erven.
Item 23: Community Awareness on WDM
Recommendation and Strategy: See Section 5.1.3 of the Future Demand and Functionality Requirements Report.
Funding and Budget Requirements: It is estimated that R250 000 / year should be allocated for WC/WDM awareness campaigns and activities, material to be included with monthly water bills, placing notices in newspapers, billboards, competitions, etc.
Item 24: Schools Education on WDM
Recommendation and Strategy: See Section 5.1.3.1 of the Future Demand and Functionality Requirements Report.
Funding and Budget Requirements: Allow a budget of approximately R100 000 per year for the implementation of WC/WDM measures at schools (Competitions, Awareness Raising events, etc.). The DWS can also assist the municipality with pamphlets and posters on WC/WDM initiatives.
Item 25: Retrofitting
Recommendation and Strategy: See Sections 5.1.2.1 and 5.1.2.2 of the Future Demand and Functionality Requirements Report.
Funding and Budget Requirements: Leak repair assistance programmes: R1 000 000 per annum for ongoing exercise to repair leakages at indigent properties using in excess of 20 kl/month. WSIG funding from DWS can be requested in this regard. Retrofitting: R1 000 000 for a pilot project in one of the public buildings.

The way forward for Stellenbosch Municipality with the implementation of the proposed WC/WDM Strategy is as follows:

- Develop a detailed methodology for measuring the performance criteria for each of the twenty-five (25) WC/WDM Strategy items;
- Allow for budget required to implement the various measures;
- Monitor the impact of all WC/WDM measures on an on-going basis;
- Develop key benchmarks for all KPIs and categories and assign responsibility; and
- Review WC/WDM Strategy as necessary.

Stellenbosch Municipality needs to ensure that adequate funding is allocated under their Capital and Operational budgets towards the implementation of the WC/WDM Strategy. Key WDM projects to be taken into account during Stellenbosch Municipality's capital budgeting process are as follows:

- Replacement of old water networks (Areas with regular pipe bursts);
- Replacement of old bulk and consumer water meters (Meter replacement programme);
- Scada systems to provide for early warning;
- Installation of zone meters;
- Pressure Management;
- Leak detection; and
- Data loggers to establish MNFs.

The WDM initiatives can deliver excellent return on investment if well implemented and well managed. All external funding that could be utilised by Stellenbosch Municipality for this purpose should be sourced. The O&M Budget allocated to repairs and maintenance should be increased to address amongst other tasks the following:

- Replacement of malfunctioning and old bulk water meters and consumer meters;
- Construction of meter chambers for all bulk water meters not adequately protected against vandalism;
- Cleaning of bulk water meter boxes;
- Buying replacement mechanisms for bulk meters;
- Speedy repair of leaks; and
- Leak detection in areas with higher than expected night flows.

Stellenbosch Municipality has responded to the need to address NRW and water losses within their jurisdiction by implementing various WC/WDM initiatives over the last number of years. The Municipality will also continue to actively implement their WC/WDM Strategy in order to reduce the percentage of NRW and Water Losses even further and improve water use efficiency within the various schemes as follows.

Table C.5.4: Commitment to reduce water losses and water inefficiencies

Distribution System	2023/2024		Committed Future Water Losses	
	NRW	Water Losses	2028	2048
Stellenbosch	30.7%	27.5%	25.0%	10.0%
Franschhoek	28.9%	25.7%	20.0%	10.0%
Dwars River	40.8%	37.6%	30.0%	10.0%
Klapmuts	32.6%	29.4%	25.0%	10.0%

IWA Water Balances: **The Revised Compulsory National Water and Sanitation Standards, as published in Government Gazette No.52814 of 6 June 2025, include the following water and wastewater balance analysis and determination of water losses requirements:**

- A Water Services Institution must install and monitor appropriate water measuring devices or volume controlling devices to measure, detect and account for the volume of water abstracted (surface or groundwater), treated and consumed, as applicable to the technical configuration of infrastructure and the water use authorisation conditions.

- A Water Services Institution must install and monitor appropriate water measuring devices or volume controlling devices to measure, detect and account for the volume of water consumed to all user connections as applicable to the technical configuration of infrastructure.

- A Water Services Institution must install and monitor appropriate measuring devices or volume controlling devices to measure, detect and account for the volume of wastewater received at pump stations and the inlet of the WWTW. A WSA shall record minimum night flows, peak wet weather flow and average dry

weather flow received at the inlet of a WWTW received from all user connections conveyed, as applicable to the technical configuration of infrastructure and the water use authorisation conditions.

- A Water Services Institution must install and monitor appropriate measuring devices or volume controlling devices to measure, detect and account for the volume of wastewater discharged into the water resource as applicable to the technical configuration of infrastructure and the water use authorisation conditions.
- A Water Services Institution must ensure that all measuring devices or meters are properly maintained and in good working order, implementing a programme for meter in-situ verification and / or calibration.
- A Water Services Institution must account for its water balance on a monthly basis as follows:
  - Measure the daily volume abstracted and treated; and
  - Measure the quantity of water provided to each supply zone within its supply area.
- A Water Services Institution must account for its wastewater balance on a monthly basis as follows:
  - daily inflows in Ml/d; and
  - daily outflows in Ml/d.
- A Water Services Institution must determine the quantity of water losses and NRW in accordance with the Guideline for the preparation of an IWA Water Balance to determine NRW and Water Losses.
- The results of the water balance analysis and the records of the quantities of water measured must be reported to the Department's National Regulatory Information Management System on a quarterly basis.

A segregated single variable future water requirement model was developed for the WSDP and is available in electronic format. The future water requirement for each of the schemes is obtained by means of this model. It is used in this analysis to estimate the future water requirement for each of the distribution systems. The model differentiates between the different income levels.

Water services must be provided in a manner that is consistent with the broader goals of integrated water resources management. There is therefore a need for an integrated planning approach between the development of water services and water resources.

The Infrastructure Leakage Index (ILI) can be used by Stellenbosch Municipality to determine an appropriate benchmark for managing the water losses according to their own specific circumstances. This ILI can also be compared with the averages for other towns within South Africa. The annual water losses within the various towns' distribution networks are therefore important indicators of the performance of the water supply and distribution systems.

Stellenbosch Municipality should conduct an assessment of strategic gaps in their IWA water balance data and to record those flows, both water and sewerage, which are strategic in terms of medium to long term planning. A prioritisation of these locations should subsequently follow with budget allocated to improve the availability and accuracy of the IWA water balance data.

Stellenbosch Municipality should continue to update their IWA water balance models on a monthly basis in order to determine the locations of wastage and to enable the Municipality to manage their NRW and Water Losses. The water balance will not directly lead to the reduction of the demand, but is an imperative management tool that will inform the implementation of demand side management initiatives. **All bulk zone water meters need to be recorded on at least a monthly basis (Meters at reservoirs and pump stations). Meters need to be located in lockable meter chambers and the meter chambers need to be cleaned regularly.**

Stellenbosch Municipality needs to focus on the following for the IWA water balances of all the systems.

- The Swift Analysis needs to be used to inspect the following erven:
  - Identified potential unmetered erven need to be inspected and water meters need to be installed if the connections are found to be unmetered.
  - Identified erven with water meters, but with zero demand, need to be inspected and new water meters need to be installed if the existing water meters are found to be faulty.
  - Metered erven with very low consumption (<3kl / month) need to be inspected.
  - Metered erven with a drastic increase or decrease in consumption need to be inspected.
- Continue with the daily and monthly reading and recording of all bulk water meters (Sources, WTWs, WWTW, Reservoirs and Pump Stations).

The following areas need to be focused on for the IWA water balance of the **Stellenbosch system**.

- Install bulk water meters at the Idas Valley and Paradyskloof WTWs to measure the final flow supplied from the plants (System Input Volumes).

The following areas need to be focused on for the IWA water balance of the **Franschhoek system**.

- All raw water supplied from Franschhoek own water sources needs to be metered and recorded on at least a weekly basis.
- Flow meter needs to be installed to measure the final effluent discharged from the Wemmershoek WWTW.

Non-Revenue Water and Water Losses:

Water losses from distribution systems are inevitable and cannot be completely eliminated. Such losses may be due to infrastructure-related problems, administrative related problems or theft and do have financial implications for Stellenbosch Municipality.

The effective implementation of the proposed WC/WDM Strategy will enable Stellenbosch Municipality to reduce their current NRW and Water Losses for the various distribution systems over the next five years.

Stellenbosch: Two additional bulk water meters need to be installed at the Idas Valley and Paradyskloof WTWs to measure the bulk potable water supplied from these two WTWs and to accurately calculate the treatment losses. The NRW and water losses increased drastically during the last financial year. The NRW is just above DWS's NRW target of 30%. The Municipality needs to work towards a NRW target of 25% and a water losses target of 20%. The ILI of 6.59 indicates a poor management system, which requires attention and the Municipality needs to work towards an ILI of between 2 and 4.

Franschhoek: The NRW and Water Losses decreased by approximately 10% during the last financial year, which are excellent. The current NRW is below DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to work towards a NRW target of 25% and a water losses target of 20%. The ILI of 4.71 indicates a poor management system, which requires attention and the Municipality needs to work towards an ILI of between 2 and 4.

Dwars River: The NRW and Water Losses were extremely high for the last two financial years and are above DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to work towards a NRW target of 30% and a water losses target of 25%. The ILI of 7.30 indicates a poor management system, which requires attention and the Municipality needs to work towards an ILI of between 2 and 4.

Klapmuts: The NRW and Water Losses increased drastically during the last financial year. The NRW is above DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to work towards a NRW target of 25% and a water losses target of 20%. The current ILI value of 3.84 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.

The NRW and Water Losses for all the systems combined increased during the last financial year and the NRW is currently above DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to work towards a NRW target of 25% and a water losses target of 20% for all the systems combined.

TOPIC 6: WATER RESOURCES

Table C.6.1: Water Resource

Section	Intervention Required?	% (1)	Solution description as identified by Master Plan	% (2)	Is there an Existing project/activity addressing this problem?	Current Demand Overall Scoring % (3)
Current Water Sources	No	100	Ensure the required authorisations (licences) are in place for all the water resources, as well as the required registrations.	100	Yes	100.0
Additional Sources Available	Yes	100	Continue with investigations of the augmentation of the existing bulk water sources for the various towns.	100	Partially	85.7
Monitoring	No	100	Ensure that the key groundwater management functions are implemented. The monitoring data must be analysed by a geohydrologist on an annual basis in order to assess the effects of abstraction and recharge on the boreholes and aquifer. Groundwater monitoring must continue on at least a monthly basis. Monthly monitoring of water levels, water chemistry and abstraction must be conducted by the Municipal staff. Stellenbosch Municipality needs to ensure that all electronic data (i.e. dataloggers) are downloaded once quarterly by a geohydrologist. Monitoring data must be annually reviewed by a geohydrologist.	100	Partially	78.6
Water Quality	No	100	-	100	-	100.0
Operation	No	100	The current approach adopted by Stellenbosch Municipality in which the various parameters at all industrial consumers are monitored should be continued, as well as volumetric monitoring at the larger users. Adaptation of the current procedures must be undertaken in accordance with any changes to the wastewater discharge criteria set by DWS. It will also be necessary to consider limits above which volumetric monitoring will be necessary at new industries and existing smaller industries, where expansion is likely to take place.	100	Yes	100.0

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem?; Does this current listed project/activity address the problem totally?; Project/Activity approved by Council as part of WSDP database?; Approved by Council in project activity database and part of 5yr IDP cycle projects?; Project/Activity listed in 3yr MTEF Cycle?

Metering of all water supplied is one of the most significant steps in order to properly plan and manage water sources. Without metering no management is possible. Stellenbosch Municipality needs to continue with the monthly reading of all their existing bulk water meters, which is a valuable source of information.

The uncertainty in projected water-related climate change impacts is one of the biggest challenges facing water managers. The managers must understand how this uncertainty influences the management decisions to be made and that decisions must be appropriate to a possible range of scenarios. A critical tool in this regard is adaptive management, in which water resource systems are carefully monitored and management actions are tailored and revised in relation to the measured changes on the ground. One cannot predict climate change impacts with any certainty, and the recognition of this uncertainty must be built into all climate change response strategies.

Future water requirement projection models were developed for each of the towns within Stellenbosch Municipality's Management Area. The future water requirement projection models include the future projections up to 2048 and were calibrated by using the historical IWA Water Balance data. The percentage of water losses was determined for each of the distribution systems and growth in future water requirement was based on agreed population and growth figures.

The projected future water requirements and the yield surplus or shortfalls, based on the WSDP model, are indicated in the table below for each of the systems.

Table C.6.2: Projected future water requirements of towns						
Distribution System	**Projection**	**PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)**				
		2028	**2033**	**2038**	**2043**	**2048**
Stellenbosch	3.0% Annual Growth	11 662.859	13 520.451	15 673.908	18 170.355	21 064.421
	5.0% Annual Growth	12 840.012	16 387.470	20 915.026	26 693.462	34 068.373
	WSDP Model	11 431.870	12 931.552	14 723.400	16 866.630	19 433.789
	Allocation surplus (+) / shortfall (-)	**+4 821.899**	**+3 322.217**	**+1 530.369**	**-612.861**	**-3 180.020**
Franschhoek	3.0% Annual Growth	1 464.347	1 697.580	1 967.961	2 281.406	2 644.774
	5.0% Annual Growth	1 612.147	2 057.553	2 626.017	3 351.537	4 277.505
	WSDP Model	1 430.378	1 694.049	2 017.789	2 416.034	2 906.795
	Allocation surplus (+) / shortfall (-)	**+1 360.750**	**+1 097.079**	**+773.339**	**+375.094**	**-115.667**
Dwars River	3.0% Annual Growth	981.483	1 137.808	1 319.031	1 529.119	1 772.668
	5.0% Annual Growth	1 080.546	1 379.081	1 760.095	2 246.377	2 867.010
	WSDP Model	850.013	896.870	952.160	1 016.521	1 090.784
	Allocation surplus (+) / shortfall (-)	**+636.003**	**+589.146**	**+533.856**	**+469.495**	**+395.232**
Klapmuts	3.0% Annual Growth	738.387	855.993	992.330	1 150.383	1 333.609
	5.0% Annual Growth	812.914	1 037.507	1 324.150	1 689.989	2 156.902
	WSDP Model	755.506	913.338	1 114.493	1 371.357	1 700.001
	Allocation surplus (+) / shortfall (-)	**+367.566**	**+209.734**	**+8.579**	**-248.285**	**-576.929**

The table below gives an overview of the years in which the annual water requirements are likely to exceed the total allocations from the various resources.

Table C.6.3: Years in which the annual water requirements are likely to exceed the total allocations or licence volumes for the various resources				
Distribution System	**Total Allocation / Licence Volume (Ml/a)**	**Annual Growth on 2023/2024 Demand (3% growth)**	**Annual Growth on 2023/2024 Demand (5% growth)**	**WSDP Projection Model**
Stellenbosch	16 253.769 *	2038 (3.0%)	2032 (5.0%)	2041
Franschhoek	2 791.128 *	> 2048 (3.0%)	2039 (5.0%)	2046
Dwars River	1 486.016 *	2041 (3.0%)	2034 (5.0%)	> 2048
Klapmuts	1 123.072 *	2041 (3.0%)	2034 (5.0%)	2038

Note: * Agreement volume of 6 848 000 m³/a split proportional according to the 23/24 System Input Volume from the CCT for the various areas.

