

BEAUFORT WEST MUNICIPALITY

WATER SERVICES DEVELOPMENT PLAN FOR 2022-2027

ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW



DRAFT

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ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
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ABBREVIATIONS AND DEFINITIONS

AADD	Average Annual Daily Demand
AC	Asbestos Cement
ADWF	Annual Dry Weather Flow
AMP	Asset Management Plan
BD	Blue Drop
BDRR	Blue Drop Risk Rating
BGWMA	Breede-Gouritz Water Management Area
BH	Borehole
BOWMA	Breede-Olifants Water Management Area
BW	Bulk Water
CAP	Corrective Action Plan
CBD	Central Business District
CFO	Chief Financial Officer
CHC	Community Health Centre
CKD	Central Karoo District
CKDM	Central Karoo District Municipality
CLC	Community Learning Centre
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
CV	Carrying Value
DCoG	Department of Cooperative Government
DLG	Department of Local Government
DMA	District Management Area
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EC	Electrical Conductivity
EHP	Environmental Health Practitioner
EPWP	Expanded Public Works Programme
ESETA	Energy Sector Education and Training Authority
ESKOM	Electricity Supply Commission
FET	Further Education and Training
GD	Green Drop
GDIP	Green Drop Improvement Plan
GDPR	Gross Domestic Product of Region
GIS	Geographic Information Systems
GRAP	Generally Recognised Accounting Practice
HR	Human Resources
IAM	Infrastructure Asset Management
ICT	Information and Communication Technology
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
ILI	Infrastructure Leakage Index
IMP	Incident Management Protocol
IMQS	Infrastructure Management Query System
IRIS	Integrated Regulatory Information System

ABBREVIATIONS AND DEFINITIONS

ISP	Internal Strategic Perspective
IT	Information Technology
IWA	International Water Association
Kl	Kilolitre
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
LED	Local Economic Development
LGTAS	Local Government Turn Around Strategy
LM	Local Municipality
MA	Management Area
MEC	Mayoral Executive Committee
MFMA	Municipal Finance Management Act
MIG	Municipal Infrastructure Grant
MISA	Municipal Infrastructure Support Agent
MI	Mega Litre
MI/a	Mega Litre per Annum
MI/d	Mega Litre per Day
MM	Municipal Manager
Mm ³ /a	Million Cubic Metre per Annum
MNF	Minimum Night Flow
MTREF	Medium-Term Revenue Expenditure Framework
MuSSA	Municipal Strategic Self-Assessment
N/A	Not Applicable
NMR	No Monitoring Required
NRW	Non-Revenue Water
NT	National Treasury
NU	Non-Urban
NWRS	National Water Resource Strategy
O&M	Operation and Maintenance
OC	Opening Cost
OHS	Occupational Health and Safety
PAT	Progress Assessment Tool
PC	Process Controller
PMS	Performance Management System
PP	Public Participation
PRV	Pressure Reducing Valve
PS	Pump Station
PSP	Professional Service Provider
PT	Provincial Treasury
PW	Potable Water
RAS	Return Activated Sludge
RDP	Reconstruction and Development Programme
RES	Reservoir
RM	Rand Million
RUL	Remaining Useful Life

ABBREVIATIONS AND DEFINITIONS

RW	Raw Water
SALGA	South African Local Government Association
SANS	South African National Standard
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
SIV	System Input Volume
SO	Strategic Objective
SP	Sub-Place
SW	Surface Water
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UV	Ultra Violet
VIP	Ventilated Improved Pit
WARMS	Water use Authorisation and Registration Management System
WC/WDM	Water Conservation / Water Demand Management
WDM	Water Demand Management
WMA	Water Management Area
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSI	Water Services Institution
WSIG	Water Services Infrastructure Grant
WSP	Water Services Provider
WSS	Water Supply System
WTP	Water Treatment Plant
WTW	Water Treatment Works
WUA	Water User Association
WULA	Water Use License Application
WWQ	Waste Water Quality
W ₂ RAP	Wastewater Risk Abatement Plan
WWTW	Waste Water Treatment Works

KEY TERMS

KEY TERMS	INTERPRETATION																		
Current replacement cost (CRC)	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset. GAMAP defines CRC as the cost the entity would incur to acquire the asset on the reporting date.																		
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.																		
Financial Year	Financial year means in relation to- <ul style="list-style-type: none">a national or provincial department, the year ending 31 March; ora municipality, the year ending 30 June.																		
Integrated Development Plan (IDP)	An IDP is a legislative requirement for municipalities, which identifies the municipality's key development priorities; formulates a clear vision, mission and values; formulates appropriate strategies; shows the appropriate organisational structure and systems to realise the vision and the mission and aligns resources with the development priorities.																		
International Water Association (IWA) Water Balance	<table><tr><td rowspan="9">System Input Volume</td><td rowspan="2">Authorised Consumption</td><td>Billed Authorised Consumption</td><td>Billed Metered Consumption</td><td rowspan="2">Revenue Water</td></tr><tr><td>Unbilled Authorised Consumption</td><td>Billed Unmetered Consumption</td></tr><tr><td rowspan="7">Water Losses</td><td>Commercial Losses</td><td>Unbilled Metered Consumption</td><td rowspan="7">Non-Revenue Water</td></tr><tr><td rowspan="5">Physical Losses</td><td>Unbilled Unmetered Consumption</td></tr><tr><td>Unauthorised Consumption</td></tr><tr><td>Customer Meter Inaccuracies and Data Handling Errors</td></tr><tr><td>Leakage on Transmission and Distribution Mains</td></tr><tr><td>Leakage and Overflows from the Utilities Storage Tanks</td></tr><tr><td>Leakage on Service Connections up to the Customer Meter</td></tr></table>	System Input Volume	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption	Revenue Water	Unbilled Authorised Consumption	Billed Unmetered Consumption	Water Losses	Commercial Losses	Unbilled Metered Consumption	Non-Revenue Water	Physical Losses	Unbilled Unmetered Consumption	Unauthorised Consumption	Customer Meter Inaccuracies and Data Handling Errors	Leakage on Transmission and Distribution Mains	Leakage and Overflows from the Utilities Storage Tanks	Leakage on Service Connections up to the Customer Meter
System Input Volume	Authorised Consumption			Billed Authorised Consumption	Billed Metered Consumption		Revenue Water												
			Unbilled Authorised Consumption	Billed Unmetered Consumption															
	Water Losses		Commercial Losses	Unbilled Metered Consumption	Non-Revenue Water														
			Physical Losses	Unbilled Unmetered Consumption															
				Unauthorised Consumption															
				Customer Meter Inaccuracies and Data Handling Errors															
				Leakage on Transmission and Distribution Mains															
				Leakage and Overflows from the Utilities Storage Tanks															
		Leakage on Service Connections up to the Customer Meter																	
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.																		
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.																		

KEY TERMS

KEY TERMS	INTERPRETATION
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.
MIG	A conditional grant from national government to support investment in basic municipal infrastructure.
Municipal Finance Management Act (MFMA)	Municipal Finance Management Act, 2003 (Act No. 56 of 2003)
Remaining useful life (RUL)	The time remaining over which an asset is expected to be used.
Service Delivery Budget Implementation Plan (SDBIP)	The SDBIP is a management, implementation and monitoring tool that enable the Municipal Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the Municipal Manager, and for the community to monitor the performance of the municipality.
Strategic Framework for Water Services (SFWS)	The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a strategic framework for its implementation over the next ten years.
Water Conservation	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
Water Demand Management	The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability.
Water Services Authority (WSA)	A water services authority means a municipality with the executive authority and the right to administer water services as authorised in terms of the Municipal Structures Act, 1998 (Act No.117 of 1998). There can only be one water services authority in any specific area. Water services authority area boundaries cannot overlap. Water services authorities are metropolitan municipalities, district municipalities and authorised local municipalities.
Water Services Development Plan (WSDP)	A plan to be developed and adopted by the WSA in terms of the Water Services Act, 1997 (Act No.108 of 1997)
WSDP Guide Framework	Modular tool which has been developed by the DWS to support WSAs in complying with the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance.
Water Services Provider (WSP)	A WSP means any person or institution who provides water services to consumers or to another water services institution but does not include a water services intermediary.

ANNEXURE A (Aerial Photos)

Map 1A:	Locality Plan
Map 1B:	WSA Management Area
Map 1C:	Topographical Profile
Map 2A1:	Beaufort West Distribution System
Map 2A2:	Beaufort West Bulk Distribution System
Map 2B:	Merweville Distribution System
Map 2C:	Nelspoort Distribution System
Map 2D:	Murraysburg Distribution System

ANNEXURE B (Water and Sewer Master Plans)

Figure BWW 2.1a: Existing Water Distribution System – Beaufort West

Figure BWW 2.1b: Existing Water Distribution System – Merweville

Figure BWW 2.1c: Existing Water Distribution System – Nelspoort

Figure BWW 2.2a: Existing Water Distribution Zones – Beaufort West

Figure BWW 2.2b: Existing Water Distribution Zones – Merweville

Figure BWW 2.2c: Existing Water Distribution Zones – Nelspoort

Figure BWS 2.1a: Existing Sewer Distribution System – Beaufort West

Figure BWS 2.1b: Existing Sewer Distribution System – Merweville

Figure BWS 2.1c: Existing Sewer Distribution System – Nelspoort

Figure BWS 2.2a: Existing Sewer Drainage Area – Beaufort West

Figure BWS 2.2b: Existing Sewer Drainage Area – Merweville

Figure BWS 2.2c: Existing Sewer Drainage Area – Nelspoort

ANNEXURE C (IWA Water Balance Models)

WTWs monthly flows and capacities

Rainfall and WWTWs monthly flows

IWA Water Balance for Beaufort West

IWA Water Balance for Merweville

IWA Water Balance for Nelspoort

IWA Water Balance for Murraysburg

ANNEXURE D (Infrastructure Leakage Indexes)

Municipal Scorecard for assessing the potential for WC/WDM efforts in Beaufort West Municipality

ILI for Beaufort West

ILI for Merweville

ILI for Nelspoort

ILI for Murraysburg

ANNEXURE E (Sample Results)

Water Quality Compliance Sample Results for 2022/2023 and 2023/2024

Final Effluent Quality Compliance Sample Results for 2023/2024

ANNEXURE F

List of Photos

References

- 2001, 2011 and 2022 SA Census Data. 2016 Community Survey data of STATSSA.
- DWS's All Towns Reconciliation Strategy Documents for each of the towns in Beaufort West Municipality's Management Area, February 2015.
- Draft 2022/2023 Annual Report, Beaufort West Municipality, January 2024.
- Draft Amended Integrated Development Plan, 2024/2025, 5th Generation IDP, Beaufort West Municipality.
- 2024/2025 Medium Term Revenue Expenditure Framework (MTREF) Budget Report, Beaufort West Municipality.
- Operational and Capital Budgets and Tariffs of Beaufort West Municipality.
- 2022-23 Municipal Economic Review and Outlook, Central Karoo District, Western Cape Government.
- Socio-Economic Profile for Beaufort West Municipality, 2023, Western Cape Government.
- DWS's 2023 Blue Drop Report
- DWS's 2022 Green Drop Report.
- DWS's 2023 Green Drop PAT
- Beaufort West Municipality Spatial Development Framework, Draft Status Quo Report, March 2023. Western Cape Government.
- Growth Potential Study, 2014, Western Cape Government, Environmental Affairs and Development Planning.
- Municipal Services Strategic Assessment (MuSSA) for Beaufort West Municipality, 2023.
- High Level update of Beaufort West Municipality's Water Master Plan, 2022, GLS Consulting.
- Beaufort West Water Master Plan, 2008, GLS Consulting.
- Beaufort West Sewer Master Plan, 2008, GLS Consulting.
- Department of Local Government, LG01-2023-24: Short-term Assessment Study, Beaufort West Municipality, JG Afrika and GEOSS, March 2024.
- 5th Groundwater Monitoring Summary for Beaufort West, GEOSS Report No. 2021/09-23, 30 September 2021.
- Feasibility Study for Additional Wellfields to Supply Beaufort West, GEOSS Report No. 2019/02-18, 20 February 2019.
- Annual Process Audit Reports for Beaufort West WTWs, for Merweville WTWs, for Nelspoort WTWs and for Murraysburg WTWs, June 2024, Water and Wastewater Engineering.
- Annual Process Audit Reports for Beaufort West WWTWs, for Merweville WWTWs, for Nelspoort WWTWs and for Murraysburg WWTWs, June 2024, Water and Wastewater Engineering.
- SANS241-1:2015 Part 1: Microbiological, physical, aesthetic and chemical determinands and SANS241-2:2015 Part 2: Application of SANS 241-1.