A Bulk Water Resources: Drought Intervention Projects Study was completed in June 2019 for Stellenbosch Municipality. The Study included the following recommended future resources for Stellenbosch Municipality.

- Groundwater; ***Licence was received for 2.04 million m³/a, 2019.***
- Wastewater reclamation;
- Increase existing allocations from the CCT (This can only be done after the CCT has increased the reliability of their existing water resources);
- Increase existing allocation from the DWS (from the Theewaterskloof tunnel); ***Agreement was signed with DWS for BRVAS Project for a volume of 1.64 million m³/a, 2023.*** and
- Rainwater harvesting.

Groundwater: The potential future supply from groundwater resources for Stellenbosch Municipality was calculated at 10.042 Ml/d. The future groundwater contributions for each of the water distribution systems were indicated as follows.

- Stellenbosch system: 4.378 Ml/d
- Dwars River system: 1.001 Ml/d
- Franschhoek system: 2.887 Ml/d

- Klapmuts system: 1.296 Ml/d
- Meerlust system: 0.065 Ml/d
- Koelenhof system: 0.415 Ml/d

Wastewater reclamation: It was recommended that the feasibility of reclamation of wastewater as a future bulk water resource be investigated at the Klapmuts, Dwars River, Wemmershoek and the Stellenbosch WWTWs.

CCT Allocation (Short Term): The current allocation of bulk water to Stellenbosch Municipality was indicated at 6 848 Ml/a. It was recommended that the allocation should be increased in the future to supply the future water demand to Stellenbosch Municipality as calculated in the water master plan (after the groundwater and wastewater reclamation projects for Stellenbosch Municipality were implemented).

- Stellenbosch main system: In the Water Master Plan it was proposed that bulk water supply to Stellenbosch town is augmented in the future through a new bulk supply system from the CCT Blackheath WTW to the existing Papegaaiberg reservoir in the Stellenbosch system. This will give Stellenbosch town more redundancy in their bulk supply system and the Stellenbosch system will be able to be supplied with bulk water from three separate sources, i.e. the Idas Valley WTW, the Paradyskloof WTW and the CCT Blackheath WTW. This bulk system will also reinforce the Polkadraai system and enable the Stellenbosch Municipality to develop the Vlottenburg node.

  The Water Master Plan proposed that this new bulk system should have the capacity to supply a peak demand of 5.0 Ml/d of water to the Stellenbosch system. The required annual allocation from the CCT to the Stellenbosch system was calculated at 1 140 Ml/a.

- Other urban and rural systems: The minimum required increase in allocation from the CCT to the other urban and rural systems (Dwars River system, Franschhoek system, Klapmuts system and rural supply areas in Stellenbosch Municipality) was calculated at an additional 502 Ml/a.

Paradyskloof Tunnel Allocation (Short Term): The minimum required increase in allocation from the DWS to the Stellenbosch system, in order to supply the future water demand, was calculated at an additional 627 Ml/a.

Proposed increase in allocation from the CCT and the WCWSS (Long Term): Over the long term it could be more cost effective for Stellenbosch Municipality to utilize the groundwater and the reclamation of wastewater resources during drought periods when surface water is under stress, and utilize the available surface water from the WCWSS on a more permanent basis (especially during times of high rainfall when there is excess water available from surface water resources).

It was therefore proposed that the allocations from the CCT and the WCWSS are increased to allow for a scenario where the available water from groundwater and wastewater reclamation are only utilize during periods when the surface water is under stress (drought conditions).

The proposed increases in the allocations from the CCT and the WCWSS were calculated as follows:

CCT Allocation:

Future demand	=	11 747 Ml/a (Excluding Stellenbosch town)
Minus existing CCT allocations	=	6 848 Ml/a
Minus existing Perdekloof resource	=	901 Ml/a
Minus Pniel surface water resources	=	78 Ml/a (Proposed future project)
Plus Blackheath allocation	=	1 140 Ml/a (Required for Stellenbosch town)
Total	**=**	**5 060 Ml/a**

WCWSS Allocation:

Future demand	=	15 706 Ml/a (For Stellenbosch town)
Minus Jonkershoek resource	=	7 224 Ml/a
Minus existing WCWSS allocation	=	3 000 Ml/a
Minus Blackheath CCT allocation	=	1 140 Ml/a (Proposed at CCT Blackheath WTW)
Total	**=**	**4 342 Ml/a**

It was proposed that the existing WCWSS allocation of 3 0000 Ml/a is increased in two phases (First phase of 2 000 Ml/a and second phase of 2 350 Ml/a) to a total allocation of 7 350 Ml/a.

The DWS is currently busy with the updating of the All Towns Reconciliation Strategies for the Western Cape. The table below gives an overview of the recommended potential future water resources as included in the 2015 All Towns Reconciliation Strategies for the towns in Stellenbosch Municipality.

Table C.6.4: Potential future water resources for the various towns (Summary of DWS's All Towns Reconciliation Strategies)

Distribution System	Recommended Summary Options
Stellenbosch	**There is not adequate supply for the current water sources to cater for future medium and longer-term water requirements. The following sources have been identified as potential sources to augment the current water supply:** • Full implementation of the WC/WDM measures to reduce non-revenue water and water losses. • Water re-use. • Reallocation of "lei"- water. • Allocation of water from the Berg River Dam. • A share in future schemes for the WCWSS. • Rainwater harvesting. • Groundwater development.
Franschhoek	**The current water sources have adequate water to cater for future water requirements in the medium and longer-term. The following sources have been identified as potential sources to augment the current water supply:** • Full implementation of the Water Conservation and Water Demand Management Strategy. • Re-use of water. • A further allocation from the Western Cape Water Supply System. • Groundwater development. • Rainwater harvesting.
Dwars River (Pniel, Kylemore & Groot-Drakenstein)	**The following sources are identified as potential sources to augment the water supply (In order of priority and implementation sequence):** • Full implementation of the Water Conservation and Water Demand Management Strategy. • Groundwater development. • Re-use water. • A further allocation from the Wemmershoek Dam (WCWSS). • A water allocation from the Berg River Dam (WCWSS). • Integration of the existing local sources into the bulk water supply. • A water allocation from the Tunnel System (WCWSS). • Rainwater harvesting.
Klapmuts	**Supply from the current water sources is not adequate to cater for the current water requirements and is currently hampering development in the town. The following sources have been identified as potential sources to augment the current water supply:** • Full implementation of the WC/WDM measures to reduce non-revenue water and water losses. • Groundwater development for the new anticipated developments. • Water re-use. • A further allocation from the Wemmershoek Dam.

Volumes are registered on the DWS's WARMS for the various resources. A Service Level Agreement is also in place with the CCT for the provision of bulk potable water to the various areas. A registered water use however does not guarantee that the water use is accurate or lawful. Validation and verification of the accuracy and lawfulness of the water use is needed to qualify as an Existing Lawful Use. It is important for the municipality to confirm the correct registration volumes and existing lawful use volumes for all their sources. This information, with the safe yields of the surface and groundwater sources, is critical to accurately determine which sources need to be augmented for the different schemes. Stellenbosch Municipality further needs to continue to ensure that all the individual sources are metered and that the abstraction volumes are recorded on at least a monthly basis.

Water Quality: The minimum monitoring requirements of the SANS 241-2:2015 (Table 1: Minimum monitoring for prescribed process risk indicators) for the various WTWs and distribution systems, are summarised below.

Table C.6.5: Minimum nonitoring frequency for process risk indicators (SANS241-2:2015: Table 1)			
Determinand	**Raw Water**	**Final Water**	**Distribution System**
Conductivity or total dissolved solids	Daily	Daily	Not applicable
pH value	Daily	Once per shift [a]	Fortnightly
Turbidity	Daily	Once per shift [a]	Fortnightly
Disinfectant residuals	Not applicable	Once per shift [a]	Fortnightly
E.Coli (or faecal coliforms) [b]	Not applicable	Weekly	Fortnightly but dependent on population served [d]
Heterotrophic plate count [c]	Not applicable	Weekly	Fortnightly
Treatment chemicals [d]	Not applicable	Monthly	Not applicable
a: A shift is defined as an eight-hour work period.			
b: If non-compliant with the numerical limits specified in SANS 241-1, implement corrective action and immediate follow-up sampling at an increased sampling frequency.			
c: If non-compliant with the numerical limits specified in SANS 241-1, implement corrective action and follow-up sampling. d: Includes all risk determinands that are added or formed as a result of the use of treatment chemicals (for example aluminium, iron and chlorine). If non-compliant with the numerical limits specified in SANS 241-1 in the final water, the distribution system monitoring frequencies of Table 3 in SANS241-2:2015 apply.			

The current and proposed operational and compliance water quality sampling programmes of Stellenbosch Municipality for the various water distribution systems are summarised in the table below.

Table C.6.6: Current and proposed water quality parameters sampled by Stellenbosch Municipality: Routine monitoring of Process Indicators				
Current / Proposed	**Sampling Point**	**Frequency of sampling**	**Samples taken by**	**Current and Proposed Parameters to be sampled**
Stellenbosch / Faure / Blackheath				
Idas Valley WTW				
Current	Raw Water Idas Valley Dam	Monthly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron
		Annually	External Lab	Full SANS
	Raw Water Jonkershoek Weir	Monthly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron
		Annually	External Lab	Full SANS
	Raw Water WTW: Towers 1-3	Six Hourly	PC	Colour
		Daily	PC	pH, Turbidity, Colour
	Filters 1-17 Outlet	Daily	PC	pH, Turbidity, Colour
	Lime Stabiliser Inlet: Stab 1-3	Daily	PC	pH, Turbidity, Colour
	Lime Stabiliser Outlet: Stab 1-3	Daily	PC	pH, Turbidity, Colour
	Final Water	Daily (06:00)	In-Line	pH, Turbidity
		Two Hourly	PC	Free Chlorine
		Six Hourly	PC	Colour
Proposed	Raw Water Idas Valley Dam	Monthly	External Lab	As currently implemented
		Annually	External Lab	As currently implemented
	Raw Water Jonkershoek Weir	Monthly	External Lab	As currently implemented
		Annually	External Lab	As currently implemented
	Raw Water WTW	Six Hourly, Daily	PC	As currently implemented
	Filters	Daily	PC	As currently implemented
	Lime Stabiliser	Daily	PC	As currently implemented
	Final Water	Two Hourly, Six Hourly, Daily	PC	As currently implemented
Paradyskloof WTW				
Current	Raw Water WTW	Hourly	Internal Lab	pH (In-line), EC
		Two Hourly	Internal Lab	Turbidity (In-line), Colour
		Monthly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron

Table C.6.6: Current and proposed water quality parameters sampled by Stellenbosch Municipality: Routine monitoring of Process Indicators				
Current / Proposed	**Sampling Point**	**Frequency of sampling**	**Samples taken by**	**Current and Proposed Parameters to be sampled**
		Annually	External Lab	Full SANS
	Coagulation	Hourly	Internal Lab	pH (In-line)
		Two Hourly	Internal Lab	Turbidity, Colour
	Clarifier Overflow	Two Hourly	Internal Lab	Turbidity, Colour
		Twelve Hourly	Internal Lab	Al^{3+}
	Filters 1-8	Four Hourly	Internal Lab	Turbidity (In-line), Colour
	Final Water Filters 1-4	Hourly	Internal Lab	Turbidity (In-line), Colour, pH (In-line), Free Chlorine
		Six Hourly	Internal Lab	Total Chlorine, Al^{3+}
	Final Water Filters 5-8	Hourly	Internal Lab	Turbidity (In-line), Colour, pH (In-line), Free Chlorine
		Six Hourly	Internal Lab	Total Chlorine, Al^{3+}
Proposed	Raw Water WTW	Hourly and Two Hourly	Internal Lab	As currently implemented
		Monthly	External Lab	As currently implemented
		Annually	External Lab	As currently implemented
	Coagulation	Hourly and Two Hourly	Internal Lab	As currently implemented
	Clarifier Overflow	Two Hourly, Twelve Hourly	Internal Lab	As currently implemented
	Filters 1-8	Four Hourly	Internal Lab	As currently implemented
	Final Water Filters 1-8	Hourly, Six Hourly	Internal Lab	As currently implemented
Distribution Systems				
Current	Stellenbosch	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
	Faure	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
	Blackheath	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
Proposed	Stellenbosch	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
		Annually	External Lab	As currently implemented
	Faure	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
		Annually	External Lab	As currently implemented
	Blackheath	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
		Annually	External Lab	As currently implemented
Klapmuts Distribution System				
Current	Distribution System	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
Proposed	Distribution System	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
Dwars River / Wemmershoek Distribution System				
Current	Distribution System	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
Proposed	Distribution System	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
		Annually	External Lab	As currently implemented

Table C.6.6: Current and proposed water quality parameters sampled by Stellenbosch Municipality: Routine monitoring of Process Indicators				
Current / Proposed	**Sampling Point**	**Frequency of sampling**	**Samples taken by**	**Current and Proposed Parameters to be sampled**
Franschhoek WTW and Distribution System				
Current	Intake Franschhoek Pass (Raw Water)	Monthly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
	Franschhoek WTW Final Water	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
	Distribution System	Bi-Weekly	External Lab	Sodium, Calcium, Magnesium, Sulphate, Alkalinity, EC, pH, Turbidity, Colour, Aluminium, Iron, HPC, Total Coliforms, E.Coli
		Annually	External Lab	Full SANS
Proposed	Intake Franschhoek Pass	Monthly	External Lab	As currently implemented
		Annually	External Lab	As currently implemented
	Franschhoek WTW Raw Water	Daily	PC	pH, EC, Turbidity
	Franschhoek WTW Final Water	Once per Shift	PC	pH, Turbidity, Free Chlorine
		Daily	PC	EC
		Bi-Weekly	External Lab	As currently implemented
		Annually	External Lab	As currently implemented
	Distribution System	Bi-Weekly	External Lab	As currently implemented, but Disinfectant residuals also to be sampled.
		Annually	External Lab	As currently implemented

Effluent Quality: Comprehensive Operational and Compliance Sampling programmes of the wastewater at the WWTWs are implemented by Stellenbosch Municipality. The Compliance Monitoring Programme includes the monthly sampling of the final effluent at the various WWTWs and analyses of all the main quality criteria. Results of the samples taken are loaded onto DWS's IRIS. Monthly monitoring and inspection reports are also compiled by the external Service Provider for all the WWTWs. The Municipality takes immediate action to rectify problems and / or improve operational aspects as and when may be required. For serious failures, an Incident Response Management Protocol is followed to ensure rapid remedying of the problems, which includes notification to the DWS as may be necessary.

Operational Alert Levels are also in place for the various 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, then certain actions are taken by the Process Controllers to bring the operational parameters back to within the target ranges.