A. WATER SERVICES AUTHORITY ADMINISTRATION

Introduction: Strategic Perspective and Methodology

Every WSA has a duty to all customers or potential customers in its area of jurisdiction to progressively ensure efficient, affordable, economical and sustainable access to water services that 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. The DWS has developed a new WSDP website (Rolled-out to all WSAs during 2017) to assist WSAs with their WSDP process and to provide a framework for the capturing of the data. The business elements included in the new WSDP website are as follows:

- Administration
 - Role Player Details
 - Sector Integrations
 - Service Provider
- Information and Comprehensive Overview
 - Settlement Demographics and Public Amenities
 - Service Levels Profile
 - Water Services Asset Management (Information)
 - Water Services O&M
 - Conservation and Demand Management
 - Water Resources
 - Finance
 - Water Services Institutional Arrangements and Customer Services
- Master Plan
 - Settlement Demographics and Public Amenities
 - Service Levels Profile
 - Water Services Asset Management
 - Water Services O&M
 - Conservation and Demand Management
 - Water Resources
 - Existing Needs Perspective
 - Water Master Plan Perspective
 - Overall Topic Strategies
- Project Management

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

WSDP Process

This 2022-2027 WSDP of Beaufort West Municipality is an update of the previous WSDP. The WSDP was drafted according to the DWS's new WSDP website, as rolled out to the Municipalities in the Central Karoo Region on the 15th of November 2017. The WSDP is aligned and integrated with the 2024/2025 IDP of Beaufort West Municipality and needs to form an integrated part of the IDP public participation and consultation process. The IDP is predominantly strategic as opposed to the WSDP that are more operationally orientated with regard to water and sanitation services.

Part of the WSDP is to identify strategies (Master Plan) that need to be developed to address the information shortfalls and other constraints, which impact on service delivery. The implementation strategies should not constitute a wish-list, but must be reasonable and achievable within the capital and operational budget and staff constraints of Beaufort West Municipality. The WSDP should be revised regularly, reporting the information for the previous five years and the projected future requirements. It is not a stagnant document, but rather a living process reliant on improvement and enhancement through the input provided by councillors, officials and technical assistants.

The 2022-2027 WSDP for Beaufort West Municipality consists of the following documents and processes.

- Executive Summary Report that can be used for Council approval and for the Public Participation Process;
- Administration, Information and Comprehensive Overview Report; and
- Future Demand and Functionality Requirements Report.
- Updated WSDP website.

The Executive Summary Report must be submitted to the Council for their approval and issued to the public for their comment.

WSDP'S as set out in the Strategic Framework for Water Services (September 2003)

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 expenditure 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 DWS.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

- A WSA must report annually and in a public way on progress in implementing the plan.

The primary purpose of the WSDP is to assist WSAs to carry out their mandate effectively. It is an important tool to assist the WSA to develop a realistic long-term investment plan which prioritises the provision of basic water services, promotes economic development and is affordable and sustainable over time.

The progressive development of the WSDP is two-phased. On the one hand it involves updating of the information content on which to base latest planning initiatives. On the other hand the structure and functionality of the framework itself will progressively be enhanced and improved.

The current guideline introduces a strategic theme to each of the business elements. Strategic approaches need to be defined and implemented in order to bridge the gap between the status quo, its existing information levels and the proposed visions and objectives for the Municipality, in relation to the delivery of water services. In particular:

- What needs to be done to bridge the gap?
- What are the different options towards achieving the objectives / priorities?
- What are the constraints in terms of the options?
- What is feasible within the existing constraints?
- What assumptions are being made?
- What aspects need to be flagged as being of relatively higher importance than others?

Name of WSA

Beaufort West Municipality is responsible for ensuring provision of water services within their area of jurisdiction and has the constitutional responsibility for planning, ensuring access to, and regulating provision of water services within their area of jurisdiction.

One of the visions of the Sector is that water supply and sanitation services are provided by effective, efficient and sustainable institutions that are accountable and responsive to those whom they serve (SFWS).

One of the goals of the Sector is that all WSAs are accountable to their citizens, have adequate capacities to make wise choices (related to water services providers) and are able to regulate water services provision effectively (SFWS).

Beaufort West is within the Central Karoo District Municipal Area of the Western Cape Province and falls within the Breede-Olifants WMA. The Municipality consists of seven (7) individual wards, and is the only WSA within this municipal area. It is also the Water Services Provider (WSP). Its responsibility as WSA also extends to the rural areas within its boundary. Beaufort West Municipality's Management includes the following areas:

- The large town of Beaufort West.
- The small towns of Merweville, Nelspoort and Murraysburg.
- The rural farm areas.

Water is supplied via independent water distribution systems to Beaufort West, Merweville, Nelspoort and Murraysburg. Beaufort West and Nelspoort are reliant on surface and groundwater sources, while Merweville and Murraysburg only utilise groundwater sources. Beaufort West Municipality also operates its own WTWs and WWTWs.

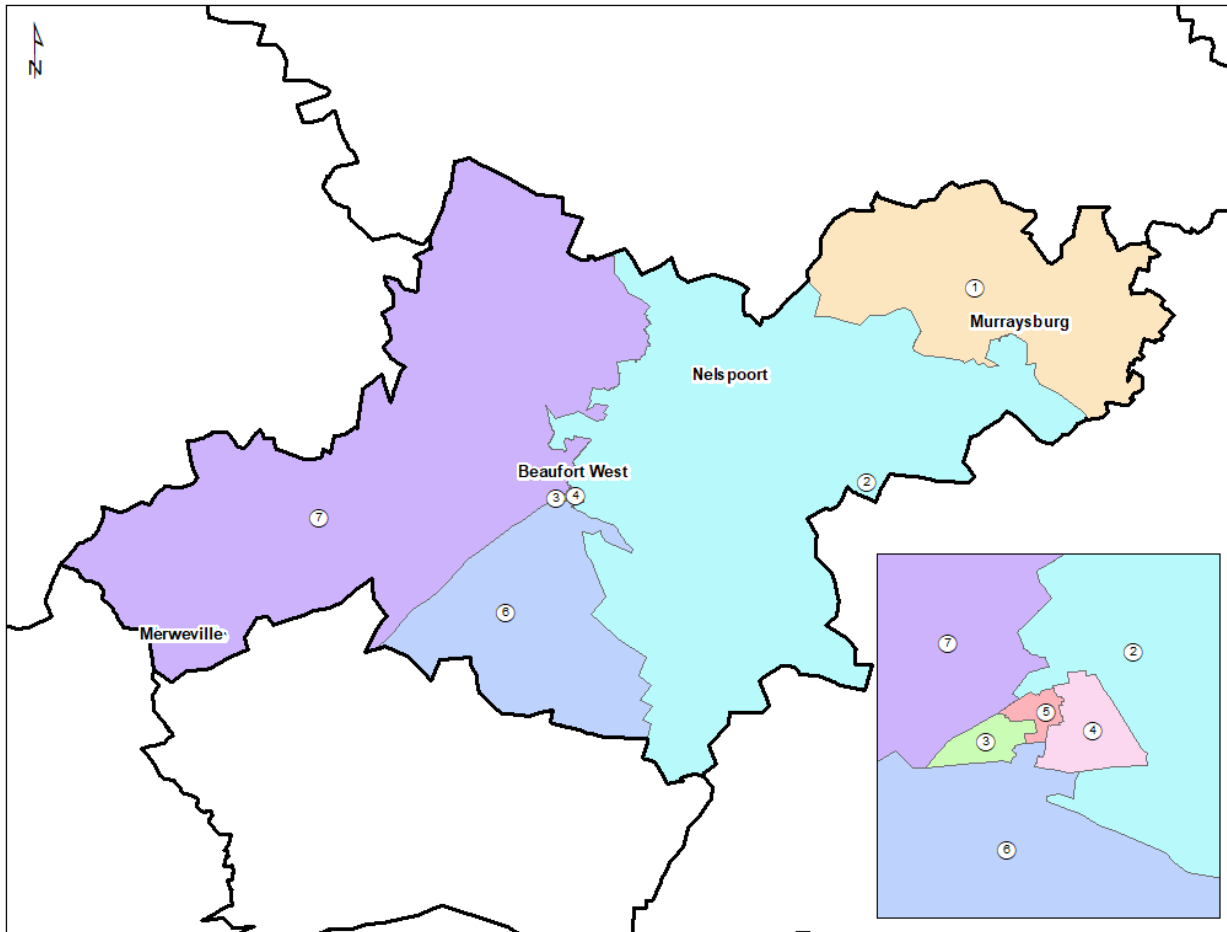
WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

Table A.1: Name of WSA	
Name	Beaufort West Municipality
Street Address	Private Bag X582, Beaufort West, 6970
Postal Address	112 Donkin Street, Beaufort West
Reference No.	WC053

The table and figure below give an overview of the twelve wards and the towns in each of the wards and the linkage with the water distribution schemes.

Table A.2: Wards in Beaufort West Municipality		
Ward	Towns	Water Distribution System
1	Murraysburg	Murraysburg
2	Beaufort West, Nelspoort	Beaufort West, Nelspoort
3	Beaufort West	Beaufort West
4	Beaufort West	Beaufort West
5	Beaufort West	Beaufort West
6	Beaufort West	Beaufort West
7	Beaufort West, Merweville	Beaufort West, Merweville



Status of WSDP

The WSDP will be taken to the Council for approval. Beaufort West Municipality will forward the Council Resolution for the approval to the DWS once approved. Councilors must be aware of the targets and funding commitments made within the WSDP since they will be responsible for ensuring that these commitments are fulfilled. The WSDP will also serve as a project management tool to monitor the achievement of these commitments.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
A: WSA ADMINISTRATION

A.1 ROLE PLAYER DETAILS

The table below gives a summary of the contact details of the various role players and the interaction acknowledgement of the WSDP process of Beaufort West Municipality.

Table A.1.1: Contact details of Role Players							
Position	Designation	Person	Tel	Cell	Email	Interaction Acknowledgement (Yes / No)	Interaction Acknowledge Signature (Yes / No)
Municipal Manager	Municipal Manager	D.E. Welgemoed	023 414 8195		derickw@beaufortwestmun.co.za	Yes	
Executive Mayor	Executive Mayor	G Pietersen	023 414 8111		bwmmayor@beaufortwestmun.co.za	Yes	
Water Services Councilor	Water Services Councilor						
WSDP Contact	Manager: Technical Services	C.B. Wright	023 414 8101	084 402 6007	manager.techservice@beaufortwestmun.co.za	Yes	
IDP Manager	IDP Manager						
PIMSS Senior Planner	Head: Asset and Fleet Management						
Technical Services	Director: Civil Engineering Services	C.B. Wright	023 414 8101	084 402 6007	manager.techservice@beaufortwestmun.co.za	Yes	
Chief Financial Officer	Acting Director: Financial Services	M Nhlengethwa	023 414 8129		mehlulin@beaufortwestmun.co.za	Yes	
Data Official	Senior Technician Trade Services	C.B. Wright	023 414 8101	084 402 6007	manager.techservice@beaufortwestmun.co.za	Yes	
PMU Manager	Manager PMU & Public Services						
Housing	Manager Human Settlements	M Tshibo	023 414 8104		mctshibo@beaufortwestmun.co.za	Yes	
Environmental	Acting Director Community Services	M Tshibo	023 414 8104		mctshibo@beaufortwestmun.co.za	Yes	
Infrastructure	Director: Civil Engineering Services	C.B. Wright	023 414 8101	084 402 6007	manager.techservice@beaufortwestmun.co.za	Yes	

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

A.2 SECTOR INTREGRATION

Integration between the WSDP and the IDP is important in order to coordinate that the timing for the update of the WSDP is aligned with that of the IDP process implementation plan. The IDP process itself will form the primary route for political stakeholder involvement in the WSDP. In so doing, recommended actions to support the strategic planning of water services will be reflected in the IDP.

Process Followed

The following process was followed for the updating of Beaufort West Municipality's WSDP.

- All the water and sewerage infrastructure were visited in Beaufort West, Merweville, Nelspoort and Murraysburg during May 2024.
- The final 2024/2025 MTREF Budget and 2024/2025 IDP were incorporated into the WSDP where applicable.
- The draft WSDP documents will be taken to Council for approval.
- The draft WSDP-IDP Sector Input report will be placed on the Municipality's website for public comment.
- The draft WSDP documents will be distributed to the DWS, the DLG and the neighbouring WSAs for their comments.
- Comments received on the draft WSDP documents will be incorporated, where after the WSDP documents will be finalised and taken to Council for final approval.

Section 14 of the Water Services Act requires that the WSA must take reasonable steps to bring its draft WSDP to the notice of a number of different stakeholders so that they have the opportunity to comment on it. Section 15 of the Act requires that the WSA must supply a copy of the WSDP to the Minister of Water Affairs, Minister of Provincial and Local Government, the relevant Province and all neighbouring WSAs.