The DWS also followed a risk-based regulatory approach that provides early warning signs of WWTWs that contain a certain measure of risk, and in directing the type of intervention required to manage and mitigate the identified risk and move to a more favourable position of compliance and ultimately, excellence. The current Cumulative Risk Ratios (CRR = A*B+C+D) of the WWTWs in Stellenbosch Municipality's Management Area, as calculated by the DWS during 2011, 2013, 2022 and 2023, are indicated in the table below.

Table C.6.7: Cumulative Risk Ratio of the various WWTWs (% Deviation = Actual CRR / Max CRR)				
WWTW	**2011**	**2013**	**2022**	**2023**
Stellenbosch	74.1%	81.8%	55.6%	86.4%
Wemmershoek	58.8%	76.5%	63.3%	82.4%
Pniel	64.7%	82.4%	58.8%	82.4%
Klapmuts	58.8%	94.1%	41.2%	70.6%
Raithby	47.1%	76.5%	64.7%	76.5%

Note: Low < 50%, Medium 50% - < 70%, High 70% - < 90%, Critical 90% - 100%

Industrial Consumers: Stellenbosch Municipality can promote WDM activities at the wet industrial consumers in order for them to potentially lower their current water demand by means of improved practices or reuse of waste water. The revenue could potentially decrease as a result of re-use practices. It is suggested that a detailed financial analysis should be conducted as part of the investigation into wastewater re-use.

Stellenbosch Municipality can encourage the large users to implement suggested re-use practices by means of incentives, informative billing to communicate monthly water consumption and monitoring and communicating actual savings achieved.

All industries formally apply for the discharge of industrial effluent into the Municipality's sewer system. The quality and volume of industrial effluent discharged into the sewer system are monitored by the Municipality, in order to determine whether the quality comply with the standards and criteria. It is also necessary to consider limits above which volumetric monitoring will be necessary at new industries and existing smaller industries, where expansion is likely to take place. The Municipality needs to continue to ensure that all industrial consumers apply for discharge permits and they must supply and maintain a flow meter measuring the volume of water that is discharged into the sewer system. It is also recommended that the accounts generated by the Municipality include for each cycle a summary of the COD and flow results to enable industries to keep a record and look at ways of improving where possible.

Stellenbosch Municipality is committed to ensure that no industrial effluent is discharged into the sewer system unless it complies with the required standards and criteria.

TOPIC 7: FINANCIAL

Stellenbosch Municipality's 2023/2024 Annual Report list the following Financial Viability Challenges:

- Financial Viability: The traceability of all debtors poses a challenge to the debt collection process. Low economic growth, an increase in unemployment, and above-inflation increases in the cost of water impact the affordability of municipal accounts.
- Revenue Leakage: An integrated revenue enhancement approach was followed to combat revenue leakages.

Stellenbosch Municipality's 2025-2027 IDP, Draft 3rd Review March 2025, list the following key Financial Strategies:

- Financial viability and sustainability through long-term financial planning
  - Long-term financial planning tool, effective implementation and monitoring.
- Clean Audit
  - Audit Action Plan
  - Annual Financial Statement compilation standard operating procedure
  - Monthly Reconciliations
  - Training Sessions
  - Participation in Forums
- Staffing
  - Revised Organogram
  - Fill critical vacancies
- Capital Expenditure
  - Implementation of Project Management System including in-year reporting
- Revenue Enhancement Strategy
  - Implementation of Revenue Enhancement Strategy.
  - Roll-out of WMD and Pre-payment Water Meters.
  - Data cleansing

- Validity of registered indigent households
- Billing System Enhancement
  - Web-based billing system
  - Review of Municipal Account Layout
  - Investigate payment methods.
- Debt Management
  - Debt Review Committee
  - Quarterly Report on Debt and Possible Debt to be written off.

The following Financial Policies are in place:

- Grant-In-Aid Policy
- Indigent Policy
- Asset Management Policy
- Travel and Subsistence Policy
- Tariff Policy
- Rates Policy
- Non-Financial Asset Management Policy
- Petty Cash Policy
- Irrecoverable Debt Policy
- Credit Control and Debt Collection Policy
- Cash Management and Investment Policy
- Budget Implementation and Monitoring Policy
- Borrowing Policy
- Acting Allowance Policy
- Accounting Policy
- Development Charges Policy
- Special Ratings Area Policy

Expenditure:

Operational: The table below gives a summary of the future planned expenditure by type for Stellenbosch Municipality, as included in the 2024/2025 Budget.

Table C.7.1: Expenditure items by type, as included in the 2024/2025 Budget

Expenditure Items	% of total 2023/2024 Expenditure	2023/2024 Pre-audit Outcome	2024/2025	2025/2026	2026/2027
Employee related costs	31.5%	R393 880 000	R656 455 000	R671 809 000	R713 730 000
Remuneration of Councillors	1.2%	R15 351 000	R23 422 000	R24 828 000	R26 317 000
Bulk Purchases – Electricity	29.5%	R369 607 000	R714 397 000	R805 126 000	R907 377 000
Inventory Consumed	5.0%	R62 772 000	R112 641 000	R119 350 000	R126 520 000
Debt Impairment	0.0%	-	R74 711 000	R78 259 000	R81 975 000
Depreciation and amortisation	10.1%	R126 325 000	R249 408 000	R259 395 000	R269 782 000
Interest	2.0%	R25 147 000	R69 589 000	R72 873 000	R77 164 000
Contracted Services	12.2%	R152 988 000	R297 434 000	R322 301 000	R372 815 000
Transfers and Subsidies	1.1%	R13 759 000	R20 739 000	R21 493 000	R22 276 000
Irrecoverable debts written off	0.0%	R42 000	R121 383 000	R126 845 000	R132 553 000
Operational costs	7.3%	R91 057 000	R169 885 000	R176 959 000	R182 325 000
Losses on disposal of Assets	0.0%	-	-	-	-
Other Losses	0.0%	R3 000	-	-	-
Total	**100.0%**	**R1 250 931 000**	**R2 510 064 000**	**R2 679 238 000**	**R2 912 834 000**

Source: 2024/2025 Medium Term Revenue and Expenditure Framework for Stellenbosch Municipality: Table A4 – Budgeted Financial Performance (Revenue and Expenditure)

Maintenance activities have been increasingly focused on reactive maintenance as a result of the progressive deterioration and failure of old infrastructure. Consequently, there has been dilution of preventative maintenance of other infrastructure. Expenditure on repairs and maintenance does not keep track with the increase in asset values as well as the ageing of the infrastructure.

An Integrated Maintenance Plan is necessary that optimises maintenance activities, appropriate to its specific needs and the local environment, and identifies the systems and resources required to support this. A regime of planned preventative maintenance should be established for all infrastructure assets classified as critical and important in the Asset Register. Consideration should be given to the establishment of a maintenance management system to enable Stellenbosch Municipality to better manage its risks, and more effectively plan and prioritise the wave of renewals that are going to be required over the next 20 years.

It is important to note that the maintenance budget requirements are going to increase substantially over the next twenty years in real terms, in line with the envisaged pace of development, and the upgrading of the treatment works. It is estimated that the budget requirements will double over this period.

The recommendations for Stellenbosch Municipality, with regard to their Operational Budgets, are as follows:

- Develop an AMP, which will indicate the real replacement values and service lives of the assets and the funds required to provide for adequate operation and maintenance of the infrastructure. Current gaps include unrealistically low depreciation charges, which have to be rectified and ring-fenced into an asset replacement fund, as well as additional budget requirements above inflation for infrastructure development.

- The new depreciation charges will have to form part of the operating budget and subsequent tariffs, linked to a ring-fenced asset replacement fund.

- It is critical for Stellenbosch Municipality to ensure that sufficient funding is allocated towards an asset replacement fund, in order to ensure adequate rehabilitation and maintenance of the existing water and sewerage infrastructure.

- Water services operational surpluses have to be allocated to essential water services requirements in the future.

- Stellenbosch Municipality needs to continue with the strict enforcement of their Credit Control and Debt Collection Policy and By-law.

Capital: The future estimated capital expenditure per standard classification are summarised in the table below.

Table C.7.2: Estimated capital expenditure per standard classification of Stellenbosch Municipality's future capital budgets

Capital Expenditure: Functional Classification	2023/2024 Pre-audit outcome	2024/2025	2025/2026	2026/2027
Executive and Council	R35 000	R40 000	R40 000	R50 000
Finance and administration	R16 338 000	R57 820 000	R52 370 000	R13 950 000
Internal Audit	-	-	-	-
Community and social services	R2 407 000	R39 069 000	R44 481 000	R8 750 000
Sport and recreation	R2 972 000	R13 300 000	R6 900 000	R7 350 000
Public safety	R307 000	R10 943 000	R12 500 000	R5 000 000
Housing	R1 232 000	R18 119 000	R37 110 000	R43 640 000
Health	-	-	-	-
Planning and Development	R7 465 000	R15 050 000	R9 785 000	R 9 915 000
Road transport	R22 955 000	R85 953 000	R95 150 000	R66 106 000
Environmental protection	R916 000	R3 150 000	R250 000	R200 000
Energy Sources	R48 243 000	R90 116 000	R131 256 000	R196 219 000
Water management	R37 436 000	R156 882 000	R86 450 000	R73 950 000
Waste water management	R7 000 000	R77 504 000	R67 300 000	R93 900 000
Waste management	R45 737 000	R44 400 000	R26 550 000	R25 750 000
Other	-	-	-	-
Total Capital Expenditure	**R193 043 000**	**R612 346 000**	**R570 142 000**	**R544 780 000**

Source: 2024/2025 Medium Term Revenue and Expenditure Framework for Stellenbosch Municipality: Table A5 – Capital Expenditure by Vote, Functional and Funding

The Opening Cost of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL < 5 yrs) is R115.251 million. The asset renewal needs for the **water infrastructure assets** over the next 10 years is R21.290 million per year. The reinvestment required is R96.455 million in the first 5 years and R116.446 million in the second 5-year period. The asset renewal needs for the **sewerage infrastructure assets** over the next 10 years is R5.663 million per year. The reinvestment required is R18.795 million in the first 5 years and R37.837 million in the second 5-year period. These values are based on the Opening Cost of the water and sewerage infrastructure currently included in the Asset Register. Table C.4.2 however indicates the required annual budget for the replacement of the old water and sewerage infrastructure and the required annual O&M budget, which is based on the CRC of the water and sewerage infrastructure included in the WSDP.

The extent to which each type of water and sewerage asset portfolio has been consumed are summarised under Topic 3 of this Executive Summary. The infrastructure components with low percentage figures (% Book Value/Opening Cost) need dedicated renewals programmes targeting these assets. If this is not done, there is the risk that the on-going deterioration will escalate to uncontrolled proportions, with considerable impact on consumers, the economy of the area and the service levels that can be provided in Stellenbosch Municipality.

The recommendations for Stellenbosch Municipality, with regard to their Capital Funding, are as follows:

- Take the recommended projects, as identified through the Water and Sewer Master Plans and the WSDP, into account during the planning and prioritization process for new infrastructure. Prioritize from the desired list, those items which can be implemented from available funding in the particular financial year.

- Undertake revised master planning at least every three to five years and use the Master Plans to list the desired infrastructure development requirements and reflect these in the IDP.

- Assign a high priority to the implementation of the WC/WDM Strategy in order to postpone additional capital investment for as long as possible, both from the water availability perspective as well as from the treatment of increased effluent volumes. The costs of physical water loss, the capital requirements for new water resources infrastructure, and the constraints of poor water availability on water dependent economic growth means that WC/WDM is a critical management priority for stretching the financial resources of the Municipality. WC/WDM is almost always a more cost-effective solution than the implementation of new infrastructure, and no new infrastructure should be developed until unauthorized water has been reduced to manageable volumes.

- To adopt appropriate technology solutions for the water and sewerage infrastructure challenges. Techniques such as value engineering should also be adopted to ensure that investments in infrastructure and other solutions are cost effective over the full life-cycle and designed to be fit for purpose.

- To ensure adequate funding for the full lifecycle cost of the new water and sewerage infrastructure, which will include funds for the operation and maintenance of the infrastructure and regular refurbishment.

- Balance land-use and development planning (SDFs) in accordance with the availability of water and the capacity of WTWs and WWTWs that are in place or that will be implemented.

- To focus strongly on revenue collection, in order to improve the Municipality's own funding sources, over and above the Grants received from National and Provincial Government. The Municipality also needs to actively implement their Credit Control and Debt Collection Policy in order to minimize the percentage of non-payment for municipal services.

- To identify all possible sources of external funding over the next three years to assist Stellenbosch Municipality to address the bulk infrastructure backlogs that exist in the various towns as indicated in the tables under Topic 3.

- Develop IAMPs for all water and sewerage infrastructure, which will indicate the real replacement values, the service life of the assets and the funds required to provide for adequate asset replacement. The renewals burden is set to increase sharply over the next 20 years and it is therefore important for Stellenbosch Municipality to commit to a substantial and sustained programme of capital renewal works. The current level of expenditure on capital renewal is inadequate and there is a critical need for Council to commit to increase the budget for the maintenance and rehabilitation of the existing infrastructure substantially.

Income:

Operational: The table below gives a summary of the future planned revenue by source for Stellenbosch Municipality, as included in the 2024/2025 Budget.

Table C.7.3: Revenue items by source, as included in the 2024/2025 Budget					
Revenue Item	**% of total 2023/2024 Expenditure**	**2023/2024 Pre-audit Outcome**	**2024/2025**	**2025/2026**	**2026/2027**
Service Charges – Electricity	37.2%	R646 395 000	R1 029 704 000	R1 167 018 000	R1 322 068 000
Service Charges – Water	8.3%	R144 132 000	R182 522 000	R190 924 000	R199 712 000
Service Charges - Waste Water Management	4.9%	R85 877 000	R122 772 000	R132 593 000	R143 201 000
Service Charges – Waste Management	4.3%	R74 240 000	R115 082 000	R120 375 000	R125 913 000
Sale of Goods and Rendering of Services	1.0%	R17 608 000	R24 654 000	R25 775 000	R26 953 000
Agency services	0.1%	R1 572 000	R3 794 000	R3 965 000	R4 144 000
Interest	0.0%	-	-	-	-
Interest earned from Receivables	0.9%	R15 900 000	R18 173 000	R18 990 000	R19 845 000
Interest earned from Current and Non-Current Assets	2.2%	R38 378 000	R44 232 000	R44 674 000	R45 121 000
Dividends	0.0%	-	-	-	-
Rent on Land	0.0%	-	-	-	-
Rental from Fixed Assets	0.5%	R8 472 000	R13 649 000	R14 272 000	R14 924 000
Licence and Permits	0.3%	R4 780 000	R8 386 000	R8 763 000	R9 157 000
Operational Revenue	1.9%	R32 736 000	R47 692 000	R46 806 000	R48 914 000
Property Rates	21.9%	R381 011 000	R509 116 000	R527 643 000	R557 117 000
Surcharge and Taxes	0.0%	-	-	-	-
Fines, penalties and forfeits	5.0%	R86 380 000	R163 380 000	R170 694 000	R178 337 000
Licenses and permits	0.0%	-	-	-	-
Transfer and subsidies – Operational	11.3%	R195 880 000	R245 638 000	R299 530 000	R356 393 000
Interest	0.2%	R3 161 000	R3 359 000	R3 426 000	R3 587 000
Other gains	0.0%	R3 000	-	-	-
Total	100.0%	**R1 736 525 000**	**R2 532 153 000**	**R2 775 448 000**	**R3 055 386 000**

Source: 2024/2025 Medium Term Revenue and Expenditure Framework for Stellenbosch Municipality: Table A4 – Budgeted Financial Performance (Revenue and Expenditure)

Capital: It is important for Stellenbosch Municipality to manage their charges for water and sanitation services and the control of consumer payments effectively, in order to ensure that adequate income is generated to fund their water and sanitation capital projects. The future funding sources of Stellenbosch Municipality's total capital budget are summarised in the table below.