Beaufort West Municipality's WSDP is an integrated and aligned Sectoral Plan of the IDP of Beaufort West Municipality. The draft IDP/Budget Time Schedule of Beaufort West Municipality for 2024/2025 is summarised in the table below.

Table A.2.1: IDP / Budget Time Schedule (July 2024 – June 2025)	
Task	Responsible Person
July 2024	
<ul style="list-style-type: none"> • Preparation of the draft IDP & Budget Time Schedule. • Engagement with Budget office and PMS for alignment purposes. • Review participatory forums and mechanisms. • MINMAY: PLANNING – District Mayors present strategic and planning priorities and service deliver challenges 	IDP / Budget / PMS
<ul style="list-style-type: none"> • Approve and announce new budget schedules and set up committees / forums. • Consultation on Performance and changing needs. 	Budget
<ul style="list-style-type: none"> • District Alignment 	CKDM / LBM / BWM / PAM
<ul style="list-style-type: none"> • Roll out of the SDBIP. • Prepare / Review departmental sector plans for next financial year. • Preparing Annual Performance Report (Section 46). • Prepare and submit performance agreements of municipal manager and senior managers to the MEC and municipal website. • Compile and submit Q4 performance report to Council. 	PMS / Budget
August 2024	
<ul style="list-style-type: none"> • IDP Steering Committee Meeting 	IDP
<ul style="list-style-type: none"> • CKD IDP Managers Forum 	IDP
<ul style="list-style-type: none"> • Consult and review performance and financial position 	CFO
<ul style="list-style-type: none"> • Audit and Performance Committee Meeting 	Internal Audit
<ul style="list-style-type: none"> • Municipal Council Meeting 	Speaker
<ul style="list-style-type: none"> • Executive Mayor tables IDP and Budget Time Schedule to Council for approval 	Executive Mayor

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

Table A.2.1: IDP / Budget Time Schedule (July 2024 – June 2025)	
Task	Responsible Person
<ul style="list-style-type: none"> Submit annual financial statements and annual performance report to the Auditor- General for auditing 	MM / CFO
<ul style="list-style-type: none"> Submit adopted time schedule with Council resolution to MEC DLG, National Treasury and Provincial Treasury 	IDP
September 2024	
<ul style="list-style-type: none"> Advertise Time Schedule 	IDP
<ul style="list-style-type: none"> Strategic Planning Meeting of Council 	Strategic Support
<ul style="list-style-type: none"> Review ward profile & ward-based plans for each ward 	IDP Office
<ul style="list-style-type: none"> Auditor General (AG) audit of performance measures. 	AG
<ul style="list-style-type: none"> Q1 Provincial IDP Managers Forum Meeting 	IDP
<ul style="list-style-type: none"> Integrate information from adopted sector plans for review 	IDP
<ul style="list-style-type: none"> Determine revenue projections and update policies and objectives 	MM / CFO / IDP / Senior Managers
<ul style="list-style-type: none"> Q1 Provincial IDP Managers Forum Meeting Q1 District Coordinating Forum (DCF) Meeting. District CFO Forum Provincial CFO Forum 	MM and Executive Mayor, CKDM, CFO and Local Mun. Provincial CFOs
October 2024	
<ul style="list-style-type: none"> Determine Revenue projections and policies. 	CFO
<ul style="list-style-type: none"> Q2 CKD ID Managers Forum Meeting. 	IDP
<ul style="list-style-type: none"> IDP Steering Committee Meeting (Feedback on situational analysis). 	IDP
<ul style="list-style-type: none"> Integration of information from adopted sector plans into IDP 	IDP
<ul style="list-style-type: none"> Internal engagements to prioritise needs and assistance from sector departments 	IDP / All internal departments
<ul style="list-style-type: none"> Send priorities to sector departments 	IDP
<ul style="list-style-type: none"> Draft initial allocations to functions. 	CFO
<ul style="list-style-type: none"> Compile and submit Q1 performance report to Council 	PMS / CFO
<ul style="list-style-type: none"> First round of public participation in all four (7) wards and Ward Committees for IDP 	IDP / PP
<ul style="list-style-type: none"> Public / Community IDP Awareness and Participation Engagements 	CKDM PP and Officials incl. Locals
November 2024	
<ul style="list-style-type: none"> Q2 IDP Representative Forum 	IDP / Sector Departments
<ul style="list-style-type: none"> Consolidation of budget and plans 	CFO
<ul style="list-style-type: none"> Table of draft Annual report to Audit committee 	PMS
<ul style="list-style-type: none"> Q2 District Public Participation and Communication Forum Meeting 	PP / IDP
<ul style="list-style-type: none"> Strategic engagements (SIME) with municipalities 	DLG
<ul style="list-style-type: none"> Audit and Performance Committee Meeting 	Internal Audit
<ul style="list-style-type: none"> Finalise Audit Report for the financial year 	AG
<ul style="list-style-type: none"> Strategic session with Council about the Vision, Mission and Strategic Objectives and Values 	MM / IDP
<ul style="list-style-type: none"> Q2 District Coordinating Technical Forum (DCFTech) meeting. Q2 District Public Participation & Communication Forum Meeting Q2 District Coordinating Forum (DCF) Meeting. Q2 Provincial IDP Managers Forum Meeting Strategic engagements (SIME) with municipalities 	MM / Legal Services CKDM PP / IDP MM & Executive Mayor IDP DLG / Municipalities
December 2024	
<ul style="list-style-type: none"> IDP Steering Committee Meeting (Comment on reviewed Municipal Strategies (Prioritize projects and programmes) 	IDP / Budget / Directors
<ul style="list-style-type: none"> Provincial IDP Managers Forum 	IDP
<ul style="list-style-type: none"> Executive determines strategic direction for next three years and finalise tariff policies 	Senior Management
<ul style="list-style-type: none"> Outline / Review municipal Strategic Objectives, KPAs, KPIs and Targets 	Senior Management / PMS
January 2025	
<ul style="list-style-type: none"> Prepare detailed budget and plans for next three years 	Budget
<ul style="list-style-type: none"> Compile and submit Quarterly Performance Report for Q2 to Council 	PMS
<ul style="list-style-type: none"> Mid-term / Midyear Report submitted to Mayor in terms of Section 72 of MFMA 	CFO / PMS
<ul style="list-style-type: none"> MM table mid-year report to Council for approval 	MM

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

Table A.2.1: IDP / Budget Time Schedule (July 2024 – June 2025)	
Task	Responsible Person
• Midterm / midyear Report is published in the local newspaper and Website	Senior Managers
• Review of Municipal Organogram	MM
• Table Draft Annual Report to Council	MM
• Q3 District Coordinating Technical Forum (DCF Tech)	MM / Legal Services
• Q3 District Coordinating Forum (DCF)	MM and Executive Mayor
February 2025	
• Continuous Review of Municipal Strategic Objectives, KPAs, KPIs and Targets	PMS / IDP
• Q3 District Public Participation & Communication Forum	IDP / PP
• Council adopts Adjustment budget and SDBIP. Performance agreements to be adjusted and signed off by section 57 managers and MM and placed on municipal website	MM / Budget / PMS
• Advertise Adjustments Budget and Mid-year Section 72 assessment in local newspapers	CFO / Corp Services
• IDP Steering Committee Meeting (Alignment)	IDP / CFO / Senior Management
• Integration of Projects & Programmes (JDA Approach)	DLG
• Q3 – CKD IDP Managers and Representative Forum	IDP / MM
• Conclusion of Sector Plans for the next financial year	Senior Managers
• Make public Annual Report and invite community inputs into report	MM
March 2025	
• Q4 – Provincial IDP Managers Forum	IDP
• Q3 District Coordinating Forum (DCF) Meeting.	Executive Mayors
• Workshop draft IDP (Proposed IDP Amendment) and Budget with Council	Mayor / MM / CFO / OM
• IDP Steering Committee Meeting	IDP / CFO
• Draft SDBIP for incorporation into draft IDP	PMS / IDP
• Draft IDP (Proposed IDP Amendment) and Budget approval by Council	Executive Mayor / MM
• Audit and Performance Committee Meeting	Internal Audit
• Mid-Year Evaluation of MM and Section 57 Managers	PMS / HR
April 2025	
• Send Draft IDP to Minister, PT and NT	Municipal Manager
• Advertise IDP and Budget document for public Inputs and comments	IDP
• Second round of public participation on draft - IDP and Budget.	Mayor / IDP
• IDP Steering Committee Meeting.	IDP
• Finalisation of draft IDP & Budget documents	
• Q – 4 District Coordinating Technical Forum	Executive Mayors
• Compile and submit Quarterly Performance Report for Q3 to Council.	PMS / CFO
• Conclusion of Sector plans for inclusion in IDP	Internal Departments
May 2025	
• Review written comments in respect of the draft (advertised) IDP	MM
• Q-4 DITRICT IDP Managers	IDP / MM
• Community inputs into organization KPIs and Target	IDP / PMS
• Tabling of IDP and budget related policies to council for adoption	MM / Mayor
June 2025	
• Approval of Top Layer SDBIP	Executive Mayor
• Inform community about the approved IDP and Budget: Place copies in libraries, website and notices in newspaper	IDP / CFO
• Q1 – Provincial IDP Managers Forum	IDP
• Send IDP & budget documents to MEC DLG, PT & NT	IDP
• Audit and Performance Committee Meeting	Internal Audit
• Signing of performance agreements of MM and Section 57 Managers	PMS / HR
• Submit copies of SDBIP to National and Provincial Treasury	PMS
• Make public the performance agreements of MM and Senior Managers (Municipal Website)	PMS

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Community Participation

Public participation in Beaufort West Municipality is done in a structured way. Printed and electronic media are used by Beaufort West Municipality for Stakeholder participation. Councillors have regular meeting with the communities in an endeavour to give feedback on progress in relation to the level of development; gather inputs from communities in relation to service delivery needs; and disseminate information on the roles and responsibilities of the municipality. The Mayoral outreach programme is regarded as another form of community consultation at which the political principals get closer to the communities.

Members of the community, Ward Committee members, Community Development Workers, and various other stakeholders attend Council meetings, Mayoral Outreach Programmes and IDP public participation meetings.

Public consultation meetings are conducted by the ward councillors at least once a quarter and the Mayoral Outreach programmes are there to enhance the mobilization and consultation mechanisms.

Integrated Development Plan Representative Forums are also another way in which the key stakeholders could be consulted and reported to. However, the municipality has not yet finalized the process to establish such forum.

Table A.2.2: Consultation Process			
Consultation	Process and Communication	Date	Comments
Users	Public participation process	November 2024	
Public	Public participation process		
Water Services Institutions	Public participation process		
Neighbouring WSAs	WSDP IDP Water Sector Input Report	November 2024	
Provinces (DLG)	Copy of draft WSDP	November 2024	
DWS	Copy of draft WSDP	November 2024	

Table A.2.3: Sector Integration		
Sector / Plans	Interaction (Yes / No / Partial)	Area
Agriculture	Partial	Settlement Demographics and Public Amenities
Mining	N/A	N/A
Tourism	Partial	Settlement Demographics and Public Amenities
Finance	Yes	Finance
IDP	Yes	Administration
PMU	Yes	Water Services Asset Management
LMs	Yes	Administration
Water Master Plan	Yes	Water Services Asset Management
Sewer Master Plan	Yes	Water Services Asset Management
WDM Strategy	Yes	Conservation and Demand Management
Maintenance Backlog Study	Yes	Water Services O&M
SDF	Yes	Settlement Demographics and Public Amenities
ISP	Yes	Administration
Health	Partial	Service Levels
LED	Partial	Settlement Demographics and Public Amenities
DMP	Partial	Water Services Asset Management
Institutional	Yes	Water Services Institutional Arrangements and Customer Services

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

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Comments

The 2022-2027 WSDP will be distributed to the public as part of the IDP public participation processes. The draft WSDP will also be distributed to all the neighbouring WSAs, the DLG and the DWS's Regional Office for their comments. **The due date for the submission of comments on the draft documents was The table below gives an overview of the comments received on the draft WSDP documents.**

Table A.2.4: Comments received on the draft WSDP				
Date	Components	Interest Group	Consideration	Comments
Nov 2024	All	DWS	All draft WSDP documents	
Nov 2024	All	DLG	All draft WSDP documents	
Nov 2024	WSDP-IDP Sector Input Report	Karoo Hoogland	Executive Summary of WSDP	
Nov 2024		Ubuntu	Executive Summary of WSDP	
Nov 2024		Laingsburg	Executive Summary of WSDP	
Nov 2024		Prince Albert	Executive Summary of WSDP	
Nov 2024		Dr Beyers Naude	Executive Summary of WSDP	
With IDP	All	Public	All draft WSDP documents	

IDP Goals and Integration

To comply with the Water Services Act, the WSDP should be prepared as part of the IDP process unless there is no IDP process in which case it can be prepared separately. The WSDP is a sectoral plan that falls within the inter-sectoral umbrella plan of the IDP. The WSDP sectoral planning and integrated development planning, must inform each other. It is therefore important to start the WSDP planning process by orientating the water services development goals against the overall development goals of the IDP. This in essence becomes the overall framework within which detailed water services needs and development projects can be benchmarked and tested.