Table C.7.4: Sources of funding for the future capital budgets of Stellenbosch Municipality				
Capital Funding Source	**2023/2024 Pre-audit**	**2024/2025**	**2025/2026**	**2026/2027**
National Government	R43 014 000	R72 056 000	R56 821 000	R59 216 000
Provincial Government	R6 204 000	R27 067 000	R40 656 000	R46 656 000
Transfers and Subsidies	R4 874 000	R38 428 000	R33 500 000	R12 200 000
Borrowing	R76 655 000	R200 000 000	R200 000 000	R200 000 000
Internally generated funds	R62 295 000	R274 795 000	R239 165 000	R226 708 000
Total Capital Funding	**R193 042 000**	**R612 346 000**	**R570 142 000**	**R544 780 000**

Source: 2024/2025 Medium Term Revenue and Expenditure Framework for Stellenbosch Municipality: Table A5 - Capital Expenditure by Vote, Functional and Funding

Tariff and Charges: The state of the economy has an adverse effect on the consumers. As a result municipalities' revenues and cash flows are expected to remain under pressure. Furthermore municipalities should carefully consider affordability of tariff increases, especially as it relates to domestic consumers while considering the level of services versus the associated cost.

Water tariffs should always be cost reflective and the water tariff structure must therefore ensure that:

- Water tariffs are fully cost-reflective, including the cost of maintenance and renewal of purification plants, water networks and the cost associated with reticulation expansion;
- Water tariffs are structured to protect basic levels of service and ensure the provision of free water to the poorest of the poor (indigent); and
- Water tariffs are designed to encourage efficient and sustainable consumption.

Stellenbosch Municipality's current seven block step water tariff structure for residential consumers adequately promotes the efficient use of water by consumers and discourages the wastage of water. Higher tariffs are charged for the higher consumption blocks. The first 6 kl of water is provided free to residential consumers who qualify for indigent relief. It is expected that this tariff structure will continue to be implemented in the future.

The sustainable supply of potable water is becoming an ever increasing challenge. This scarce commodity has to be optimally managed. The increase in the price of electricity, load shedding and the chemicals for purification has contributed to the cost of delivering the service.

The table below gives some comments on the specific blocks, with regard to Stellenbosch Municipality's residential block stepped water tariff structure, for the various financial years.

Table C.7.5: Comments on the Municipality's residential block step tariff structure

Block (kl/month)	20/21	21/22	22/23	23/24	24/25	Comments
0 – 6 kl	R6-06	R6-39	R6-79	R7-19	R7-64	Free Basic Water
> 6 – 12 kl	R9-17	R9-67	R10-27	R10-89	R11-56	Low volume use
> 12 – 20 KL	R15-51	R16-36	R17-37	R18-42	R19-56	Typical use volume, including garden irrigation
> 20 – 25 kl	R27-58	R29-09	R30-90	R32-75	R34-78	
>25 – 40 kl	R38-33	R40-43	R42-94	R45-52	R48-34	Above average use, including garden irrigation
> 40 – 70 kl	R61-24	R64-61	R68-61	R72-73	R77-24	Wasteful use and/or severe garden irrigation
> 70 kl	R95-85	R101-12	R107-39	R113-83	R113-83	Significant waste and/or unnecessary garden irrigation

Wasteful or inefficient use of water is discouraged through increased tariffs. It is suggested that the following tariff structure characteristics should remain in Stellenbosch Municipality's Structure in order to ensure efficient water use (WDM Strategy):

- Maintain a rising block tariff structure.
- Keep number of blocks in the tariff to a minimum. One block to address free basic water (the first step) and another to address the "cut-off" volume where consumers are discouraged to use water above this monthly volume (highest block) are required. In addition another three blocks could be used to distinguish between low users, typical use of high water use. Six blocks in a tariff often make good sense, as indicated in Table C.7.5.
- The volumetric steps should be kept the same for all the areas within Stellenbosch Municipality's Management Area.
- The cost of water in the maximum step should severely discourage use in this category. The volumetric use for the highest category could be 60 kl/month, above which residential water use could be considered to be wasteful or unnecessary. Garden use requiring in excess of this volume should be reduced in accordance with xeriscape practices.

The MFMA Circular No.78 of 7 December 2015 stipulated the following w.r.t. the water and sanitation tariff increases:

Municipalities should consider the full cost of rendering the water and sanitation services when determining tariffs related to these two services. If the tariffs are low and result in the municipality not recovering their full costs, the municipality should develop a pricing strategy to phase-in the necessary tariff increases in a manner that spreads the impact on consumers over a period of time.

Municipalities are urged to design an Inclining Block Tariff structure that is appropriate to its specific circumstances, and ensures an appropriate balance between low income consumers and other domestic, commercial and business customers, and the financial interests of the municipality. While considering this structure, municipalities are advised to evaluate if the IBT system will be beneficial to them depending on consumption patterns in their areas.

In light of the current drought being experienced across large parts of the country, and to mitigate the need for water tariff increases, municipalities must put in place appropriate strategies to limit water losses to acceptable levels. In this regard municipalities must ensure that water used by their own operations is charged to the relevant service, and not simply attributed to water losses.

The recommendations for the water and sewerage tariffs of Stellenbosch Municipality are as follows:

- Stellenbosch Municipality can investigate the financial viability of changing the sanitation tariff structure from a fixed monthly amount, which is based on the size of the erven, to a stepped tariff based on water consumption in the future (Financial analysis needs to be done). Volumetric usage for sanitation services, whereby charges are determined according to water usage, with maximum ceilings and charged accordingly. This will need to include a free sanitation bracket, similar for free water, for indigent households. This will also further deter wasteful water use.

- Stellenbosch Municipality will continue to re-evaluate the tariffs they charge for their water and sanitation services on an annual basis in order to put the Municipality in a better financial position and to ensure that all the O&M expenditure for water and sanitation services are recovered through their water and sanitation services income, to address the bulk infrastructure backlogs and to ensure the adequate rehabilitation and maintenance of all existing water and sewerage infrastructure within the various towns.

- The large commercial and industrial consumers could lower their current water demand by means of improved practices or re-use of wastewater. Stellenbosch Municipality should note that revenue could potentially decrease as a result of reuse practices.

- Stellenbosch Municipality will continue to monitor the volume and nutrient loading of all industrial effluent discharged by industrial consumers into the sewer system. A formula for the calculation of the extraordinary treatment cost to industrial consumers for the industrial effluent they discharged into Stellenbosch Municipality's sewer system is in place and form part of the existing tariff structure. The performance of the WWTWs in general can be severely compromised by certain industrial effluent discharges. It is therefore also important for Stellenbosch Municipality to recalculate their treatment costs annually, in order to ensure that there is no under or over recovery of costs from industrial consumers. The charges for wastewater discharged by industrial consumers can also be linked to their water usage in the future.

  Stellenbosch Municipality needs to continue to regularly sample the quality of industrial effluent discharged into the sewer system and all industrial consumers need to be charged according to the quality of the effluent discharged into the Municipality's sewer system.

- The current water tariff codes adequately differentiate between the different type of consumers and their water usage. The Municipality can investigate the possibility to uniquely describe the "Municipal Tariff" water usage with a distinction between the different user types, for example parks, office usage, fire-fighting, etc.

TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES

Sections 12 and 13 of the Water Services Act (Act No 108 of 1997) place a duty on WSAs to prepare and maintain a WSDP, as part of the process of preparing an IDP. The DWS has developed a new eWSDP website to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. The WSDP of Stellenbosch Municipality needs to be updated regularly.

The Municipality will also continue to report annually and in a public way on progress in implementing the plan (WSDP Performance- and Water Services Audit Report), as part of Stellenbosch Municipality's Annual Report, as 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.

The Water Safety Plans for the various WTWs and water distribution systems and the W_2RAPs for the WWTWs and sewer drainage networks need to be updated regularly. Both the existing Water Safety Plans and W_2RAPs need to be updated. WTW and WWTW Process Audits also needs to be compiled regularly.

The 2025 Water and Sewer Master Plans of Stellenbosch Municipality summarise the projects (Master Plan Items) necessary in order to cope with the increased future demands and developments within the Stellenbosch Municipality's systems. The Water and Sewer Master Plans need to be updated regularly (At least once every three to five years).

A Work Place Skills Plan is in place, which lists the training to be provided during the new financial year. The training of Stellenbosch Municipality's personnel involved in the management of water and sanitation services are the most important factors that determine the ability of Stellenbosch Municipality to deliver safe and reliable water and to treat the effluent at the WWTWs to an acceptable standard. Training of all staff involved in water supply and sanitation services on matters related to treatment processes and quality monitoring and control is essential because their actions (or failure to act) will have a major impact on the well-being of the communities and the environment.

It is important for Stellenbosch Municipality to classify all WTWs and WWTWs and Process Controllers along the lines of the new Regulation 3630 requirements by establishing a programme for certification of works, operators, technicians and managers. The process will include reviewing the skills needed and aligning resources to these needs as well as reviewing total staff numbers necessary to meet all the objectives in the National Water Act.

The table below provides an overview of the current Process Controllers at the WTWs and WWTWs and whether additional Process Controllers are required in order to comply with Regulation 3630.

Table C.8.1: Required number of Process Controllers at the WTWs and WWTWs	
WTWs	
Idas Valley	The minimum requirement for a Class C WTW is one Class III Process Controller per shift, plus one on standby. For the Idas Valley WTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. The existing Class II Process Controllers need to receive the required training to be classified as a Class III Process Controllers in order to ensure compliance.
Paradyskloof	The minimum requirement for a Class C WTW is one Class III Process Controller per shift, plus one on standby. For the Paradyskloof WTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. The current number of Process Controllers at the plant is adequate.
Franschhoek	No permanent PC
WWTWs	
Stellenbosch	The minimum requirement for a Class A WWTW is one Class IV Process Controller per shift, plus one on standby. For the Stellenbosch WWTW, with two shifts, there should therefore be three Process Controllers with minimum Class IV classifications. Current number and Class of Process Controllers are adequate for the plant.
Wemmershoek	The minimum requirement for a Class C WWTW is one Class III Process Controller per shift, plus one on standby. For the Wemmershoek WWTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. Current number and Class of Process Controllers are adequate for the plant.
Pniel	The minimum requirement for a Class C WWTW is one Class III Process Controller per shift, plus one on standby. For the Pniel WWTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. One additional Class III Process Controller needs to be appointed for the Pniel WWTW.
Klapmuts	The minimum requirement for a Class C WWTW is one Class III Process Controller per shift, plus one on standby. For the Klapmuts WWTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. Current number and Class of Process Controllers are adequate for the plant.

Table C.8.1: Required number of Process Controllers at the WTWs and WWTWs	
Raithby	The minimum requirement for a Class D WWTW is one Class II Process Controller per shift, plus one on standby. For the Raithby WWTW, with one shift, there should therefore be two Process Controllers with minimum Class II classifications. Current number and Class of Process Controllers are adequate for the plant.

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 Stellenbosch Municipality to compile a Legal Compliance Audit of their WTWs and WWTWs, which will provide the management Stellenbosch Municipality with the necessary information to establish whether the Municipality is in compliance with the legislation or not. It is further recommended that Stellenbosch Municipality arrange for chlorine audits to be done at all their disinfection facilities, in order to identify any potential shortcomings.

Stellenbosch Municipality has a comprehensive Performance Management System in place. The performance indicators as included in the SDBIP are regularly reviewed in order to promote a culture of performance management among its political structures, political office bearers and councillors and in its administration and administer its affairs in an economical, effective, efficient and accountable manner.

Access to safe drinking water is essential to health and is human right. Safe drinking water that complies with the SANS:241 Drinking Water specifications do not pose a significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages. Stellenbosch Municipality is therefore committed to ensure that their water quality always complies with SANS241:2015 limits.

Stellenbosch Municipality is committed to maintain the existing high level of customer service in their urban areas and to record all the necessary information for the WSDP on an annual basis. The present Customer Services and Complaints Management System allows for the recording and management of all water and sanitation related complaints. The Municipality is committed to ensure that all water and sanitation related complaints are recorded and that the complaints are addressed within the required time period.

SECTION D: WATER SERVICES OBJECTIVES AND STRATEGIES

The water services strategies presented below were derived from the 2023/2024 SDBIP and the water services situational analysis as summarized in Section C: Water Services Existing Needs Perspective and presents the 5-year Water Services strategies as established in Stellenbosch Municipality's WSDP.