The Vision and Mission statements of Beaufort West Municipality, as included in the Draft 2024/2025 IDP, are as follows:

VISION STATEMENT
“Beaufort West in the Central Karoo, the economic gateway to the Western Cape, where people are developed and living together in harmony.”

MISSION STATEMENT
<p>To reflect the will of the South African people as reflected in the Constitution and by Parliament</p> <ul style="list-style-type: none"> • Service Delivery: To provide excellent services to the residents of Beaufort West Municipality. • Growing the economy: To implement infrastructure to grow the economy and create jobs. • Staff: To have an equipped, skilled and motivated staff establishment. • Well-run administration: Establish a sound, efficient and effective administration for the Municipality. • Financial Sustainability: Collecting all debtors and paying creditors in time. • Sport centre: To become the sport and recreational mecca of the Karoo, creating harmony and unity. • Safe place: To create a crime-free, safe and healthy environment. • Reduce Poverty: To reduce poverty and promote the empowerment of women, youth and people living with disabilities.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

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The following KPAs and Strategic Objectives were developed in relation to the above vision and mission statement:

Table A.2.5: KPAs and Strategic Objectives of Beaufort West Municipality	
Service to the people	
<ul style="list-style-type: none"> SO1: Provide, maintain and expand basic services to all people in the municipal area. SO2: Sustainable, safe and healthy environment. 	
Sustainable Economic Growth	
<ul style="list-style-type: none"> SO3: Promote broad-based growth and development. 	
Transparent Organisation	
<ul style="list-style-type: none"> SO4: Maintain an ethical, accountable and transparent administration. 	
Well-run Administration	
<ul style="list-style-type: none"> SO5: Enabling a diverse and capacitated workforce. 	
Financial Sustainability	
<ul style="list-style-type: none"> SO6: Uphold sound financial management principles and practices. 	

The Community and Ward Committees consultations (October 2023 – March 2024) highlighted the water and sanitation issues indicated in the table below for the seven Wards.

Table A.2.6: Water and Sanitation Inputs from Communities	
Ward	Water and Sanitation Inputs from Communities
1	<ul style="list-style-type: none"> Provision of toilets at the cemetery. Replacement / upgrade of obsolete sewerage infrastructure in Murraysburg. Development of more boreholes.
2	<ul style="list-style-type: none"> Purification of water in Nelspoort. Regularly cleaning of the river.
3	<ul style="list-style-type: none"> Construction of toilets for houses.
4	<ul style="list-style-type: none"> Completion of toilets where excavations have already taken place. Replacement of older infrastructure (water and sewage) in the ward.
5	<ul style="list-style-type: none"> Building of outside toilets next to the houses in the whole ward. Establishing of a 24/7 call Centre specifically to report after hours complaints. Upgrading of sewerage system at St Matthews School. Upgrading of the sewerage system between Paddavlei and Kwa-Mandlenkosi.
6	<ul style="list-style-type: none"> Replacement of the sewer pipe between Chrisville and Strelitzia Avenue. Replacement of ageing Sanitation infrastructure. Construction of outside toilets to the dwellings.
7	<ul style="list-style-type: none"> Paving of Blankenweg as well as upgrading of sewerage system and then the rest of the unpaved roads in the ward. Construction of another catchment dam as well as repair water meters of all households where need exist. Provision of extra panels to supply power to the boreholes. Provision of water, toilet and more trees at the cemetery as well as extension of the cemetery. Building of outside toilets next to houses in the whole ward.

The top ten risks of the Municipality are indicated in the table below (2024/2025 IDP).

Table A.2.7: Top ten risks of Beaufort West Municipality (2024/2025 IDP)			
Risk Level	Risk	Directorate	Risk Rating
Low	Impact of drought.	Strategic	100
Medium	Financial viability in the long term.	Strategic	90
Medium	Ageing and deteriorating infrastructure.	Strategic	90
Medium	Technical excessive water losses (infrastructure)	Infrastructure	80
Low	Disaster Management – Coordinated by the Central Karoo District Municipality, but only one official available for the entire district area.	Strategic	72
Medium	Lack of funding (need to expand the landfill site in the near future).	Community Services	86
Medium	Vandalism and the misuse of municipal property.	Strategic	81
Medium	Lack of conducive environment to attract economic investment.	Municipal	81

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

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Table A.2.7: Top ten risks of Beaufort West Municipality (2024/2025 IDP)

Risk Level	Risk	Directorate	Risk Rating
Medium	Illegal landfill sites operated at Murraysburg (funding already acquired and new regional landfill site identified), Merweville and Nelspoort.	Community Services	81
Medium	Non-compliance with laws and regulations.	Strategic	81

The Water Sector's Vision, Goal and Objectives for the NWRS 2, as aligned with the vision of South Africa 2030, are as follows:

- Vision: Sustainable, equitable and secure water for a better life and environment for all.
- Goal: Water is efficiently and effectively managed for equitable and sustainable growth and development.
- 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 in an equitable and sustainable manner.

Catchment Management Agency Catchment Management Strategy Integration

Beaufort West 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.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

A: WSA ADMINISTRATION

The NWA envisages that all water resources management functions, excluding those that have national strategic implications, should be delegated to the CMAs. The functions to be delegated to the CMAs will include the following:

- Water use authorization;
- Water resources protection;
- Compliance monitoring and enforcement;
- Coordination of WC/WDM programmes;
- Water quality management;
- Establishment and oversight of WUAs;
- Water resource planning;
- Water resources information management;
- Billing and collection of water use charges; and
- Coordination of disaster management.

A.3 SERVICE PROVIDER

Table A.3.1: Service Provider					
Company			iX Engineers (Pty) Ltd		
Name of PSP WSDP Project Manager			Jaco Human		
Tel: 021 – 912 3000	Cell: 084 431 8728	Fax: 021 – 912 3222	Email: jaco.h@ixengineers.co.za		
INPUTS					
Components	Chapter	Name	Designation	Role	Contact address and Number
Comprehensive Overview					
Settlement Demographics & Public Amenities	1	Jaco Human	Engineer	WSDP PSP	See Above
Service Levels Profile	2	Jaco Human	Engineer	WSDP PSP	See Above
Water Services Asset Management	3	Jaco Human	Engineer	WSDP PSP	See Above
Water Services O&M	4	Jaco Human	Engineer	WSDP PSP	See Above
Conservation and Demand Management	5	Jaco Human	Engineer	WSDP PSP	See Above
Water Resources	6	Jaco Human	Engineer	WSDP PSP	See Above
Financial Profile	7	Jaco Human	Engineer	WSDP PSP	See Above
Water Services Institutional Arrangements and Customer Services	8	Jaco Human	Engineer	WSDP PSP	See Above
Master Plan					
Settlement Demographics & Public Amenities	1	Jaco Human	Engineer	WSDP PSP	See Above
Service Levels Profile	2	Jaco Human	Engineer	WSDP PSP	See Above
Water Services Asset Management	3	Jaco Human	Engineer	WSDP PSP	See Above
Water Services O&M	4	Jaco Human	Engineer	WSDP PSP	See Above
Conservation and Demand Management	5	Jaco Human	Engineer	WSDP PSP	See Above
Water Resources	6	Jaco Human	Engineer	WSDP PSP	See Above
Existing Needs Perspective		Jaco Human	Engineer	WSDP PSP	See Above
Water Master Plan Perspective		Jaco Human	Engineer	WSDP PSP	See Above
Overall Topic Strategies		Jaco Human	Engineer	WSDP PSP	See Above
Name of PSP WSDP Information Systems Operator			Rian Kuffner		
Tel: 021 – 912 3000	Cell: 083 298 9624	Fax: 021 – 912 3222	Email: rian.k@ixengineers.co.za		

1. SETTLEMENT DEMOGRAPHICS AND PUBLIC AMENITIES

An important component of planning is to characterise the WSA in terms of physical, topographical and socio-economic attributes that might influence the provision of services.

Description of settlement types

- Urban – Formal towns within vicinity of urban cores.
- Dense – Dense rural settlements with population > 5000.
- Village – Rural village with population between 500 and 5000.
- Scattered – Scattered rural village with population less than 500.
- Farmlands – Farming.

Location

The WSA is the Beaufort West Municipality and the boundaries of the area are indicated on Map 1A and 1B in Annexure A. The former Central Karoo DMA (Murraysburg) was incorporated with Beaufort West Municipality from July 2011. Beaufort West Municipality falls within the Central Karoo District Municipal Area of the Western Cape Province, in which the Prince Albert- and Laingsburg Local Municipality are also located.

Beaufort West Municipality's Management Area includes the towns of Beaufort West, Merweville, Nelspoort and Murraysburg. The largest town is Beaufort West, which also serves as the administrative centre for Beaufort West Municipality. Beaufort West is situated approximately 450 kilometres northwest from Cape Town and is connected to Cape Town, Bloemfontein and Johannesburg via the N1 route.

Beaufort West Municipality's Management Area falls partially within the Breede-Olifants and Mzimvubu-Tsitsikamma Water Management Areas (WMAs). The Municipality consists of seven (7) individual wards and Beaufort West Municipality is the only WSA and WSP within this Municipal Management Area. Beaufort West Municipality's Management Area includes the following towns and urban areas (**Water Distribution Systems**):

Beaufort West – **Beaufort West System**: The town relies on a large number of boreholes, as well as on surface water supplied from the Gamka Dam and two fountains. A water reclamation project, where secondary treated water from the Beaufort West WWTW is further treated to potable standard was commissioned on the 15th of January 2011 to further augment the existing water sources. The surface water is treated at the Beaufort West WTW.

Merweville – **Merweville System**: The town currently relies on nine boreholes for bulk water supply to the town. There is no WTW and the groundwater is only disinfected with Sodium Hypochlorite.

Nelspoort – **Nelspoort System**: The town relies on three boreholes, as well as on surface water supplied from the Sout River. The water is treated at the Nelspoort WTW. Disinfection is with chlorine gas or HTH granular.

Murraysburg – **Murraysburg System**: Four production boreholes supply potable water to the town. There is no WTW and the groundwater is disinfected with Sodium Hypochlorite at the Riverside, Moddergat and Victoria West boreholes.

WSA Perspective

Beaufort West Municipality is located in the Central Karoo Region of the Western Cape. Beaufort West Municipality has been classified as a low capacity and Category 'B' municipality. A category 'B' municipality shares municipal executive and legislative authority with a category 'C' or district municipality within whose area it falls, in this case the Central Karoo District Municipality (DC 5). Beaufort West Municipality borders on the Prince Albert-, Laingsburg-, Karoo Highlands- and Dr Beyers Naude Municipality's Management Areas.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 1: SETTLEMENT DEMOGRAPHICS AND PUBLIC AMENITIES

Beaufort West Municipality's 2024/2025 IDP list the following key issues and challenges that it is faced with:

- Low economic growth, high unemployment, low skills levels, high levels of poverty, high dependency rate, high prevalence of HIV/AIDS.
- Lack of payment for services by government offices/facilities and businesses.
- Frequent and recurring sewer blockages in settlements due to aged infrastructure.
- Financial constraints to purchase refuse collection service trucks.
- Inadequate refuse collection contributes adversely to global warming, and threatens the wellbeing of the people and the environment.
- Lack of support for LED projects.
- Inability of people to participate in the local labour market due to lack of requisite skills.
- Lack of economic opportunities.

The 2024/2025 IDP also list the following Opportunities for Beaufort West Municipality.

- Strategic location for economic opportunities (N1 Corridor).
- Good relations with district municipality and provincial sector departments.
- Declare Nelspoort as Heritage site for tourism (Khoisan Rock Art).
- South Cape FET College.
- Uranium Mining.
- Shell Gas.
- Land available for alternative energy construction sites.

The municipality plans to improve itself over the next five years by focussing on the following:

- New projects for basic services.
- Access to water, sanitation and electricity services.
- Upgrading of infrastructure.
- Improvement of road infrastructure.
- Make land available for alternative energy plants.
- Embarking on campaign for rebranding of the Town Beaufort West.
- Promote Local Economic Development and job creation.

Aerial photos of the various urban areas (towns) and the existing water and sewerage infrastructure are included as Maps 2A to 2D in Annexure A.

Physical Perspective

Topography

The Great Karoo consists of flat plains and low hills formed by Karoo sediments and dolerite intrusions. The Beaufort West Region is an arid region of the Western Cape Province, falling between the Cape Fold Mountains in the south and the Great Karoo escarpment in the north. It is dominated by the semi-desert Nama-Karoo Biome. The vegetation- and conservation areas are indicated on Map 1B in Annexure A. The topographical profile of Beaufort West Municipality's Management Area is indicated on Map 1C in Annexure A.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 1: SETTLEMENT DEMOGRAPHICS AND PUBLIC AMENITIES

Climate

The Beaufort West Municipality climate generally, has cool to cold, dry winters and warm, moist summers. The long-term average annual rainfall is between 400 mm and 500 mm, however, the areas normally receive an average rainfall of 266 mm per annum. Average temperatures vary between 15°C (daily min) and 33°C (daily max) in summer and between 15°C (daily min) and 18°C (daily max) in winter. The extreme high temperature that has been recorded is 44.2°C and the extreme low temperature 7.5°C.

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.

The Climate Change Adaption Summary Report was developed through the Local Government Climate Change Support program in partnership with the Western Cape Climate Change Municipal Support Programme. A summary of the key vulnerability indicators is provided in the table below.

Table 1.1: Key vulnerability indicators for Climate Change				
Sector	Indicator Title	Exposure	Sensitivity	Adaptive Capacity
Biodiversity and Environment	Increased impacts on environment due to land-use change	Yes	High	Low
Biodiversity and Environment	Loss of Soil Fertility	Yes	High	Low
Human Health	Health impacts from increased storm events	Yes	High	Low
Human Health	Increased heat stress	Yes	High	Low
Human Settlements, Infrastructure and Disaster Management	Increased impacts on strategic infrastructure	Yes	High	Low
Water	Less water available for irrigation and drinking	Yes	High	Low
Water	Less groundwater availability	Yes	High	Low

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.

Due to the uncertainty associated with the impact of climate change on water demand and on water resources, it would be prudent to adopt the precautionary principle. The following scenario is likely:

- As a result of uncertainty about future rainfall, all resources, especially surface water resources, may be under pressure and may have lower safe yields.
- Due to increased heat units water demand from agriculture, as well as from towns (approximately 62% of all water) will rise sharply.
- Even in the event that average annual rainfalls would not reduce much, it is anticipated that much greater variability of rainfall will occur within a year and also between years due to more extreme climatic conditions.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 1: SETTLEMENT DEMOGRAPHICS AND PUBLIC AMENITIES

It is therefore advisable for Beaufort West Municipality and the Central Karoo District 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.

The recommended projects and sub-projects for the different Sectors were indicated as follow in the Central Karoo District Municipality's Climate Change Plan, March 2018.

Table 1.2: Sector Projects for the Adaptation to Climate Change	
Objective	Project
Biodiversity and Environment	
Manage Increased impacts on environment due to land-use change	<ul style="list-style-type: none"> • Clearing of trees, particularly alien trees in river courses can also assist in reducing flooding (as they can fall into river courses blocking them). • Continue and enhance structures such as the 'flood working group' for Laingsburg. • Increase financial investment into ecological buffering and include climate related disaster information into current property valuations and insurance schemes. • Continue with alien invasive clearing. • Continue with LandCare programmes and improved land management. • Continue with alien removal where it still exists, particularly in riverine catchments and wetlands – particular problem species include Prickly Pear (<i>Opuntia aurantiaca</i>), and Mesquite (<i>Prosopis glandulosa</i>). • Improved land management and LandCare on rangelands and farming lands. • Some Spekboom projects are already underway and should be upscaled where feasible. In some parts of the south west areas of the region, Spekboom planting in degraded ecosystems that used to contain this species can potentially take place in order to restore lands and to achieve some potential carbon credits.
Manage Loss of Soil Fertility	<ul style="list-style-type: none"> • Assist farmers to implement soil erosion measures.
Human Health	
Manage health impacts from increased storm events.	<ul style="list-style-type: none"> • Develop/review storm water management plan. To be done by local municipal storm water departments by June 2019.
Manage the impacts of increased heat stress.	<ul style="list-style-type: none"> • Investigate and support the development of guidelines for human heat management on farms. • Early response to heatwave warnings from the South African Weather Service (SAWS) and publication of heat response actions to be taken by communities.
Human Settlements, Infrastructure and Disaster Management	
Manage potential increased impacts on strategic infrastructure.	<ul style="list-style-type: none"> • Ensure climate change considerations are taken into account in new or revised Infrastructure Plans. • Ensure aerial infrastructure such as phone and electric lines are not in the path of falling trees (i.e. keep trees well pruned in relevant areas). • General responses for LED managers and business forums for the region need to focus on identifying the various risks to each sector: increased occurrence of drought, floods, fires, increased heat, higher number of high heat days, likely increase in minimum temperatures.
Water	

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Table 1.2: Sector Projects for the Adaptation to Climate Change	
Objective	Project
Manage the quantity of water available for irrigation and drinking.	<ul style="list-style-type: none"> Report on assessment of alternative mechanisms for water capture across all local municipalities by 2018/19. Report on water losses investigations– understanding what causes the leaks. Across all local municipalities by 2018/19. To be done by EPWP. Continue reduced urban water demand measures and drought measures (e.g. grey water reuse, emergency tariffs, water leak detection and reporting, ensure working equipment for water measurement, groundwater monitoring, etc.) Assess potential for implementation of smart meters for water (to protect water sources). Consider reverse osmosis water reclamation plants in other parts of Central Karoo – and share best practice with other local municipalities. Conduct and assess alternative mechanisms for water capture (rooftop rainwater harvesting & landscape harvesting into underground tanks). Increased evapotranspiration means that all water bodies need to be protected further from much more rapid evaporation as the region warms. Consider mechanisms to increase water recharge, for example, crescent shaped earthen dams across the landscape help to capture water in one place and lets this then percolate into the groundwater aquifers. Increase ground water monitoring and record keeping. Encourage low/no water use agri-processing techniques, water demand management, increase in water reuse technologies, and possible 'water from air' technologies. Continued support for Drought schemes by DoA and farmers, and motivation for annual drought financial budget from national treasury.
Manage Less groundwater availability	<ul style="list-style-type: none"> Support zero water using industries and businesses and further attract those economic activities that will not negatively impact on groundwater supplies.
Cross-cutting	
Integrate climate change adaptation into municipal strategies and plans	<ul style="list-style-type: none"> Shifts in design philosophy as well as design standards and specifications of human settlements will likely be required to ensure resilient and healthy communities in a new climate. These include location of settlements (proximity to flood lines, risk zones, etc.) use of alternative building materials that reduce risk to fires; and strategies to deal with heat and cold. For any new or planned upcoming housing developments in the region (for all income groups) more climate-resilient and energy-efficient housing should be considered. Adapt building regulations and specifications to include climate change – need to look at legislation to improve enforcement. Ensure new settlements factor climate change considerations into their plans and standards to increase resilience of communities. Ensure all new settlements are in compliance with SANS 10400 XA energy use in buildings (e.g. orientation of buildings etc.). Further increase the integration of climate change impacts into the Disaster Management Framework for CKDM and its operationalisation. All disaster management plans for specific events such as fire, flood, drought and heatwaves need additional impetus and resources provided to them. Further develop the sector response by deepening the outcomes and plans from the Smart Agri programme. CKDM needs to increase and enhance support to local municipalities to help them to integrate climate change into their activities and planning processes, as well as advocating sister departments in province and nationally to also provide support through all interactions across sectors on climate change. Planning will need to take new climate extremes into account, including new or revised SDFs.
Secure financial resources to respond to climate change	<ul style="list-style-type: none"> Identification of and getting access to funding opportunities that support the implementation of climate change responses.
Disseminate information and build awareness on climate change	<ul style="list-style-type: none"> Include new requirements and bolster existing information in disaster management plans according to the new requirements given in the National Disaster Management Amendment Act. Once the CKDM has a climate change strategy framework it needs to be communicated to the community – e.g. through news articles in local newspapers/newsletters. Municipal officials also need to communicate the framework through the course of their work, where appropriate. Municipality may need to have awareness campaigns to prepare the public for seasonal disasters – e.g. fires, flooding.

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.

Natural Environment

The Beaufort West Municipal area falls within the 'Karoo' macro biogeographical region that includes the arid interior and arid coastal plains of the northern West Coast and the plains of the 'Great Karoo'. This area stretches far beyond the boundaries of the Western Cape Province.

The geology of Beaufort West area is generally hilly. The Nuweveld Mountains form an escarpment that divides the Great Karoo from the Succulent Karoo. These two areas have different characteristics both environmentally and in respect to agriculture. The Department of Agriculture divided the area into various farming regions with similar characteristics, namely the Koup, Nuweveld Mountains, Nuweveld Plateau, Nelspoort Ridge and Rietbron Plateau. The boundaries of these farming regions coupled with water management area boundaries would be useful in demarcating environmental management areas.

The Beaufort West Municipal area falls within the 'Nama-Karoo' Biome, and is described as grassy dwarf 'shrubland'. Grasses tend to be more common in depressions and on sandy soils. According to 'Low and Rebelo (1996)' there are very few Red Data Book Plant Species in the 'Nama-Karoo'. Little research into the dynamics of the biome has however been undertaken particularly in the west of the region. In spite of its significant scientific importance and sensitivity, less than 1% of the biome has statutory conservation status. The only primary statutory conservation area in Beaufort West area is the Karoo National Park.

Murraysburg lies on the Southern banks of the Buffels River which is the upper part of the Groot river system. This is a priority river reach listed as a CBA in which natural habitat should be protected and degraded lands rehabilitated.

The vegetation of Beaufort West municipal areas in the west and south west (the Koup) consist of mixed karoo bush and grass veld known as "karroid Broken Veld" and is generally not sensitive. The north and North West (Nuweveld Berge) vegetation is described as sour veld and consists primarily of shrubs (Renosterbos and Harpuisbos).

The Renosterbos is one of South Africa's rarest vegetation types and area containing Renosterbos should be demarcated as conservation areas. Other vegetation types found in this area are "Danthonia Veld", Central Upper Karoo and mountain "Renoster Veld" and the area are environmentally sensitive and farming areas should be rehabilitated to ensure sustainable farming practice. In the south and east of Beaufort West municipal areas, there are low lands known as Reitbronsvlakte. The topography is hilly and vegetation consists of primarily Karoo bushes and sweet veld known as "Central Lower Karoo veld" and "Karroid Broken Veld".

The conservation areas and vegetation profiles are indicated on Map 1B in Annexure A.

Demographic Perspective

Economics: The Beaufort West municipal area had the largest economy in the CKD in 2021 (R 2 7 billion). The government sector is the most significant source of economic activity and employment in the Beaufort West municipal area, contributing R 549.5 million (20.7 per cent) to the economy in 2021. All spheres of government are active in the region. However, most jobs stem from the local and provincial governments and the Beaufort West Prison. The community services and finance sectors also contribute substantially to the local economy.

The economy was also propelled upwards in 2021 by the Wholesale and retail trade, catering and accommodation sector, which accounted for 12.9 per cent to the GDP of the Beaufort West municipal area (growing at 4.4 per cent in 2021) and with this surge in growth, the transport sector completed the process of recovering ground lost during the COVID 19 pandemic and contributed 11.4 percent to the GDP in 2021 (growing at 6.3 per cent).

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In 2022 the GDPR is estimated to have expanded by 2.3 per cent. The tertiary sector is the only sector that reported growth at 3.9 per cent in 2022. Economic growth prospects were dampened by contractions in all industries within the primary and secondary sectors, with the primary sector shrinking by an estimated 2.5 percent in 2022 and the secondary sector by an estimate of 3.6 per cent. These contractions highlight the extent to which the mining manufacturing electricity, gas and water and construction sectors are struggling to recover from the impact of the pandemic. However, public sector spending can be valuable in revitalising the local construction industry.

Table 1.3: Beaufort West GDPR performance per sector (2021)	
Sector	% Contribution
PRIMARY SECTOR	11.7
Agriculture, forestry and fishing	11.7
Mining and quarrying	-
SECONDARY SECTOR	9.8
Manufacturing	3.0
Electricity, gas and water	4.3
Construction	2.5
TERTIARY SECTOR	78.5
Wholesale and retail trade, catering and accommodation	12.9
Transport, storage and communication	11.4
Finance, insurance, real estate and business services	15.6
General government	20.7
Community, social and personal services	17.9
Total Beaufort West	100.0

Source: 2023 Socio-Economic Profile Beaufort West Municipality

Social: The table below gives an overview of the 2023 Socio-Economic Profile of Beaufort West Municipality.