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Table D.1: Strategies, Objectives and Key Performance Indicators for Stellenbosch Municipality									
Nr	**Objective / Strategy**	**Key Performance Indicator**	**Baseline 2023/2024**	**Linked Project**	**FY2024/25**	**FY2025/26**	**FY2026/27**	**FY2027/28**	**FY2028/29**
Topic 1: Settlement Demographics & Public Amenities									
	Implemented by other Department								
Topic 2: Service Levels									
KPI027	Installation of new standpipes	Number of new standpipes installed by 30 June.	-	Part of O&M Budget	50	50	50	Future targets still to be set	Future targets still to be set
KPI028	Provision of waterborne toilet facilities in informal settlements as identified by the Department: Integrated Human Settlements.	Number of waterborne toilet facilities provided in Informal settlements as identified by the Department: Integrated Human Settlements by 30 June	-	Part of O&M Budget	25 / annum	30 / annum	50 / annum	Future targets still to be set	Future targets still to be set
KPI032	Registered indigent formal households with access to free basic water (NKPI Proxy - MSA, Reg. S10(a), (b)).	Percentage of registered indigent formal households with access to free basic water, measured quarterly.	-	Part of O&M Budget	100%	100%	100%	Future targets still to be set	Future targets still to be set
KPI035	Registered indigent formal households with access to free basic sanitation (NKPI Proxy - MSA, Reg. S10(a), (b)).	Percentage of registered indigent formal households with access to free basic sanitation, measured quarterly.	-	Part of O&M Budget	100%	100%	100%	Future targets still to be set	Future targets still to be set
KPI036	Formal households with access to water (NKPI Proxy - MSA, Reg. S10(a))	Number of formal households with access to water, measured quarterly	-	Part of O&M Budget	27 000	27 000	27 000	Future targets still to be set	Future targets still to be set
KPI039	Formal households with access to sanitation (NKPI Proxy - MSA, Reg. S10(a)).	Number of formal households with access to sanitation, measured quarterly.	-	Part of O&M Budget	27 000	27 000	27 000	Future targets still to be set	Future targets still to be set
New	*Compile a Water and Sanitation Service Level Policy*	*Water and Sanitation Service Level Policy in place.*	-	*Part of O&M Budget*	-	-	*1*	-	-
New	*Ensure all households on the farms are provided with at least basic water services and complying with basic water service requirements as included in Gazette 52814 of 6 June 2025.*	*Support all applications received for basic water services on the farms (Subject to availability of financial resources and sustainability of type of service).*	-	*Part of O&M Budget*	-	-	*80% of applications received are supported (Subject to availability of funding and sustainability of type of service)*	*90% of applications received are supported (Subject to availability of funding and sustainability of type of service)*	*100% of applications received are supported (Subject to availability of funding and sustainability of type of service)*
New	*Ensure all households on the farms are provided with at least basic sanitation services and complying with basic sanitation service requirements as included in Gazette 52814 of 6 June 2025.*	*Support all applications received for basic sanitation services on the farms (Subject to availability of financial resources and sustainability of type of service).*	-	*Part of O&M Budget*	-	-	*80% of applications received are supported (Subject to availability of funding and sustainability of type of service)*	*90% of applications received are supported (Subject to availability of funding and sustainability of type of service)*	*100% of applications received are supported (Subject to availability of funding and sustainability of type of service)*
Topic 3: Water Services Asset Management									

Table D.1: Strategies, Objectives and Key Performance Indicators for Stellenbosch Municipality									
Nr	**Objective / Strategy**	**Key Performance Indicator**	**Baseline 2023/2024**	**Linked Project**	**FY2024/25**	**FY2025/26**	**FY2026/27**	**FY2027/28**	**FY2028/29**
D1838	Update of Infrastructure Asset Register.	Number of updates to the Infrastructure Asset Register submitted to the Portfolio Committee as a preventative maintenance tool by 31 March	Target: 1 Actual: 0	Part of O&M Budget	1	1	1	1	1
New	*Ensure adequate storage capacity*	*Ensure adequate storage capacity for all towns (At least 48hrs AADD)*	-	*Various Projects*	-	-	*All towns with storage capacity above 48 hrs AADD*	*All towns with storage capacity above 48 hrs AADD*	*All towns with storage capacity above 48 hrs AADD*
New	*Implement projects included in the Water Master Plan*	*Ensure adequate water pump station and water reticulation capacity.*	-	*Various Projects*	-	-	*Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.*	*Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.*	*Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.*
New	*Implement projects included in the Sewer Master Plan*	*Ensure adequate sewer pump station and sewer drainage network capacity.*	-	*Various Projects*	-	-	*Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.*	*Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.*	*Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.*
Topic 4: Water Services Operation and Maintenance									
D2180	Waste water quality managed and measured i.t.o. the DWS's License conditions for physical and micro parameters	Percentage waste water quality compliance as per analysis certificate measured quarterly	Target: 70% Actual: 48.67%	Part of O&M Budget	70%	70%	70%	70%	70%
D2190 / KPI030	Water quality measured quarterly i.t.o. the SANS 241 physical and micro parameters	Percentage water quality level as per analysis certificate measured quarterly.	Target: 90% Actual: 95.25%	Part of O&M Budget	90%	90%	90%	90%	90%
New	*Implement recommendations from detail WTW Technical Process Audits.*	*% Of recommendations, as included in the WTW Process Audits, implemented.*	-	*Various Projects*	-	-	*50% of recommendations implemented*	*70% of recommendations implemented*	*90% of recommendations implemented*
New	*Implement recommendations from detail WWTW Technical Process Audits.*	*% Of recommendations, as included in the WWTW Process Audits, implemented.*	-	*Various Projects*	-	-	*50% of recommendations implemented*	*70% of recommendations implemented*	*90% of recommendations implemented*
New	*Implement recommendations as included in the Improvement*	*% Of recommendations, as included in the Improvement / Upgrade Plan of the Water Safety Plan, implemented.*	-	*Various Projects*	-	-	*50% of recommendations implemented*	*70% of recommendations implemented*	*90% of recommendations implemented*

Table D.1: Strategies, Objectives and Key Performance Indicators for Stellenbosch Municipality									
Nr	**Objective / Strategy**	**Key Performance Indicator**	**Baseline 2023/2024**	**Linked Project**	**FY2024/25**	**FY2025/26**	**FY2026/27**	**FY2027/28**	**FY2028/29**
	/ Upgrade Plan of the Water Safety Plan								
New	*Implement recommendations as included in the Improvement / Upgrade Plan of the W_2RAPs.*	*% Of recommendations, as included in the Improvement / Upgrade Plan of the W_2RAPs, implemented.*	-	*Various Projects*	-	-	*50% of recommendations implemented*	*70% of recommendations implemented*	*90% of recommendations implemented*
New	*Water Quality sampling programme complies with requirements.*	*Water Quality Sampling Programme complies with the minimum SANS241:2015 monitoring frequency for process indicators.*	-	*Part of O&M Budget*	-	-	*90%*	*95%*	*100%*
New	*Ensure adequate budget for the O&M of the existing water and sewerage infrastructure*	*Ensure a budget of at least 1.5% of the total value of the water and sewerage assets is allocated towards the annual O&M of the systems.*	-	*Part of O&M Budget*	-	-	*A budget of 1.5% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.*	*A budget of 1.5% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.*	*A budget of 1.5% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.*
New	*Ensure adequate budget for the replacement of old water and sewerage infrastructure*	*Ensure a budget of at least 2% of the total value of the water and sewerage assets is allocated towards the replacement of existing infrastructure per annum.*	-	*Various Projects*	-	-	*A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.*	*A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.*	*A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.*
New	*Reporting on water quality and wastewater quality compliance percentages*	*Annually report on the percentage of water quality and wastewater quality compliance.*	-	*Part of O&M Budget*	-	-	*At least annual publication of water quality and wastewater quality compliance percentages.*	*At least annual publication of water quality and wastewater quality compliance percentages.*	*At least annual publication of water quality and wastewater quality compliance percentages.*
Topic 5: Conservation and Demand Management (Topic 5.1: Water Resources)									
D2191 / KPI031	Limit unaccounted water to less than 25%	Percentage of average unaccounted water measured by 30 June	Target: 25% Actual: 7.83%	Part of O&M Budget	<25%	<25%	<25%	<25%	<25%
D1812	Implement Water Demand Management measures	Number of Water Demand Management Devices installed by 30 June	Target: 200 Actual: 427	Part of O&M Budget	-	Future targets still to be set	Future targets still to be set	Future targets still to be set	Future targets still to be set
D3329	Implementation of the pipe replacement programme	Number of meters of pipe replaced in the pipe replacement programme, measured per quarter	Target: 1 000 Actual: 2 734	Part of O&M Budget	-	Future targets still to be set	Future targets still to be set	Future targets still to be set	Future targets still to be set
D1815	Implementation of the indigent household water leak repair programme	Number of indigent household water leaks repaired by 30 June.	Target: 80% Actual: 80%	Part of O&M Budget	-	Future targets still to be set	Future targets still to be set	Future targets still to be set	Future targets still to be set
D1814	Repair burst pipes within 5 hours from receiving the complaint	Percentage of burst pipes repaired within 5 hours from receiving the complaint.	Target: 80% Actual: 200%	Part of O&M Budget	-	Future targets still to be set	Future targets still to be set	Future targets still to be set	Future targets still to be set

Table D.1: Strategies, Objectives and Key Performance Indicators for Stellenbosch Municipality									
Nr	**Objective / Strategy**	**Key Performance Indicator**	**Baseline 2023/2024**	**Linked Project**	**FY2024/25**	**FY2025/26**	**FY2026/27**	**FY2027/28**	**FY2028/29**
Topic 5: Conservation and Demand Management (Topic 5.2: Water Balance)									
New	*Detail IWA Water Balances for all the systems and monthly WTW flows for all the treatment plants.*	*Ensure all bulk water is metered at source, at WTW (incoming and outgoing) and at all bulk storage reservoirs and the meters are read and recorded on at least a monthly basis.*	-	*Part of O&M Budget*	-	-	*100% Compliance*	*100% Compliance*	*100% Compliance*
New	*Monthly WWTW flows for all the treatment plants.*	*Ensure all incoming flow and outgoing flow at WWTWs are metered, as well as final effluent re-used for irrigation purposes and that meters are read and recorded on at least a monthly basis.*	-	*Part of O&M Budget*	-	-	*80% Compliance*	*90% Compliance*	*100% Compliance*
Topic 6: Water Resources									
D1840	Submission of a revised Water Resources Master Plan to the Director: Infrastructure Services	Number of revised Water Resources Master Plans submitted to the Director: Infrastructure Services by 30 June	Target: 1 Actual: 0	Part of O&M Budget	-	Future targets still to be set	Future targets still to be set	Future targets still to be set	Future targets still to be set
D2175 / KPI055	Submission of the revised Wastewater Master Plan to the Municipal Manager	Number of revised Wastewater Master Plans submitted to the Municipal Manager by 30 June	Target: 1 Actual: 1	Part of O&M Budget	1	1	1	Future targets still to be set	Future targets still to be set
New	*Implementation of Groundwater Management Programme*	*Ensure groundwater management programme for boreholes are implemented and raw water quality is monitored at least annually.*	-	*Part of O&M Budget*	-	-	*Implement Groundwater Management Programme and monitor raw water quality at least annually.*	*Implement Groundwater Management Programme and monitor raw water quality at least annually.*	*Implement Groundwater Management Programme and monitor raw water quality at least annually.*
New	*All water sources are authorised.*	*% of Abstraction from sources registered and authorised by the DWS.*	-	*Part of O&M Budget*	-	-	*95% Compliance*	*100% Compliance*	*100% Compliance*
New	*Ensure adequate yield and allocations from water resources to meet the projected future water requirements.*	*Ensure yields and allocations are adequate to meet the projected five year water requirements for all systems.*	-	*Part of O&M Budget*	-	-	*100% Adequate supply to meet water requirements for all systems*	*100% Adequate supply to meet water requirements for all systems*	*100% Adequate supply to meet water requirements for all systems*
New	*Monitoring of industrial consumers.*	*% Monitoring of effluent discharged by industrial consumers (Quantity and Quality) and charged according to the quality of effluent discharged by them.*	-	*Part of O&M Budget*	-	-	*80% Of all Industrial Consumers monitored w.r.t. quality and quantity of effluent discharged by them*	*90% Of all Industrial Consumers monitored w.r.t. quality and quantity of effluent discharged by them*	*100% Of all Industrial Consumers monitored w.r.t. quality and quantity of effluent discharged by them*
Topic 7: Financial									
D1828	Spend the Department: Water and Wastewater Services approved Capital Budget	Percentage of approved Capital Budget of the Department: Water and Wastewater Services actually spent by 30 June	Target: 90% Actual: 97.06%	Part of O&M Budget	90%	90%	90%	90%	90%

Table D.1: Strategies, Objectives and Key Performance Indicators for Stellenbosch Municipality									
Nr	**Objective / Strategy**	**Key Performance Indicator**	**Baseline 2023/2024**	**Linked Project**	**FY2024/25**	**FY2025/26**	**FY2026/27**	**FY2027/28**	**FY2028/29**
D1799	Spend the Section: Wastewater Treatment approved Capital Budget	Percentage of approved Capital Budget of the Section: Wastewater Treatment actually spent by 30 Jun	Target: 90% Actual: 42.0%	Part of O&M Budget	90%	90%	90%	90%	90%
D1846	Spend the Section: Water Treatment approved Capital Budget	Percentage of approved Capital Budget of the Section: Water Treatment actually spent by 30 June	Target: 90% Actual: 60%	Part of O&M Budget	90%	90%	90%	90%	90%
D1811	Spend the Section: Water and Wastewater Network Operations approved Capital Budget	Percentage of approved Capital Budget of the Section: Water and Wastewater Network Operations actually spent by 30 June	Target: 90% Actual: 78%	Part of O&M Budget	90%	90%	90%	90%	90%
Topic 8: Institutional Arrangements and Customer Care									
D1847	Submit an Annual Water Services Audit Report to the Portfolio Committee: Infrastructure Services	Number of Annual Water Services Audit Reports submitted to the Portfolio Committee: Infrastructure Services by 30 June	Target: 1 Actual: 1	Part of O&M Budget	1	1	1	1	1
D2126	Update Water use Licenses (WULA)	WULAs updated by 30 June	Target: 3 Actual: 3	Part of O&M Budget	-	-	-	-	-
D1839	Submit the Water Services Tariffs to the Directorate: Financial Services	Number of Water Services Tariffs submitted to the Directorate: Financial Services by 31 January	Target: 1 Actual: 1	Part of O&M Budget	1	1	1	1	1
D1816	Unblock municipal sewer blockages within 5 hours from receiving the complaint	Percentage of sewer blockages unblocked within 5 hours from receiving the complaint	Target: 80% Actual: 83.75%	Part of O&M Budget	80%	80%	80%	80%	80%
New	*Ensure adequate Process Controllers at the WTWs according to Regulation 3630*	*% Compliance w.r.t the number of existing Process Controllers at the WTWs and the required number of Process Controllers*	-	*Part of O&M Budget*	-	-	*70 % Of WTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*	*80 % Of WTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*	*90 % Of WTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*
New	*Ensure adequate Process Controllers at the WWTWs according to Regulation 3630*	*% Compliance w.r.t the number of existing Process Controllers at the WWTWs and the required number of Process Controllers*	-	*Part of O&M Budget*	-	-	*70 % Of WWTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*	*80 % Of WWTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*	*90 % Of WWTW plants meeting the requirements, w.r.t. the number of Process Controllers per shift.*

SECTION E: WATER SERVICES MTEF PROJECTS

The approved 2025/2026 Water Services Medium-Term Expenditure Framework (MTEF) projects are presented below and outline the water services projects which might be funded for implementation within the next three financial years. Table E.2a provides the projects identified for implementation in FY2025/26, Table E.2b provides the projects identified for implementation in FY2026/27 and Table E2c provides the projects identified for implementation in FY2027/28.

It should be highlighted that the projects included herein, represents only projects for which funding might be secured, and therefore does not comprise the comprehensive water services project requirements of Stellenbosch Municipality.

The summary of the MTEF water services projects are indicated in the table below.