Table 1.4: 2023 Socio Economic Profile of Beaufort West Municipality			
Education (2022)		Poverty (2022)	
Matric Pass Rate	79.0%	Gini Coefficient	0.58
Learner-Teacher Ratio	31.9	Poverty Head Count Ratio	65.9%
Retention Rate	60.0%		
Health (2022/22)		Safety and Security (Actual number of reported cases in 2022/2023)	
Primary Health Care Facilities	6	Residential Burglaries	361
Immunisation Rate	76.2%	DUI	137
Maternal Mortality Ratio (per 100 000 live births)	122.7	Drug-related Crimes	369
Teenage Pregnancies – Delivery rate to women U19	17.4%	Murder	16
		Sexual Offences	38
Access to Basic Service Delivery (Percentage of households with access to basic services, 2021)		Demographics (2022)	
Water	87.2%	Population:	72 972
Refuse Removal	79.6%	Households:	19 216
Electricity	97.3%		
Sanitation	98.0%	Labour (2021)	
Housing	99.4%	Unemployment Rate	28.1%
Socio-economic Risks		Largest Three Sectors (Contribution to GDP, 2021)	
Job Losses	Risk 1	General Government	20.7%
High unemployment rate	Risk 2	Community, social and personal services	17.8%
Low skills base (Labour)	Risk 3	Finance, insurance, real estate and business services	15.6%

Source: 2023 Socio-Economic Profile Beaufort West Municipality

Regional Perspective

The sparsely populated CKD contributed only R3.8 billion (0.5 per cent) to the Provincial economy in 2021. That said, estimated growth in 2022 of 2.2 per cent marked a full recovery from the downturn of 2020 and brought welcome relief to struggling communities. Many residents returned to the job market, with the labour force participation rate increasing by 1.9 percentage points to reach 52.7 per cent. The 2022 labour force participation rate of the Western Cape stood at 64.9 per cent, however, highlighting the limited extent of economic activity in the District. In this context, it is perhaps unsurprising that a large number of CKD residents are economically inactive (47.3 per cent in 2022) and that working people have several dependants even as many residents look to the government for income support.

As the epicentre of economic activity in the CKD, the Beaufort West municipal area led in GDPR and employment growth. The area accounted for 1.6 percentage points of the District GDPR growth estimated for 2022 and 3.6 percentage points of job growth (put at 5.8 per cent for the CKD overall). In 2021, the general government and personal services sectors were responsible for most economic activity in the District, collectively contributing 38.9 per cent of the GDPR of the CKD. Employment in public administration and defence activities accounted for the largest share of formal workers in 2022. This group comprised 2 243 Local Government, Provincial Government and National Government workers, as well as 440 people working in public order and safety activities.

It is forecast that the economy of the CKD will contract by 0.2 per cent in 2023 before rebounding in 2024 with growth of 1.1 per cent, this as the agriculture sector's performance stabilises. A reduction in the size of the CKD economy is forecast for 2023 mostly because substantial contractions are anticipated in prominent sectors such as general government, transport and trade. High inflation rates and fuel prices, coupled with high interest rates, dampen household spending and have a negative impact on business confidence. Government budgets are also constrained, as tax revenue is affected by declining levels of taxable income and increasing numbers of indigent households.

However, continued growth in the finance sector (which is forecast to expand by 3.4 per cent in 2023) will minimise the impact of a poor performance across most other sectors. The few sand and aggregate mines in the CKD are expected to benefit from improved prices and public infrastructure investment projects. That said, given the small GDPR of the mining sector, the growth of 2.6 per cent anticipated for this sector will not be sufficient to counteract the contractions forecast for other sectors. On a more positive note, the 2024 forecast exceeds the average annual growth of 0.5 per cent that occurred between 2015 and 2019. This turn of events will positively impact the wellbeing of local communities if sustainable employment opportunities arise from the GDPR growth. (2023-24 Municipal Economic Review and Central Karoo District, Western Cape Government).

1.1 SETTLEMENT DEMOGRAPHICS

The towns in Beaufort West Municipality's Management Area were described as follows in the draft SDF Status Quo Report, March 2023.

Table 1.1.1: Towns in Beaufort West Municipality's Management Area
Beaufort West
<p>This is the largest town in the arid Great Karoo region of South Africa and is known as the "Capital of the Karoo". It is the hub of a farming district based primarily on sheep farming and is located along a major road junction of the N1, N12 and R61. The Karoo National Park is adjacent to the town of Beaufort West, where important fossils have been found, initially by David Baird, son of the local magistrate, in 1827. Both the old Town Hall and the Dutch Reformed Church are designated national monuments.</p> <p><u>Biophysical Synthesis:</u></p> <ul style="list-style-type: none"> • The Karoo National Park is a significant asset and tourism attraction located in close proximity to Beaufort West Town. • There is an inconsistency between the buffer zone for the Karoo National Park and the built environment of the town. The buffer zone extends into the urban edge of the town and over areas that have already been developed for housing. • The state of the Vaalkoppies landfill site is a severe environmental risk. The overflow of waste poses a significant threat to all of the natural systems in the town. • The majority of the land around the town constitute Critical Biodiversity Areas or Ecological Support areas. This is cause for additional concern around the state of the landfill site. • The riverbeds running through the centre of the town represent a flood risk when the area receives rain and are often filled with dumped rubbish particularly the poorer areas of the town. • The hilly topography to the North of the town is a constraint on development. • There is a fault line running through the town in the North that should be noted.

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Table 1.1.1: Towns in Beaufort West Municipality's Management Area

Built Environment Syntheses:

- The Vaalkoppies waste site, located to the South-East of the town, is overflowing and in need of urgent intervention. The degradation of the waste site is leading to litter getting blown into the town and the surrounding areas. This is an environmental health hazard to residents and a threat to the Critical Biodiversity Areas surrounding the town.
- The rail network and the N1 highway are a spatial buffer between the suburb of Hillside and most of the town's commercial land uses. These transport systems are important assets at this area – and where open space does exist, it is usually in the form of a walled off sports field that is separated from the public realm.
- Future housing pipeline projects fall between Hillside and the railway area. These housing projects are separated from the commercial centre of the town by the railway.
- The primary commercial land uses in the town occur along the N1 at the entrance to the West, and along Donkin Street in the town's CBD.
- The main industrial uses in the town are located close to the railway line and highway at the Western entrance to the town. The rail network is currently under utilised. Its upgrading and maintenance should be prioritised as it offers a significant strategic advantage for Beaufort West Town and the municipality.
- There is a proposed heritage overlay zone around the CBD to protect the character of the historical buildings in this area.
- The low-density residential areas to the East and South of the CBD are well located and enjoy easy access to the commercial opportunity along Donkin Street.
- There is limited state-owned land available for infill housing. However, the water reticulation network extends South of the well-located areas to the East of the CBD. Given the existence of this infrastructure, and the problems with accessibility in the areas North of the railway line, this area should be considered for infill housing.
- Interventions that improve accessibility across the rail system in particular should be prioritised.

Socioeconomic Syntheses:

- Hillside is drastically under-serviced. A single school and a single clinic service the entire area to the North of the railway line. Many of the newer houses in the area are a minimum of fifteen minutes' walk from a school or healthcare facility, and parts of the newer housing developments are outside the fifteen-minute walking distance band. This is a significant problem, considering that non-motorised transport is the primary mode of transport for most residents in Beaufort West Town.
- Rustdene and Kwamandlenkosi are relatively well serviced in terms of social facilities and community centres. This uneven distribution of facilities has created a situation where children are either bussed to school from Hillside or are forced to cross the N1 and rail system on foot.
- Property values are lowest in Hillside and the Southern areas of Rustdene and Kwamandlenkosi. There is some economic activity in the North of Rustdene, close to the N1. This is reflected in relatively higher property values in this area.
- The highest residential property values in Beaufort West Town are in the area to the East of the CBD. This area around De Villiers Street is close to the economic centre of the town and is well serviced by social facilities and public open space.
- Economic activity primarily occurs in the CBD, along Donkin Street. This is reflected in the clustering of businesses, community service centres, financial institutions, restaurants, and shops in this area.
- As mentioned above, there is some economic activity towards the North of Rustdene and at the entrance to the town from the East (these are primarily businesses serving trucks passing through Beaufort West along the N1). There is no discernible formal economic activity occurring in Hillside.

Merweville

- The small town of Merweville was established in 1904 on the farm Vanderbylskraal and was named after Reverend van Der Merwe, the then minister of the Dutch Reformed Church in Beaufort West.
- The town served as service centre for the surrounding agricultural areas. This role has significantly dwindled and the town is left with very limited economic opportunities.
- Facilities offered in the town include Primary schools, a clinic and a general dealer.
- The original town is characterised by some beautifully restored buildings, some of which have been turned into guest accommodation.
- The town is segregated by the Vanderbylskraalleegte River. The low-income area lies to the west of the river and the main town to the east.
- The town has a low development potential (coping settlement) with very high social needs.

Nelspoort

- The town of Nelspoort was established when number of farmers established their homes here.
- The town also became a haven for those with chest ailments and in 1924 the first "chest hospital" was established here mainly for the treatment of TB sufferers. In 1969 the first psychiatric patients were admitted to the hospital, mainly due to the decline of TB patients due to sufferers being able conduct home based treatment. Today the hospital is still in operation but with very low occupancy.
- The town offers extremely limited economic opportunities with no business or commercial areas.
- The town has a few facilities including: a police station, primary school and a hospital.
- The centre of the town is characterised by deserted buildings, some of which have become dilapidated.
- The railway line separates the hospital from the rest of the town. Access across the railway line is provided by means of an underpass.
- Between the town and the Sout River to the east there are some agricultural activities.
- Bushman and Khoi rock paintings and engravings are found throughout the "koppies" around Nelspoort.
- Although the area appears somewhat clean, many residents burn their waste, and the landfill is poorly managed.

Murraysburg

- The town of Murraysburg was established on the Farm Eenzaamheid in 1855 as a "church town". The town was named after Rev. Andrew Murray, minister of the Dutch Reformed Church in Graaff-Reinet.
- The main source of income in the town is in the agricultural sector.

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Table 1.1.1: Towns in Beaufort West Municipality's Management Area

- The town has limited economic activity and there is only a limited range of facilities. These include schools, a clinic, a sports field, and a few shops.
- The historical town has some beautifully restored old houses and a church dating back to 1856.
- Tourism activities offered in and around the town include hunting, bird watching, stargazing, fly-fishing, hiking, fossil viewing, photography tours and donkey cart rides.
- The lower income, higher density neighbourhoods of the town are situated to the south of the main town. Large pieces of vacant land separate the two areas.
- Murraysburg has been identified as a settlement with exceptionally low development potential (struggling settlement) and very high social needs.

The Growth Potential Study 2014 of the Western Cape Government determined the growth potential and socio-economic needs of settlements in the Western Cape using quantitative data (e.g. factors relating to socio-economic, economic, physical-environmental, infrastructure and institutional aspects). The growth potential of the towns in Beaufort West Municipality's Management Area was indicated as follows.

Table 1.1.2: Growth potential of the towns in Beaufort West Municipality's Management Area

Town	Growth Potential Score (Out of 100)	Growth Category
Beaufort West	44	Low
Merweville	22	Very Low
Nelspoort	-	-
Murraysburg	12	Very Low

The table below gives an overview of the growth potential indicators for the towns in Beaufort West Municipality's Management Area, as included in the Growth Potential Study.

Table 1.1.3: Growth potential indicators for the towns in Beaufort West Municipality's Management Area (Settlement Level Classification)

Indicator	Beaufort West	Merweville	Nelspoort	Murraysburg
Absolute socio-economic needs	High	Very Low	-	Low
Proportional socio-economic needs	Medium	High	-	Very High
Human capital index	Low	Low	-	Very Low
Economic index	Low	Very Low	-	Very Low
Physical index	Very Low	Low	-	Very Low
Infrastructure	Medium	Low	-	Very Low
Institutional	Very High	Medium	-	High

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The published 2022 Census population for Beaufort West Municipality was 72 972 persons and the number of permanent households was 19 216. This figure is also aligned with the 2024/2025 IDP.

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

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

Table 1.1.4: Estimated future annual population growth percentages, population and households per distribution system			
Distribution System	Estimated future annual population growth %	Projected 2023/2024 population	Projected 2023/2024 households
Beaufort West	1.50%	40 753	10 619
Merweville	1.50%	1 903	532
Nelspoort	1.00%	1 914	460
Murraysburg	1.50%	6 061	1 501
Farms	0.50%	7 581	2 231
Total	1.24%	58 212	15 343

The current 2023/2024 population for Beaufort West Municipality is therefore estimated at 58 213 persons and the permanent households at 15 342, as indicated in the table above.

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The table below gives a summary of the population and households for the various water distribution and sanitation drainage systems.

Table 1.1.5: Settlement Demographics																			
Settlement Name	Scheme ID	Main Type (Urban / Rural)	Type	2011 Census Data			2023/2024 Projected Data			WSDP General Fields									
				Population	Households	Person / hh	Population	Households	Person / hh	% HH Communal Supply	% HH Controlled Supply	% HH Uncontrolled Supply	% of Settlement Metered	% of Settlement Billed	Water Use	Artificial Recharge	Rain Water Harvesting	No of HH requiring free basic water	No of HH requiring free basic sanitation
Beaufort West	CK0301	Urban	Formal Town	34 085	8 882	3.84	40 753	10 619	3.84	0.2%	0%	99.8%	Unknown	Unknown	Domestic	No	No	5 560	3 205
Merweville	CK0302	Urban	Formal Town	1 592	445	3.58	1 903	532	3.58	1.7%	0%	98.3%	Unknown	Unknown	Domestic	No	No	279	161
Nelspoort	CK0303	Urban	Formal Town	1 699	408	4.16	1 914	460	4.16	0.0%	0%	100.0%	Unknown	Unknown	Domestic	No	No	241	139
Murraysburg	CK0304	Urban	Formal Town	5 069	1 255	4.04	6 061	1 501	4.04	2.4%	0%	97.6%	Unknown	Unknown	Domestic	No	No	786	453
Farms	CK030R	Rural	Farming	7 141	2 101	3.40	7 581	2 231	3.40	3.3%	0%	96.7%	0%	0%	Domestic & Agricultural	Unknown	Unknown	Unknown	Unknown
Total				49 586	13 091	3.79	58 212	15 343	3.79										

Notes: 1) % of Settlements Metered and Billed were estimated.
2) No of HH requiring free basic water: 23/24 Number of projected households for town / Total number of projected households in the Urban areas, excluding farms x 6 866 (22/23 registered indigent households that received free basic water)
3) No of HH requiring free basic sanitation: 23/24 Number of projected households for town / Total number of projected households in the Urban areas, excluding farms x 3 957 (22/23 registered indigent households that received free basic sanitation)
4) The 2011 Census Data in the above table is revised data for the urban areas of each town according to new boundaries.

The residential Water and Sanitation Service Levels Profiles for the above settlements are included under Topic 2.

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1.2 PUBLIC AMENITIES

The Public facilities in Beaufort West Municipality's Management Area are shown in the table below.

Table 1.2.1: Public Amenities in Beaufort West Municipality's Management Area			
Facility Name	Town	Main Type	Sub Type
Ebulumko Pre-Primary School	Beaufort West	Educational Facility	Pre-Primary School
Cornerstone Sonstraaltjie Pre-Primary School	Beaufort West	Educational Facility	Pre-Primary School
Lighuis Pre-Primary School	Beaufort West	Educational Facility	Pre-Primary School
Kleuterland Pre-Primary School	Beaufort West	Educational Facility	Pre-Primary School
St. John's Pre-Primary School	Beaufort West	Educational Facility	Pre-Primary School
Beaufort West Primary School	Beaufort West	Educational Facility	Primary School
H.M. Dlikidla Primary School	Beaufort West	Educational Facility	Primary School
Beaufort Wes Preparatory School	Beaufort West	Educational Facility	Primary School
Niko Brummer Primary School	Beaufort West	Educational Facility	Primary School
John D Crawford Primary School	Beaufort West	Educational Facility	Primary School
A.H. Barnard Primary School	Beaufort West	Educational Facility	Primary School
Teske Gedenk Primary School	Beaufort West	Educational Facility	Primary School
St. Matthews Primary School	Beaufort West	Educational Facility	Primary School
Destiny Academy	Beaufort West	Educational Facility	Primary School
Vuurvliegje Akademie Primary School	Beaufort West	Educational Facility	Primary School
Mandlenkosi Secondary School	Beaufort West	Educational Facility	Secondary School
Sentraal High School	Beaufort West	Educational Facility	Secondary School
Beaufort-Wes Secondary School	Beaufort West	Educational Facility	Secondary School
Bastiaanse Secondary School	Beaufort West	Educational Facility	Secondary School
Klawervlei Primary School	Beaufort West Rural	Educational Facility	Primary School
Layton NGK Primary School	Beaufort West Rural	Educational Facility	Primary School
George Fredericks Primary School	Merweville	Educational Facility	Intermediate School
Merweville Primary School	Merweville	Educational Facility	Primary School
Murraysburg Primary School	Murraysburg	Educational Facility	Primary School
Murraysburg High School	Murraysburg	Educational Facility	Secondary School
Restvale Met Primary School	Nelspoort	Educational Facility	Intermediate School
Beaufort West Hospital	Beaufort West	Health Facility	Hospitals
Beaufort West Hospital CHC	Beaufort West	Health Facility	Health Centers
KwaMandlenkosi Clinic	Beaufort West	Health Facility	Clinics
Beaufort West Constitution Street Clinic	Beaufort West	Health Facility	Clinics
Beaufort West DC Clinic	Beaufort West	Health Facility	Clinics
Newtown Clinic	Beaufort West	Health Facility	Clinics
Nieuvelddpark Clinic	Beaufort West	Health Facility	Clinics
Hillside Clinic	Beaufort West	Health Facility	Clinics
Beaufort West Mobile Clinic 1	Beaufort West	Health Facility	Clinics
Beaufort West Mobile Clinic 2	Beaufort West	Health Facility	Clinics
Merweville Satellite Clinic	Merweville	Health Facility	Clinics
Nelspoort Hospital	Nelspoort	Health Facility	Hospitals
Nelspoort Clinic	Nelspoort	Health Facility	Clinics
Murraysburg Hospital	Murraysburg	Health Facility	Hospitals
Murraysburg Clinic	Murraysburg	Health Facility	Clinics

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1.3 SOCIO ECONOMIC BACKGROUND (Information)

1.3.1 Population and Households

The table below gives an overview of the historical population and household figures for Beaufort West Municipality for the various years.

Table 1.3.1.1: Historical population and household data of Beaufort West Municipality					
Year	Area	Source	Population	Households	Person / Household
2001	Previous Beaufort West MA	Census 2001 Community Profiles	37 099	9 074	4.09
2001	Previous Central Karoo DMA	Census 2001 Community Profiles	6 191	1 570	3.94
2001 Census Data Total			43 290	10 644	4.07
2007	Previous Beaufort West MA	2007 Community Survey	37 090	9 149	4.05
2007	Previous Central Karoo DMA	2007 Community Survey	5 609	1 845	3.04
2007 Community Survey Total			42 699	10 994	3.88
2011 Census Data (Former DMA Included)			49 586	13 091	3.79
2016 Community Survey data (DMA Included)			51 080	14 935	3.42
2022 Census Data (DMA Included)			72 972	19 216	3.80

The population figures above is indicative of some migration into the Municipal Area. The 2022/2023 population of Beaufort West Municipality is estimated at approximately 57 436 persons (15 140 Households).

The published 2022 Census population for Beaufort West Municipality was 72 972 persons (Annual growth rate of 3.8% over the period 2011 to 2022) and the number of permanent households was 19 216. The 2022 Census data is not yet available per town and it was therefore not possible to update Beaufort West Municipality's projected population and households per town (system) at this stage.

The historical population and household figures and population growth rates and projected present population and number of households for Beaufort West Municipality, for the various schemes, are summarised in the table below.

Table 1.3.1.2: Historical population and household figures, population growth rates and projected present population and households							
Town	Census 2011 (Stats SA Source)			Future Population Growth per year (2011 Onwards)	Projected for 2023/2024 (Calculated from revised boundaries of Census 2011 data)		
	P	H	P/H		P	H	P/H
Beaufort West	34 085	8 882	3.84	1.50%	40 753	10 619	3.84
Merweville	1 592	445	3.58	1.50%	1 903	532	3.58
Nelspoort	1 699	408	4.16	1.00%	1 914	460	4.16
Murraysburg	5 069	1 255	4.04	1.50%	6 061	1 501	4.04
Farms	7 141	2 101	3.40	0.50%	7 581	2 231	3.40
Total	49 586	13 091	3.79	1.24%	58 212	15 343	3.79

Notes: Abbreviations P – Persons, H – Households and P/H - Person / Household.

The size of the population provides an indication of the volume of demand for government services in a particular area. It also serves as a planning measure to assist budget planners to match available resources to the relative demand for infrastructural and social services including water, sanitation, electricity, housing and health care.

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1.3.2 Population Growth Rates

The effective population growth rate will most likely change over the next five years considering the effect of economic development and social development (e.g. education). The projected annual population growth rates included in the WSDP are as follows.

Table 1.3.2.1: Projected population growth rate for the next five years	
Town	Estimated annual population growth for next 5 Years (%/a)
Beaufort West	1.50%
Merweville	1.50%
Nelspoort	1.00%
Murraysburg	1.50%
Farms	0.50%

1.3.3 Age and Gender Profile

The age and gender profile of the various communities may be indicative of development needs and socio-economic status and the statistics provides important insights into the age groups, where the bulk of the population is located and to target government, civil society and non-governmental programmes more effectively. The 2022 age and gender Census data is not yet available per Community Profile. The information below for Beaufort West Municipality is as taken from the 2011 Census data.

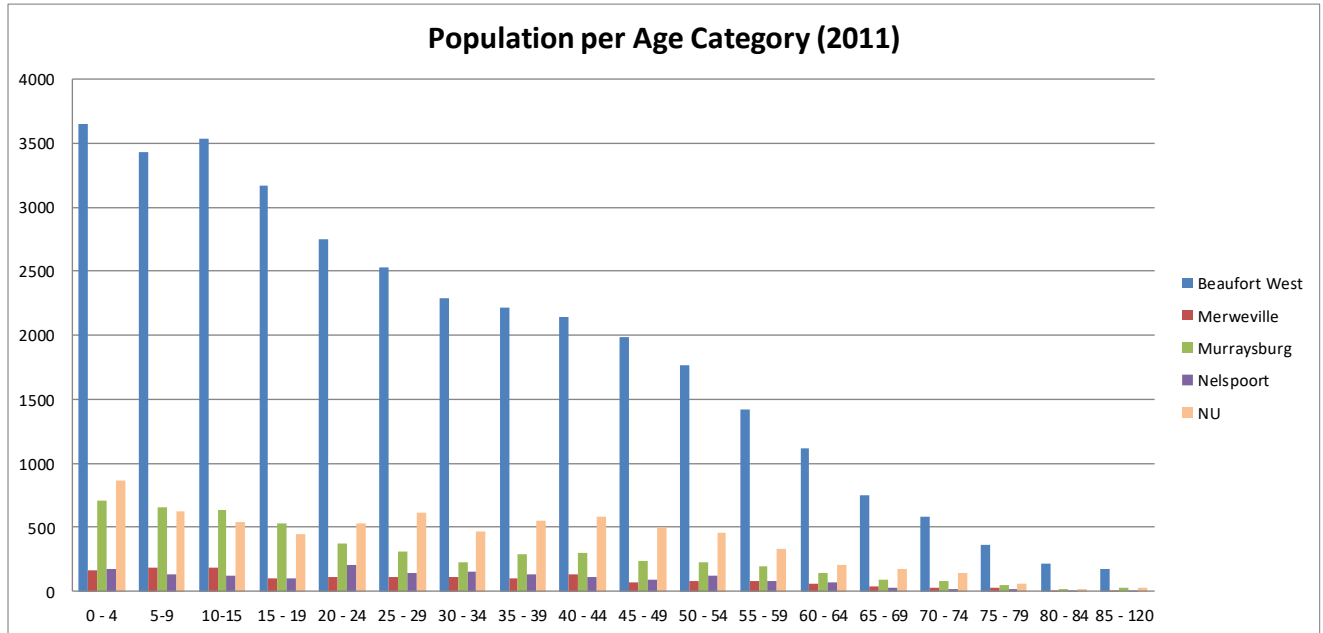
Table 1.3.3.1: Age and gender profile per scheme for 2011									
Scheme	Permanent resident population 2011	Residents (15 to 64 years)		Youth and aged residents (< 15 years & >64 years)		Male residents		Female residents	
		Number	%	Number	%	Number	%	Number	%
Beaufort West	34 085	21 382	62.7%	12 703	37.3%	16 133	47.3%	17 952	52.7%
Merweville	1 592	961	60.4%	631	39.6%	822	51.6%	770	48.4%
Nelspoort	1 699	1 211	71.3%	488	28.7%	932	54.9%	767	45.1%
Murraysburg	5 069	2 809	55.4%	2 260	44.6%	2 389	47.1%	2 680	52.9%
Farms	7 141	4 688	65.6%	2 453	34.4%	3 862	54.1%	3 279	45.9%
TOTALS	49 586	31 051	62.6%	18 535	37.4%	24 138	48.7%	25 448	51.3%

From the above table and graph it can be noted that there is not a big difference between the male and female population within the various towns. The population increases at the young ages, from 0 to 9 years, as well as in the working age population between 15 and 49 years will have particular implications for the provision of facilities and services related to children and child care, whereas the growth in the labour force will also have a direct impact on a greater need for employment opportunities.