Table E.1: Summary of MTEF Projects

Project Main Category	FY2025/26		FY2026/27		FY2027/28		MTEF Total	
	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)
Water Projects	17	R148 159	12	R116 967	8	R57 700	**17**	**R322 826**
Sanitation Projects	14	R87 200	13	R104 800	12	R71 250	**16**	**R263 250**
Combined Water & Sanitation Projects	**31**	**R235 359**	**25**	**R221 767**	**20**	**R128 950**	**33**	**R586 076**

WSDP EXECUTIVE SUMMARY 2025-2027

Table E.2a: Water Services MTEF Projects - FY2025/26 (1st year MTEF period)

Nr	Project Reference Number (Dept)	Project Name	Description	Project Driver	Main Category "W" or "S"	Sub Category	Component type	Project Budget / Funding Sources									MTEF Project Source
								Prev spent FY2024/25	FY2025/26							Total Cost	
									Budget	Own	IUDG	RBIG	ACIP	DC	WSIG	External Loans	
1. Infrastructure Projects								**R0**	**R201 459**								**R201 459**	
PC0080		Bulk Water Supply Pipe and Reservoir: Stellenbosch	Construction of new bulk water pipeline and reservoir	Ensure adequate bulk water pipeline capacity and storage capacity	Water	Internal Bulk	Bulk Pipeline and Reservoir		**R100 504**		R32 239					R68 265	**R100 504**	Water Master Plan
PC0081		Bulk Water Supply Pipe Line and Pump stations: Franschhoek	Construction of new bulk water pipeline and pumpstation	Ensure adequate bulk water pipeline capacity and pump capacity	Water	Internal Bulk	Bulk Pipeline and Pump Station		**R12 000**	R12 000							**R12 000**	Water Master Plan
PC0079		Bulk Water Supply Pipe: Cloetesville/ Idas Valley	Construction of new bulk water pipeline	Ensure adequate bulk water pipeline capacity	Water	Internal Bulk	Bulk Pipeline		**R4 000**	R4 000							**R4 000**	Water Master Plan
PC0084		Bulk Water Upgrades Franschoek	Upgrades to bulk water pipelines	Ensure adequate bulk water pipeline capacity	Water	Internal Bulk	Bulk Pipeline		**R1 000**	R1 000							**R1 000**	Water Master Plan
PC0089		New Reservoir and Pipeline: Vlottenburg	Construction of new bulk water pipeline and reservoir	Ensure adequate bulk water pipeline capacity and storage capacity	Water	Internal Bulk	Bulk Pipeline and Reservoir		**R6 955**	R645				R6 310			**R6 955**	Water Master Plan
PC0332		Uniepark and Helshoogte Storage and Supply scheme	Construction of new bulk water pipeline and reservoir	Ensure adequate bulk water pipeline capacity and storage capacity	Water	Internal Bulk	Bulk Pipeline and Reservoir		**R4 000**	R4 000							**R4 000**	Water Master Plan
PC0119		Dorp Street Bulk Sewer Upgrade	Upgrades to bulk sewer pipelines	Ensure adequate bulk sewer pipeline capacity	Sanitation	Sanitation Bulk	Waterborne Sanitation		**R3 000**	R3 000							**R3 000**	Sewer Master Plan
PC0112		Extention of WWTW: Stellenbosch	Extention of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R6 000**	R6 000							**R6 000**	WSDP
PC0105		Sewerpipe replacement	Replace sewer pipeline	Reduce blockages and spillages and ensure adequate sewer drainage capacity. Refurbishment of sewer pipelines.	Sanitation	Internal Sanitation	Waterborne Sanitation		**R6 000**	R6 000							**R6 000**	Sewer Pipeline Replacement Programme
PC0111		Upgrade of WWTW Wemmershoek	Upgrade of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R30 000**							R30 000	**R30 000**	WSDP and WWTW Process Audit
PC0110		Upgrade of WWTW: Klapmuts	Upgrade of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R25 000**		R9 000					R16 000	**R25 000**	WSDP and WWTW Process Audit
PC0403		Upgrade of IdasValley WTP	Upgrade of WWTW	Ensure adequate water treatment capacity and water quality compliance	Water	Internal Bulk	WTW		**R2 000**	R2 000							**R2 000**	WSDP and WTW Process Audit
PC0405		Upgrade of Dwars River Bulk Sewer network and pump lines	Upgrades to bulk sewer pipelines	Ensure adequate bulk sewer pipeline capacity	Sanitation	Sanitation Bulk	Waterborne Sanitation		**R1 000**	R1 000							**R1 000**	Sewer Master Plan
2. Source Development Projects								**R0**	**R0**								**R0**	
									R0								**R0**	
3. Demand Management projects								**R0**	**R11 000**								**R11 000**	
PC0094		Upgrade and Replace Water Meters	Upgrade and Replace Water Meters	Ensure all water usage is metered. WC/WDM	Water	Reticulation	WC/WDM		**R3 000**	R3 000							**R3 000**	WC/WDM Strategy
PC0096		Water Conservation & Demand Management	Implementation of WC/WDM measures	Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R2 000**	R2 000							**R2 000**	WC/WDM Strategy
PC0100		Waterpipe Replacement	Implementation of Pipeline Replacement Programme	Reduce number of pipe bursts and improved assurance of supply. Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R6 000**	R6 000							**R6 000**	Water Pipeline Replacement Programme
4. O&M Commitments								**R0**	**R21 500**								**R21 500**	
Operations																		
PC0085		Chlorination Installation: Upgrade	Install / upgrade chlorination system	Water Quality compliance	Water	Internal Bulk	WTW		**R500**	R500							**R500**	WSDP
PC0087		Furniture, Tools and Equipment: Water	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Water	Other	Equipment		**R200**	R200							**R200**	Operations
PC0091		Reservoirs and Dam Safety	Investigate reservoirs and dam safety	Reservoirs and Dam Safety compliance	Water	Other	Operations		**R250**	R250							**R250**	Operations
PC0092		Specialized Vehicles: Water	Purchase vehicles	Service Delivery	Water	Other	Operations		**R1 000**	R1 000							**R1 000**	Operations
PC0095		Vehicles: Water	Purchase vehicles	Service Delivery	Water	Other	Operations		**R1 000**	R1 000							**R1 000**	Operations
PC0097		Water Telemetry Upgrade	Upgrading of the telemetry system for water network	Effective monitoring and management of water supply	Water	Other	Telemetry		**R3 250**	R3 250							**R3 250**	Operations
PC0114		Furniture, Tools & Equipment: Sanitation	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Sanitation	Other	Equipment		**R400**	R400							**R400**	Operations
PC0104		Sewer Pump station and Telemetry Upgrade	Upgrading of the telemetry system for sewer network	Effective monitoring and management of sewage flows	Sanitation	Other	Telemetry		**R2 500**	R2 500							**R2 500**	Operations
PC0106		Specialized Vehicles: Sanitation	Purchase vehicles	Service Delivery	Sanitation	Other	Operations		**R3 000**	R3 000							**R3 000**	Operations
PC0126		Vehicles: Sanitation	Purchase vehicles	Service Delivery	Sanitation	Other	Operations		**R1 000**	R1 000							**R1 000**	Operations
Maintenance																		
PC0338		Pond rehabilitation and pond pumping systems construction WWTW	Rehabilitate ponds and pumping systems	Wastewater Treatment and Final Effluent Compliance	Sanitation	Sanitation Bulk	WWTW		**R400**	R400							**R400**	WSDP and WWTW Process Audit
PC0113		Refurbish Plant & Equipment - Raithby WWTW	Refurbish WWTW and equipment	Wastewater Treatment and Final Effluent Compliance. Implementation of Refurbishment	Sanitation	Sanitation Bulk	WWTW		**R8 000**							R8 000	**R8 000**	WSDP and WWTW Process Audit
5. Institutional								**R0**	**R1 400**								**R1 400**	
PC0093		Update Water Masterplan	Update Water Masterplan	Higher level of water services	Water	Planning	Operations		**R500**	R500							**R500**	WSDP
PC0108		Compilation of Water Service Development Plan (tri-annually)	Compilation of Water Service Development Plan	Planning and Compliance	Sanitation	Planning	Operations		**R400**	R400							**R400**	WSDP
PC0107		Update Sewer Masterplan	Update Sewer Masterplan	Higher level of sanitation services	Sanitation	Planning	Operations		**R500**	R500							**R500**	WSDP
6. Water Services Programmes								**R0**	**R0**								**R0**	
		Total						**R0**	**R235 359**								**R235 359**	

WSDP EXECUTIVE SUMMARY 2025-2027

Table E.2b: Water Services MTEF Projects - FY2026/27 (2nd year MTEF period)

Nr	Project Reference Number (Dept)	Project Name	Description	Project Driver	Main Category "W" or "S"	Sub Category	Component type	Project Budget / Funding Sources									MTEF Project Source
								Prev spent FY2025/26	FY2026/27 Budget	Own	IUDG	RBIG	ACIP	DC	WSIG	External Loans	Total Cost	
1. Infrastructure Projects								**R0**	**R198 267**								**R198 267**	
PC0080		Bulk Water Supply Pipe and Reservoir: Stellenbosch	Construction of new bulk water pipeline and reservoir	Ensure adequate bulk water pipeline capacity and storage capacity	Water	Internal Bulk	Bulk Pipeline and Reservoir		**R43 282**		R3 000					R40 282	**R43 282**	Water Master Plan
PC0079		Bulk Water Supply Pipe: Cloetesville/ Idas Valley	Construction of new bulk water pipeline	Ensure adequate bulk water pipeline capacity	Water	Internal Bulk	Bulk Pipeline		**R24 000**	R24 000							**R24 000**	Water Master Plan
PC0089		New Reservoir and Pipeline: Vlottenburg	Construction of new bulk water pipeline and reservoir	Ensure adequate bulk water pipeline capacity and storage capacity	Water	Internal Bulk	Bulk Pipeline and Reservoir		**R23 985**	R23 985							**R23 985**	Water Master Plan
PC0112		Extention of WWTW: Stellenbosch	Extention of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R30 000**	R30 000							**R30 000**	WSDP
PC0105		Sewerpipe replacement	Replace sewer pipeline	Reduce blockages and spillages and ensure adequate sewer drainage capacity. Refurbishment of sewer pipelines.	Sanitation	Internal Sanitation	Waterborne Sanitation		**R6 000**	R6 000							**R6 000**	Sewer Pipeline Replacement Programme
PC0111		Upgrade of WWTW Wemmershoek	Upgrade of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R1 000**							R1 000	**R1 000**	WSDP and WWTW Process Audit
PC0110		Upgrade of WWTW: Klapmuts	Upgrade of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R55 000**		R30 273					R24 727	**R55 000**	WSDP and WWTW Process Audit
PC0403		Upgrade of IdasValley WTP	Upgrade of WWTW	Ensure adequate water treatment capacity and water quality compliance	Water	Internal Bulk	WTW		**R10 000**	R10 000							**R10 000**	WSDP and WTW Process Audit
PC0404		Construction of New Dwars River Sewer Pump station.	Construction of new sewer pump station	Ensure adequate sewer pump capacity and prevent possible sewage spillages	Sanitation	Sanitation Bulk	Pump Station		**R4 000**	R4 000							**R4 000**	Sewer Master Plan
PC0405		Upgrade of Dwars River Bulk Sewer network and pump lines	Upgrades to bulk sewer pipelines	Ensure adequate bulk sewer pipeline capacity	Sanitation	Sanitation Bulk	Waterborne Sanitation		**R1 000**	R1 000							**R1 000**	Sewer Master Plan
2. Source Development Projects								**R0**	**R0**								**R0**	
3. Demand Management projects								**R0**	**R13 000**								**R13 000**	
PC0094		Upgrade and Replace Water Meters	Upgrade and Replace Water Meters	Ensure all water usage is metered. WC/WDM	Water	Reticulation	WC/WDM		**R3 000**	R3 000							**R3 000**	WC/WDM Strategy
PC0096		Water Conservation & Demand Management	Implementation of WC/WDM measures	Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R2 000**	R2 000							**R2 000**	WC/WDM Strategy
PC0100		Waterpipe Replacement	Implementation of Pipeline Replacement Programme	Reduce number of pipe bursts and improved assurance of supply. Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R8 000**	R8 000							**R8 000**	Water Pipeline Replacement Programme
4. O&M Commitments								**R0**	**R9 100**								**R9 100**	
Operations																		
PC0085		Chlorination Installation: Upgrade	Install / upgrade chlorination system	Water Quality compliance	Water	Internal Bulk	WTW		**R250**	R250							**R250**	WSDP
PC0087		Furniture, Tools and Equipment: Water	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Water	Other	Equipment		**R200**	R200							**R200**	Operations
PC0091		Reservoirs and Dam Safety	Investigate reservoirs and dam safety	Reservoirs and Dam Safety compliance	Water	Other	Operations		**R250**	R250							**R250**	Operations
PC0097		Water Telemetry Upgrade	Upgrading of the telemetry system for water network	Effective monitoring and management of water supply	Water	Other	Telemetry		**R1 500**	R1 500							**R1 500**	Operations
PC0114		Furniture, Tools & Equipment: Sanitation	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Sanitation	Other	Equipment		**R400**	R400							**R400**	Operations
PC0104		Sewer Pump station and Telemetry Upgrade	Upgrading of the telemetry system for sewer network	Effective monitoring and management of sewage flows	Sanitation	Other	Telemetry		**R1 500**	R1 500							**R1 500**	Operations
PC0126		Vehicles: Sanitation	Purchase vehicles	Service Delivery	Sanitation	Other	Operations		**R1 000**	R1 000							**R1 000**	Operations
Maintenance																		
PC0338		Pond rehabilitation and pond pumping systems construction WWTW	Rehabilitate ponds and pumping systems	Wastewater Treatment and Final Effluent Compliance	Sanitation	Sanitation Bulk	WWTW		**R2 000**	R2 000							**R2 000**	WSDP and WWTW Process Audit
PC0113		Refurbish Plant & Equipment - Raithby WWTW	Refurbish WWTW and equipment	Wastewater Treatment and Final Effluent Compliance. Implementation of Refurbishment	Sanitation	Sanitation Bulk	WWTW		**R2 000**							R2 000	**R2 000**	WSDP and WWTW Process Audit
5. Institutional								**R0**	**R1 400**								**R1 400**	
PC0093		Update Water Masterplan	Update Water Masterplan	Higher level of water services	Water	Planning	Operations		**R500**	R500							**R500**	WSDP
PC0108		Compilation of Water Service Development Plan (tri-annually)	Compilation of Water Service Development Plan	Planning and Compliance	Sanitation	Planning	Operations		**R400**	R400							**R400**	WSDP
PC0107		Update Sewer Masterplan	Update Sewer Masterplan	Higher level of sanitation services	Sanitation	Planning	Operations		**R500**	R500							**R500**	WSDP
6. Water Services Programmes								**R0**	**R0**								**R0**	
Awareness and WASH Programs																		
		Total						**R0**	**R221 767**								**R221 767**	

WSDP EXECUTIVE SUMMARY 2025-2027

Table E.2c: Water Services MTEF Projects - FY2027/28 (3rd year MTEF period)

Nr	Project Reference Number (Dept)	Project Name	Description	Project Driver	Main Category "W" or "S"	Sub Category	Component type	Project Budget / Funding Sources										MTEF Project Source
								Prev spent FY2026/27	FY2027/28								Total Cost	
									Budget	Own	IUDG	RBIG	ACIP	DC	WSIG	External Loans		
1. Infrastructure Projects								**R0**	**R100 200**								**R100 200**	
PC0112		Extention of WWTW: Stellenbosch	Extention of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R46 200**	R46 200							**R46 200**	WSDP
PC0105		Sewerpipe replacement	Replace sewer pipeline	Reduce blockages and spillages and ensure adequate sewer drainage capacity. Refurbishment of sewer pipelines.	Sanitation	Internal Sanitation	Waterborne Sanitation		**R8 000**	R8 000							**R8 000**	Sewer Pipeline Replacement Programme
PC0110		Upgrade of WWTW: Klapmuts	Upgrade of WWTW	Ensure adequate wastewater treatment capacity and final effluent compliance	Sanitation	Sanitation Bulk	WWTW		**R1 000**							R1 000	**R1 000**	WSDP and WWTW Process Audit
PC0403		Upgrade of IdasValley WTP	Upgrade of WWTW	Ensure adequate water treatment capacity and water quality compliance	Water	Internal Bulk	WTW		**R40 000**	R6 641	R33 360						**R40 000**	WSDP and WTW Process Audit
PC0404		Construction of New Dwars River Sewer Pump station.	Construction of new sewer pump station	Ensure adequate sewer pump capacity and prevent possible sewage spillages	Sanitation	Sanitation Bulk	Pump Station		**R3 000**	R3 000							**R3 000**	Sewer Master Plan
PC0405		Upgrade of Dwars River Bulk Sewer network and pump lines	Upgrades to bulk sewer pipelines	Ensure adequate bulk sewer pipeline capacity	Sanitation	Sanitation Bulk	Waterborne Sanitation		**R2 000**	R2 000							**R2 000**	Sewer Master Plan
2. Source Development Projects								**R0**	**R0**								**R0**	
3. Demand Management projects								**R0**	**R13 500**								**R13 500**	
PC0094		Upgrade and Replace Water Meters	Upgrade and Replace Water Meters	Ensure all water usage is metered. WC/WDM	Water	Reticulation	WC/WDM		**R3 000**	R3 000							**R3 000**	WC/WDM Strategy
PC0096		Water Conservation & Demand Management	Implementation of WC/WDM measures	Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R2 500**	R2 500							**R2 500**	WC/WDM Strategy
PC0100		Waterpipe Replacement	Implementation of Pipeline Replacement Programme	Reduce number of pipe bursts and improved assurance of supply. Reduce NRW and Water Losses	Water	Reticulation	WC/WDM		**R8 000**	R8 000							**R8 000**	Water Pipeline Replacement Programme
4. O&M Commitments								**R0**	**R13 850**								**R13 850**	
Operations																		
PC0087		Furniture, Tools and Equipment: Water	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Water	Other	Equipment		**R200**	R200							**R200**	Operations
PC0091		Reservoirs and Dam Safety	Investigate reservoirs and dam safety	Reservoirs and Dam Safety compliance	Water	Other	Operations		**R2 000**	R2 000							**R2 000**	Operations
PC0097		Water Telemetry Upgrade	Upgrading of the telemetry system for water network	Effective monitoring and management of water supply	Water	Other	Telemetry		**R1 500**	R1 500							**R1 500**	Operations
PC0114		Furniture, Tools & Equipment: Sanitation	Purchase furniture, tools and equipment	Ensure adequate tools and equipment for operations	Sanitation	Other	Equipment		**R400**	R400							**R400**	Operations
PC0104		Sewer Pump station and Telemetry Upgrade	Upgrading of the telemetry system for sewer network	Effective monitoring and management of sewage flows	Sanitation	Other	Telemetry		**R1 500**	R1 500							**R1 500**	Operations
PC0106		Specialized Vehicles: Sanitation	Purchase vehicles	Service Delivery	Sanitation	Other	Operations		**R6 000**	R6 000							**R6 000**	Operations
PC0115		Upgrade Laboratory Equipment	Upgrade Laboratory Equipment	Ensure adequate lab testing equipment	Sanitation	Other	Laboratory		**R250**	R250							**R250**	Operations
Maintenance																		
PC0338		Pond rehabilitation and pond pumping systems construction WWTW	Rehabilitate ponds and pumping systems	Wastewater Treatment and Final Effluent Compliance	Sanitation	Sanitation Bulk	WWTW		**R2 000**	R2 000							**R2 000**	WSDP and WWTW Process Audit
5. Institutional								**R0**	**R1 400**								**R1 400**	
PC0093		Update Water Masterplan	Update Water Masterplan	Higher level of water services	Water	Planning	Operations		**R500**	R500							**R500**	WSDP
PC0108		Compilation of Water Service Development Plan (tri-annually)	Compilation of Water Service Development Plan	Planning and Compliance	Sanitation	Planning	Operations		**R400**	R400							**R400**	WSDP
PC0107		Update Sewer Masterplan	Update Sewer Masterplan	Higher level of sanitation services	Sanitation	Planning	Operations		**R500**	R500							**R500**	WSDP
6. Water Services Programmes								**R0**	**R0**								**R0**	
Awareness and WASH Programs																		
		Total						**R0**	**R128 950**								**R128 950**	

SECTION F: WSDP PROJECTS

Stellenbosch Municipality's approved 2025/2026 Capital Budget list the following major water and sewerage infrastructure projects (Value above R5 million over the three years), which are planned for the short term (Next three years).

- Implementation of water and sewer pipeline replacement programmes.
- Bulk water supply pipeline and reservoir for Stellenbosch.
- Bulk water supply pipeline and pump stations for Franschhoek.
- Bulk water supply pipeline Cloetesville / Idas Valley
- New reservoir and pipeline Vlottenburg.
- Upgrade and replacement of water meters.
- Implementation of Water Conservation and Water Demand Management measures.
- Water Telemetry upgrade.
- Upgrade of Idas Valley WTW.
- Upgrade Wemmershoek and Klapmuts WWTWs.
- Extension of Stellenbosch WWTW.
- Refurbish plant and equipment: Raithby WWTW.
- Construction of new Dwars River sewer pump station.
- Sewer pump station and telemetry upgrade.
- Specialised vehicles for Sanitation.

The NWRS 2 list the following steps to raise the water profile in development planning:

- Water must be placed at the center of integrated planning and decision-making, with a specific aim to respond to and support the achievement of national development and sector goals.
- Current budgets need to adequately provide for water, which might mean they have to be doubled to cater for the present needs.
- Current financial values need to appreciate water as a scarce resource and should thus reflect the real value of water. This requires a new value system across all sectors and stakeholders.
- Water efficiency and curbing water losses should be high on the agenda of each individual and institution in the country.
- Water management must be formally embedded in the sector businesses with associated accountability.

The DWS will insist in the future that all water infrastructure which they fund is value engineered against the life-cycle cost with a specific emphasis on energy costs. Evidence will be required that the technical design is appropriate for the nature of the resource and that operation and maintenance of the assets is reasonably within the capability of the responsible institution. New water resources infrastructure will also not be developed or authorized unless effective WC/WDM interventions have been put in place in the affected area.

The identification of projects necessary to ensure the provision of adequate levels of water and sanitation services is based primarily on the findings of the Water and Sewer Master Plans. Master Planning is typically based on a forward planning horizon of 20 years, but is usually updated every three to five years, taking into account improved water demand estimates and subsequent infrastructure developments which may have taken place. The recommended projects from the Stellenbosch Master Plans were incorporated into the WSDP.

The Master Plans represent the ideal infrastructure development required to meet projected future water requirements over the next few years, while realistic capital investment in infrastructure projects is determined by budget availability. As a result, prioritization of projects is necessary to identify what can be done within the available and projected budget constraints. The prioritization of projects is done through the IDP and annual budget planning process.

Recommended infrastructure projects for implementation in the future by Stellenbosch Municipality will be based on the following plans and processes:

- Water and Sewer Master Plans and Water and Waste Water Treatment Works Master Plans;
- Infrastructure replacement needs (Asset Register);
- Budget proposals; and
- Asset Management Plans.

The current needs projects are estimated at R674.651 million of which 87% are funded, as included in the three year MTEF project list. It should however be emphasised that additional funding will be required to address the full achievement of the water services strategies as outlined in Section D, but that the extent of such additional funding can only be determined, once initial investigations and activities have been concluded.

WSDP EXECUTIVE SUMMARY 2025-2027

Table F.1: WSDP FY2025/26: LIST OF CONCEPTUAL PROJECTS

Nr	Situation Assessment (Problem Definition)	Solution description as defined by topic situation assessment (Strategy)	Conceptual project	Is there an existing project addressing this problem?	Existing Projects Information			Does this current listed project address the problem totally?	Approved by Council, in project database and part of 5 year IDP cycle projects?	Project listed in 3yr MTEF - cycle?
					Project Number (Dept)	Project Title	Project Cost R'000			
CURRENT NEEDS										
Topic 1: Settlements and Demographics										
	Done by other Department									
Topic 2: Service Levels										
2.1	There are still an estimated 212 households on the farms in the rural areas without basic water supply services.	Assist private landowners as far as possible with the provision of basic water services to all the households in the Municipality's Management Area with existing water service levels below basic water supply services.	WSDP	No	SB2526001	Provide basic water services to the households on the farms without basic water services	R2 120	Yes	No	No
2.2	There are still an estimated 1 270 households on the farms in the rural areas without basic sanitation services.	Assist private landowners as far as possible with the provision of basic sanitation services to all the households in the Municipality's Management Area with existing sanitation service levels below basic sanitation services.	WSDP	No	SB2526002	Provide basic sanitation services to the households on the farms without basic sanitation services	R12 700	Yes	No	No
2.3	There are still 2 623 households in the informal areas without interim water supply services.	Install communal water services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 25 or less households per tap.	WSDP	No	SB2526003	Install additional communal water services for the informal areas.	R1 635	Yes	No	No
2.4	There are still 6 320 households in the informal areas without interim sanitation services.	Install communal sanitation services for the informal areas in order to ensure that the ratio of number of households per facility complies with the target of 5 of less households per toilet facility.	WSDP	No	SB2526004	Install additional communal sanitation facilities for the informal areas.	R19 050	Yes	No	No
2.5	Water and Sanitation Service Level Policy is not in place.	Ensure a Water and Sanitation Service Level Policy is in place.	WSDP	No	SB2526005	Draft a Water and Sanitation Service Level Policy.	R200	Yes	No	No
Topic 3: Water Services Asset Management (Infrastructure)										
3.1	Capacity of existing bulk water pipeline and storage capacity not adequate.	Ensure adequate bulk water pipeline capacity and storage capacity.	MTREF Project	Yes	SB2526006	Bulk Water Supply Pipe and Reservoir: Stellenbosch	R143 786	Yes	Yes	Yes
3.2	Capacity of existing bulk water pipeline and pump capacity not adequate.	Ensure adequate bulk water pipeline capacity and pump capacity.	MTREF Project	Yes	SB2526007	Bulk Water Supply Pipe Line and Pump stations: Franschhoek	R12 000	Yes	Yes	Yes
3.3	Capacity of existing bulk water pipeline is not adequate.	Ensure adequate bulk water pipeline capacity.	MTREF Project	Yes	SB2526008	Bulk Water Supply Pipe: Cloetesville/ Idas Valley	R28 000	Yes	Yes	Yes
3.4	Capacity of existing bulk water pipeline is not adequate.	Ensure adequate bulk water pipeline capacity.	MTREF Project	Yes	SB2526009	Bulk Water Upgrades Franschoek	R1 000	Yes	Yes	Yes
3.5	Capacity of existing bulk water pipeline and storage capacity not adequate.	Ensure adequate bulk water pipeline capacity and storage capacity.	MTREF Project	Yes	SB2526010	New Reservoir and Pipeline: Vlottenburg	R30 940	Yes	Yes	Yes
3.6	Capacity of existing bulk water pipeline and storage capacity not adequate.	Ensure adequate bulk water pipeline capacity and storage capacity.	MTREF Project	Yes	SB2526011	Uniepark and Helshoogte Storage and Supply scheme	R4 000	Yes	Yes	Yes
3.7	Capacity of existing sewer bulk pipeline is inadequate.	Ensure adequate bulk sewer pipeline capacity, in order to prevent possible spillages.	MTREF Project	Yes	SB2526012	Dorp Street Bulk Sewer Upgrade	R3 000	Yes	Yes	Yes
3.8	Capacity of existing WWTW is inadequate to meet future wastewater treatment requirements.	Ensure adequate wastewater treatment capacity and final effluent compliance.	MTREF Project	Yes	SB2526013	Extention of WWTW: Stellenbosch	R82 200	Yes	Yes	Yes
3.9	Some of the existing sewer drainage networks with insufficient capacity.	Replace sewer pipelines with inadequate capacity.	MTREF Project	Yes	SB2526014	Sewerpipe replacement	R20 000	Partly	Yes	Yes
3.10	Capacity of existing WWTW is inadequate to meet future wastewater treatment requirements.	Ensure adequate wastewater treatment capacity and final effluent compliance.	MTREF Project	Yes	SB2526015	Upgrade of WWTW Wemmershoek	R31 000	Yes	Yes	Yes
3.11	Capacity of existing WWTW is inadequate to meet future wastewater treatment requirements.	Ensure adequate wastewater treatment capacity and final effluent compliance.	MTREF Project	Yes	SB2526016	Upgrade of WWTW: Klapmuts	R81 000	Yes	Yes	Yes
3.12	New pump station needs to be constructed in order to adequately service new households with waterborne sewer system.	Ensure adequate sewage pump capacity, in order to prevent possible spillages.	MTREF Project	Yes	SB2526017	Construction of New Dwars River Sewer Pump station.	R7 000	Yes	Yes	Yes
3.13	Capacity of existing sewer drainage network pipelines is inadequate.	Ensure adequate sewer drainage capacity, in order to prevent possible spillages.	MTREF Project	Yes	SB2526018	Upgrade of Dwars River Bulk Sewer network and pump lines	R4 000	Yes	Yes	Yes
Topic 4: Water Services Operation and Maintenance										
4.1	Existing disinfection facilities need to be upgraded	Ensure microbiological water quality compliance	MTREF Project	Yes	SB25626019	Chlorination Installation: Upgrade	R750	Yes	Yes	Yes
4.2	Additional furniture are required for some of the offices and tools and equipment.	Ensure a good working environment and adequate tools and equipment.	MTREF Project	Yes	SB25626020	Furniture, Tools and Equipment: Water	R600	Yes	Yes	Yes
4.3	Safety Inspections need to be done for some of the reservoirs and dams.	Ensure compliance with regard to safety requirements.	MTREF Project	Yes	SB25626021	Reservoirs and Dam Safety	R2 500	Yes	Yes	Yes
4.4	Some of the existing vehicles need to be replaced.	Ensure adequate vehicles for operations (Service Delivery)	MTREF Project	Yes	SB25626022	Specialized Vehicles: Water	R1 000	Yes	Yes	Yes
4.5	Some of the existing vehicles need to be replaced.	Ensure adequate vehicles for operations (Service Delivery)	MTREF Project	Yes	SB25626023	Vehicles: Water	R1 000	Yes	Yes	Yes
4.6	Some parts of the existing water telemetry system needs to be upgraded	Effective monitoring and management of water supply volumes	MTREF Project	Yes	SB25626024	Water Telemetry Upgrade	R6 250	Yes	Yes	Yes
4.7	Capacity of existing WTW is inadequate and some components need refurbishment	Ensure adequate future water treatment capacity and water quality compliance.	MTREF Project	Yes	SB25626025	Upgrade of IdasValley WTP	R52 000	Yes	Yes	Yes
4.8	Additional furniture are required for some of the offices and tools and equipment.	Ensure a good working environment and adequate tools and equipment.	MTREF Project	Yes	SB25626026	Furniture, Tools & Equipment: Sanitation	R1 200	Yes	Yes	Yes
4.9	Existing ponds need rehabilitation and pumping system needs to be constructed.	Ensure adequate wastewater treatment capacity and final effluent compliance.	MTREF Project	Yes	SB25626027	Pond rehabilitation and pond pumping systems construction WWTW	R4 400	Yes	Yes	Yes
4.10	Capacity of existing WWTW is inadequate to meet future wastewater treatment requirements and some components need to be refurbished.	Ensure adequate wastewater treatment capacity and final effluent compliance.	MTREF Project	Yes	SB25626028	Refurbish Plant & Equipment - Raithby WWTW	R10 000	Yes	Yes	Yes
4.11	Some parts of the existing sewage telemetry system needs to be upgraded	Effective monitoring and management of sewage flows.	MTREF Project	Yes	SB25626029	Sewer Pump station and Telemetry Upgrade	R5 500	Yes	Yes	Yes
4.12	Some of the existing vehicles need to be replaced.	Ensure adequate vehicles for operations (Service Delivery)	MTREF Project	Yes	SB25626030	Specialized Vehicles: Sanitation	R9 000	Yes	Yes	Yes
4.13	Additional laboratory equipment is needed	Ensure adequate sample testing equipment	MTREF Project	Yes	SB25626031	Upgrade Laboratory Equipment	R250	Yes	Yes	Yes
4.14	Some of the existing vehicles need to be replaced.	Ensure adequate vehicles for operations (Service Delivery)	MTREF Project	Yes	SB25626032	Vehicles: Sanitation	R2 000	Yes	Yes	Yes
4.15	Water Safety Plan not regularly updated.	Water Quality Risk Management - Regular updating of Water Safety Plan	WSDP	No	SB25626033	Regular updating of the Water Safety Plan	R300	Yes	No	No
4.16	W2RAP not regularly updated.	Wastewater Risk Management - Regular updating of W2RAP	WSDP	Partly	SB25626034	Regular updating of the W2RAP	R300	Yes	No	No
4.17	WTW and WWTW Process Audits not regularly done.	Compile regular WTW and WWTW Process Audits	WSDP	Partly	SB25626035	WTW and WWTW Process Audits	R400	Yes	No	No
4.18	Asset Management Plan is not in place.	Ensure sufficient budget allocation toward refurbishment of existing water and sewerage infrastructure.	WSDP	No	SB25626036	Compile an Asset Management Plan	R1 000	Yes	No	No
Topic 5: Conservation and Demand Management (Topic 5.1 Water Resources)										
5.1	WC/WDM measures need to be implemented to further reduce NRW and Water Losses.	Implementation of WC/WDM Strategy measures	MTREF Project	Yes	SB2526037	Water Conservation & Demand Management	R6 500	Yes	Yes	Yes
5.2	Some sections of the water reticulation network are old, which result in regular pipe bursts	Implementation of pipeline replacement programme	MTREF Project	Yes	SB2526038	Waterpipe Replacement	R22 000	Partly	Yes	Yes
5.3	WC/WDM measures need to be implemented to further reduce NRW and Water Losses.	Implementation of WC/WDM Strategy measures	WSDP	No	SB2526039	Implement propopsed WC/WDM Strategy measures as included in WSDP (1-3 yrs)	R20 020	Yes	Partly	Partly
5.4	WC/WDM measures need to be implemented to further reduce NRW and Water Losses.	Implementation of WC/WDM Strategy measures	WSDP	No	SB2526040	Implement propopsed WC/WDM Strategy measures as included in WSDP (4-7 yrs)	R18 300	Yes	Partly	Partly
5.5	WC/WDM measures need to be implemented to further reduce NRW and Water Losses.	Implementation of WC/WDM Strategy measures	WSDP	No	SB2526041	Implement propopsed WC/WDM Strategy measures as included in WSDP (8-10 yrs)	R12 550	Yes	Partly	Partly
Topic 5: Conservation and Demand Management (Topic 5.2 Water Balance)										
5.6	Potential unmetered erven were identified through Swift process	Ensure all water usage is metered. Implementation of WC/WDM Strategy in order to reduce NRW and Water Losses.	MTREF Project	Yes	SB2526042	Upgrade and Replace Water Meters	R9 000	Yes	Yes	Yes
Topic 6: Water Resources										
Topic 7: Financial										
	Done by other Department									
Topic 8: Institutional Arrangements and Customer Care										
8.1	Water Infrastructure planning needs to be aligned with the future potential developments.	Water Infrastructure Planning, aligned with SDF.	MTREF Project	Yes	SB2526043	Update Water Masterplan	R1 500	Yes	Yes	Yes
8.2	WSDP needs to be updated regularly, according to the Water Services Act.	Water and Sanitation Services Planning. Legislative compliance	MTREF Project	Yes	SB2526044	Compilation of Water Service Development Plan (tri-annually)	R1 200	Yes	Yes	Yes
8.3	Sewerage infrastructure planning needs to be aligned with the future potential	Sewerage Infrastructure Planning, aligned with SDF.	MTREF Project	Yes	SB2526045	Update Sewer Masterplan	R1 500	Yes	Yes	Yes
TOTAL: CURRENT NEEDS							**R674 651**			
							R586 076			
							87%			

WSDP EXECUTIVE SUMMARY 2025-2027

Table F.1: WSDP FY2025/26: LIST OF CONCEPTUAL PROJECTS

Nr	Situation Assessment (Problem Definition)	Solution description as defined by topic situation assessment (Strategy)	Conceptual project	Is there an existing project addressing this problem?	Existing Projects Information			Does this current listed project address the problem totally?	Approved by Council, in project database and part of 5 year IDP cycle projects?	Project listed in 3yr MTEF - cycle?
					Project Number (Dept)	Project Title	Project Cost R'000			
FUTURE NEEDS										
Infrastructure										
F.1	Inadequate capacity of existing bulk water pipeline and water reticulation network infrastructure.	Ensure adequate bulk water pipeline and water reticulation network capacity.	Water Master Plan	No	SB2526046	Stellenbosch: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R172 920	Yes	No	No
F.2			Water Master Plan	No	SB2526047	Stellenbosch: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R18 094	Yes	No	No
F.3			Water Master Plan	No	SB2526048	Stellenbosch: Upgrade bulk water pipeline and reticulation networks (>2045).	R10 794	Yes	No	No
F.4			Water Master Plan	No	SB2526049	Klapmuts: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R22 830	Yes	No	No
F.5			Water Master Plan	No	SB2526050	Klapmuts: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R13 261	Yes	No	No
F.6			Water Master Plan	No	SB2526051	Klapmuts: Upgrade bulk water pipeline and reticulation networks (>2045).	R2 371	Yes	No	No
F.7			Water Master Plan	No	SB2526052	Franshhoek: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R65 167	Yes	No	No
F.8			Water Master Plan	No	SB2526053	Franschhoek: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R9 816	Yes	No	No
F.9			Water Master Plan	No	SB2526054	Dwars River: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R41 306	Yes	No	No
F.10			Water Master Plan	No	SB2526055	Dwars River: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R24 081	Yes	No	No
F.11			Water Master Plan	No	SB2526056	Raithby: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R2 533	Yes	No	No
F.12			Water Master Plan	No	SB2526057	Raithby: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R8 564	Yes	No	No
F.13			Water Master Plan	No	SB2526058	Faure: Upgrade bulk water pipeline and reticulation networks (2030).	R4 733	Yes	No	No
F.14			Water Master Plan	No	SB2526059	Polkadraai: Upgrade bulk water pipeline and reticulation networks (2025-2030).	R52 344	Yes	No	No
F.15			Water Master Plan	No	SB2526060	Koelenhof: Upgrade bulk water pipeline and reticulation networks (2025-2035).	R80 585	Yes	No	No
F.16			Water Master Plan	No	SB2526061	Koelenhof: Upgrade bulk water pipeline and reticulation networks (2036-2045).	R71 387	Yes	No	No
F.17			Water Master Plan	No	SB2526062	Muldersvlei: Upgrade bulk water pipeline and reticulation networks (2026).	R740	Yes	No	No
F.18	Inadequate capacity of existing water pump stations.	Ensure adequate water pump station capacity.	Water Master Plan	No	SB2526063	Stellenbosch: Future upgrades and new water pump stations.	R21 332	Yes	No	No
F.19			Water Master Plan	No	SB2526064	Klapmuts: Future upgrades and new water pump stations.	R5 875	Yes	No	No
F.20			Water Master Plan	No	SB2526065	Franschhoek: Future upgrades and new water pump stations.	R20 371	Yes	No	No
F.21			Water Master Plan	No	SB2526066	Dwars River: Future upgrades and new water pump stations.	R12 614	Yes	No	No
F.22			Water Master Plan	No	SB2526067	Raithby: Future upgrades and new water pump stations.	R6 668	Yes	No	No
F.23			Water Master Plan	No	SB2526068	Koelenhof: Future upgrades and new water pump stations.	R22 597	Yes	No	No
F.24	Inadequate capacity of existing reservoir storage capacity.	Ensure adequate bulk water storage capacity.	Water Master Plan	No	SB2526069	Stellenbosch: Additional reservoirs required to ensure adequate storage capacity	R245 823	Yes	No	No
F.25			Water Master Plan	No	SB2526070	Klapmuts: Additional reservoirs required to ensure adequate storage capacity	R50 373	Yes	No	No
F.26			Water Master Plan	No	SB2526071	Franschhoek: Additional reservoirs required to ensure adequate storage capacity	R50 489	Yes	No	No
F.27			Water Master Plan	No	SB2526072	Dwars River: Additional reservoirs required to ensure adequate storage capacity	R49 171	Yes	No	No
F.28			Water Master Plan	No	SB2526073	Koelenhof: Additional reservoirs required to ensure adequate storage capacity	R20 648	Yes	No	No
F.29	Inadequate capacity of existing bulk sewer pipeline and sewer drainage network infrastructure.	Ensure adequate bulk sewer pipeline and sewer drainage network capacity.	Sewer Master Plan	No	SB2526074	Stellenbosch: Upgrade bulk sewer pipeline and sewer drainage networks (2025-2035).	R103 915	Yes	No	No
F.30			Sewer Master Plan	No	SB2526075	Stellenbosch: Upgrade bulk sewer pipeline and sewer drainage networks (2036-2045).	R40 228	Yes	No	No
F.31			Sewer Master Plan	No	SB2526076	Stellenbosch: Upgrade bulk sewer pipeline and sewer drainage networks (>2045).	R1 412	Yes	No	No
F.32			Sewer Master Plan	No	SB2526077	Wemmershoek: Upgrade bulk sewer pipeline and sewer drainage networks (2025-2035).	R13 168	Yes	No	No
F.33			Sewer Master Plan	No	SB2526078	Wemmershoek: Upgrade bulk sewer pipeline and sewer drainage networks (2036-2045).	R1 693	Yes	No	No
F.34			Sewer Master Plan	No	SB2526079	Pniel: Upgrade bulk sewer pipeline and sewer drainage networks (2025-2035).	R48 314	Yes	No	No
F.35			Sewer Master Plan	No	SB2526080	Pniel: Upgrade bulk sewer pipeline and sewer drainage networks (2036-2045).	R18 746	Yes	No	No
F.36			Sewer Master Plan	No	SB2526081	Klapmuts: Upgrade bulk sewer pipeline and sewer drainage networks (2025-2035).	R26 503	Yes	No	No
F.37			Sewer Master Plan	No	SB2526082	Klapmuts: Upgrade bulk sewer pipeline and sewer drainage networks (2036-2045).	R11 764	Yes	No	No
F.38			Sewer Master Plan	No	SB2526083	Klapmuts: Upgrade bulk sewer pipeline and sewer drainage networks (>2045).	R50 883	Yes	No	No
F.39			Sewer Master Plan	No	SB2526084	Raithby: Upgrade bulk sewer pipeline and sewer drainage networks (2025-2030).	R529	Yes	No	No
F.40	Inadequate capacity of existing sewer pump stations.	Ensure adequate sewer pump station capacity.	Sewer Master Plan	No	SB2526085	Stellenbosch: Future upgrades and new sewer pump stations.	R25 757	Yes	No	No
F.41			Sewer Master Plan	No	SB2526086	Wemmershoek: Future upgrades and new sewer pump stations.	R2 970	Yes	No	No
F.42			Sewer Master Plan	No	SB2526087	Pniel: Future upgrades and new sewer pump stations.	R16 888	Yes	No	No
F.43			Sewer Master Plan	No	SB2526088	Klapmuts: Future upgrades and new sewer pump stations.	R11 027	Yes	No	No
F.44	Inadequate capacity of existing WWTWs.	Ensure adequate wastewater treatment capacity.	WSDP	No	SB2526089	Upgrade Stellenbosch WWTW (2030, Additional 15 Ml/d)	R375 000	Yes	No	No
F.45			WSDP	No	SB2526090	Upgrade Stellenbosch WWTW (2040, Additional 15 Ml/d)	R375 000	Yes	No	No
F.46			WSDP	No	SB2526091	Upgrade Wemmershoek WWTW (2034, Additional 4.5 Ml/d)	R112 500	Yes	No	No
Resources										
F.47	Current allocations and yields from the various water resources are inadequate to meet the future water requirements.	Implement Water Resource Augmentation projects to meet the future water requirements	WSDP	No	SB2526092	Groundwater development for Stellenbosch (Additional 4.378 Ml/d)	Costs of these water resource augmentation projects still need to be determined.	Yes	No	No
F.48			WSDP	No	SB2526093	Groundwater development for Dwars River (Additional 1.001 Ml/d)		Yes	No	No
F.49			WSDP	No	SB2526094	Groundwater development for Franschhoek (Additional 2.887 Ml/d)		Yes	No	No
F.50			WSDP	No	SB2526095	Groundwater development for Klapmuts (Additional 1.296 Ml/d)		Yes	No	No
F.51			WSDP	No	SB2526096	Groundwater development for Meerlust (Additional 0.065 Ml/d)		Yes	No	No
F.52			WSDP	No	SB2526097	Groundwater development for Koelenhof (Additional 0.415 Ml/d)		Yes	No	No
F.53			WSDP	No	SB2526098	Stellenbosch Wastewater Reclamation (Additional 5.000 Ml/d)		Yes	No	No
F.54			WSDP	No	SB2526099	Dwars River Wastewater Reclamation (Additional 1.000 Ml/d)		Yes	No	No
F.55			WSDP	No	SB2526100	Franschhoek Wastewater Reclamation (Additional 2.000 Ml/d)		Yes	No	No
F.56			WSDP	No	SB2526101	Klapmuts Wastewater Reclamation (Additional 0.699 Ml/d)		Yes	No	No
F.57			WSDP	No	SB2526102	External Sources: Stellenbosch (CCT, Blackheath WTW, Additional 3.123 Ml/d)		Yes	No	No
F.58			WSDP	No	SB2526103	External Sources: Stellenbosch (WCWSS, Second Phase, Additional 7.425 Ml/d)		Yes	No	No
F.59			WSDP	No	SB2526104	External Sources: Other areas (CCT, Additional 10.740 Ml/d)		Yes	No	No
TOTAL: FUTURE NEEDS							**R2 343 784**			