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The graph below gives an overview of the 2011 Census population distribution per age category for Beaufort West Municipality.



The table below gives an overview of the population categories by age (2011 Census).

Table 1.3.3.2: Age distribution for 2011					
Year	Children (0-14)	Economically Active (15 – 64)	Elderly (> 64)	Youth (15-34)	Youth and Children (0 – 34)
2011	2011	31.5%	62.6%	5.9%	30.8%

The child and age dependency ratio for Beaufort West Municipality for 2011 was 31.5% and 5.9% respectively. The total dependency ratio for Beaufort West Municipality was therefore 37.4%.

In relation to the Age Distribution within the Beaufort West Municipality, the Working Age segment of the population accounts for 62.6%, while 31.5 % is attributable to the “Children” category and 5.9 % making up the “Aged” category in 2011. From an economic standpoint, the labour force appeared to be well endowed with a fair sparkling of youth. The “Aged” category is small in comparison.

1.3.4 Employment Profile

The status and type of employment indicates the nature of household income and income security. The 2022 employment Census data is not yet available per Community Profile. The employment profile for Beaufort West Municipality for 2011, as taken from the 2011 Census data, is as follows.

Table 1.3.4.1: Employment profile per scheme for 2011										
Scheme	Employed		Unemployed		Discouraged Work Seeker		Other not Economically Active		Not Applicable	
	Number	%	Number	%	Number	%	Number	%	Number	%
Beaufort West	6 710	19.6%	2 717	8.0%	1 699	5.0%	10 256	30.1%	12 703	37.3%
Merweville	262	16.5%	41	2.6%	210	13.2%	447	28.1%	632	39.7%
Nelspoort	417	24.5%	101	5.9%	136	8.0%	557	32.8%	488	28.7%
Murraysburg	445	8.8%	784	15.5%	328	6.5%	1 253	24.7%	2 259	44.6%
Farms	3 184	44.6%	127	1.8%	198	2.8%	1 179	16.5%	2 453	34.4%
TOTALS	11 018	22.2%	3 770	7.6%	2 571	5.2%	13 692	27.6%	18 535	37.4%

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Skills facilitation is becoming essential in ensuring that local labourers find employment. Over the past decade, skilled workers were more likely to be employed in the Beaufort West than semi-skilled or low-skilled workers. Low skilled and semi-skilled are more likely to be employed at Murraysburg and Nelspoort mostly in the mixed farming industry.

It is estimated that Beaufort West municipal area employment in 2021 amount to 11 197 workers, of which 9 203 (82.2%) are employed in the formal sector and 2 635 (17.8%) are informally employed. The informal sector is an essential source of jobs, accounting for 17.8% of employment in 2021. As formal employment faltered in 2022 the informal sector recorded a surge in jobs, mainly in retail.

Most of the formally employed consisted of semi-skilled (33.3%) and low skilled (29.3%) workers. The skilled category only contributed 19.9% to total formal employment. The skilled category grew at a pace of 1.3% per annum from 2019 to 2022 notably outpacing low-skilled employment which shed -7.3% of jobs per annum and semi-skilled employment -5.9%. The informal sector shed most of the jobs at -13.3% of jobs between 2019 and 2022. The growth in the skilled category reflects the increasing market demand for skilled labour and the need for skills development initiatives in the municipal area (2023 Socio-Economic Profile Beaufort West Municipality).

The formally employed workers in the Beaufort West labour force in 2022 was dominated by semi-skilled workers (33.1%), as indicated in the table below.

Table 1.3.4.2: Trends in labour force skills for Beaufort West Municipality			
Formal employment by skill	Skill level contribution (%)	Average growth (%)	Number of jobs
	2022	2019 – 2022	2022
Skilled	19.9	1.3	2 233
Semi-skilled	33.1	-5.9	3 713
Low-skilled	29.2	-7.3	3 235
Informal	17.8	-13.3	2 635
Total	100.0	-6.8	11 816

Source: 2023 Socio-Economic Profile Beaufort West Municipality

The number of skilled workers experienced the highest growth (1.3%) across the period 2019-2022, while the informal workers experienced a negative growth (-13.3%) during the same reporting period. Evidently, the demand for skilled labour is on the rise, which implies the need to capacitate and empower low-skilled and semi-skilled workers.

The table below gives an overview of the percentage unemployment rates for Beaufort West Municipality and the Central Karoo Region.

Table 1.3.4.3: Unemployment rates for period 2018 to 2022					
Area	2018	2019	2020	2021	2022
Beaufort West Municipality	23.5%	24.5%	24.8%	28.9%	28.1%
Central Karoo	21.5%	22.4%	22.7%	26.5%	25.6%

Source: 2023 Socio-Economic Profile Beaufort West Municipality

With 11 197 people formally and informally employed in 2021 the municipal area had a labour absorption rate (53.3%). The not economically active population was at 46.7%. It is evident that the Beaufort West municipal area needs economic revitalisation. Ideally, this will increase labour force participation and promote job creation.

Most of the jobs stem from the local and provincial governments and the Beaufort West Prison. Despite the economic recovery experienced in 2021 the economy continued to shed jobs, with an estimated 401 net jobs lost. This was largely driven by job losses in the wholesale retail trade, catering accommodation (-240 jobs) transport, storage and communication (-68 jobs) finance and insurance and construction lost 50 jobs each, followed by 34 job losses in Agricultural sector, reflecting that employment creation is lagging the improved GDP. Only the general government and the community and social sector was able to create jobs during 2021.

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The net job growth in the municipal area is expected to be positive in 2022 largely boosted by employment in the informal sector. This contributed to a welcome reduction in the unemployment rate by 0.8% points. Unemployment rate at 28.1% in 2022 however remains rife and above the District average, and contributes to the high poverty rate in the municipal area (2023 Socio-Economic Profile Beaufort West Municipality).

1.3.5 Household Income

The economic profile is directly related to the development prospects, affordability of services and projected water use. Poverty can be defined as a lack of resources to meet basic needs, such as adequate food, shelter and basic amenities. It also represents the inability to meet higher order needs, such as the need for personal fulfilment, recreation and freedom. Income related factors are direct determinants of poverty levels. The 2022 household income Census data is not yet available per Community Profile. The household income for Beaufort West Municipality for 2011, as taken from the 2011 Census data, is as follows.

Table 1.3.5.1: Household income per scheme for 2011						
Household Income Categories	Beaufort West	Merweville	Nelspoort	Murraysburg	Farms	Total
No Income	839	39	57	235	84	1 254
R1 – R4 800	289	32	11	68	28	428
R4 801 – R9 600	500	49	23	125	63	760
R9 601 – R19 600	1 687	141	61	363	591	2 843
R19 601 – R38 200	1 998	93	82	263	676	3 112
R38 201 – R76 400	1 477	49	96	119	267	2 008
R76 401 – R153 800	991	23	53	41	132	1 240
R153 801 – R307 600	706	12	21	29	127	895
R307 601 – R614 400	313	4	3	9	84	413
R614 401 – R1 228 800	50	2	0	0	34	86
R1 228 801 – R2 457 600	18	0	0	2	7	27
R2 457 601 +	14	1	1	1	8	25
Total	8 882	445	408	1 255	2 101	13 091

The percentage of households within the various income brackets are as follows.

- Low Income (Up to R38 200 per annum) – 64.1%
- Middle Income (R38 201 up to R307 600 per annum) – 31.7%
- High Income (R307 601 and higher per annum) – 4.2%

Approximately 12.8% of the 13 091 households in Beaufort West Municipality earned R400 or less per month in 2011. Lower levels of household income increase indigent dependency on municipal support. Municipal resources are therefore strained in an effort to provide free basic services.

A key constraint in planning for infrastructure delivery is household affordability. Knowing the existing situation regarding household incomes is a key part to understanding consumers' affordability levels. These levels should be considered when setting service level targets.

Income inequality has been increasing not only in Beaufort West, but also in the Central Karoo and the broader Western Cape Province. This indicates that the relative satisfactory growth experienced across these regions has not equally been distributed amongst households or individuals.

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The National Development Plan sets forth a vision for 2030, which includes the eradication of households with a monthly income below R419 per person (Reducing it from 39% to 0%) and lowering the Gini coefficient from 0.69 to 0.60. Achieving this vision necessitates tackling the fundamental drivers of poverty and inequality, transitioning from short-term policies to evidence-based ones, and, most importantly, guaranteeing a “decent standard of living” for all South Africans by 2030. The table below gives an overview of the Gini coefficient for the period 2019 to 2022.

Table 1.3.5.2: Gini coefficient for period 2019 to 2022			
Year	Western Cape	Central Karoo	Beaufort West Municipality
2019	0.622	0.598	0.599
2020	0.627	0.602	0.603
2021	0.627	0.592	0.593
2022	0.601	0.580	0.582

The Beaufort West municipal area registered the most pronounced level of income inequality in the District between 2019 and 2022. However, the level remains lower than the Provincial income inequality level. This phenomenon can be attributed to the unequal earnings of the region’s residents. A notable proportion of the population working in public administration jobs in this area earns comparatively higher incomes. Particularly noteworthy in this regard is Beaufort West town, which serves as the primary urban centre in the region. In 2021, it reported the highest median income in the District (R9 812). By contrast, during the same year, inhabitants of Merweville and Murraysburg had median incomes of R5 338 and R4 987, respectively. This contrast underscores the disparities in income in the District that contribute to the relatively elevated Gini coefficient observed within this municipal area (2023-24 Municipal Economic Review and Outlook, Western Cape Government).

2. SERVICE LEVELS PROFILE

Having an understanding of the current situation allows the most important aspect of the plan to be addressed, which is the service level targets. This section sets out what services will be provided to consumers, both in terms of *level of service* and *quality of service (reliability)*.

The concept of service levels relates to the options which consumers can be given with regard to the convenience of the service and hence the amount of water which they will consume and the associated wastewater they will generate.

There are a range of different service types which can be provided. These are clarified below according to the types reported in the tables.

Service Types:

None or inadequate

This refers to the number of consumer units (or households) that do not have access to basic water supply or sanitation.

Basic water supply comprises:

- the provision of appropriate education in respect of effective water use;
- a minimum quantity of potable water of 25 litres per person per day;
- at a minimum flow rate of not less than 10 litres per minutes;
- within 200 metres of a household, and
- with an effectiveness of not more than 7 days interrupted supply to any consumer per year.

Basic sanitation comprises:

- the provision of appropriate health and hygiene education; and
- a toilet which is safe, reliable, 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.

Water Service Levels:

Communal water supply

See 'basic water supply' explained above.

Controlled volume supply

E.g. Yard Tanks

Each house is provided with a tank which holds about 200 litres. The tank gets filled up once a day. This type of service is often referred to as an intermediate level of supply.

Uncontrolled volume supply

There are generally two types: either the tap stands outside the house on its own or on the wall of an outside toilet (yard tap) or water is piped into the house to take water to taps in the kitchen, bathroom, toilet etc.

Sanitation Service Levels:

Consumer installations : dry

See basic sanitation supply explained above.

Ventilated pit: A basic pit latrine structurally reinforced without preventing water seepage into surrounding soil, a slab that seals the edges of the pit and a screened air pipe that vents smells from the pit into the air above the privy. The concrete slab over the pit is not standard requirement for all VIP toilets, but necessary under certain geotechnical conditions and it must comply with ground water protocol.

Eco San option: one of a range of sanitation options that convert the waste products into re-usable agricultural soil conditioners or fertilizers on-site (usually without water use).

Consumer installations: wet (Septic tanks)

Water is flushed into a digester where certain bacteria and other organisms breakdown the solids. Digester effluent flows into the soak away, then the ground and it must be ensured that the soak away does not cause pollution of the ground water. There can be a build-up of sludge in the digester that has to be pumped out occasionally. In some cases the effluent from the septic tank is discharged into the bulk sewer network, which leads to a WWTWs.

Discharge to WWTWs

Here there are generally two types: intermediate (e.g. aqua-privy with solids free sewer, which is similar to a septic tank, but instead of a soak-away the digester effluent flows into a pipe which connects to a small sewer in the road reserve).

Full waterborne refers to the situation where a flushing toilet is used; the wastewater flows to a sewer on the site, then to sewers on the street. Effluent discharged from WWTWs must meet national effluent discharge quality standards in order to avoid polluting the water resources.

Service Level Policy:

The key issue in preparing a service level policy is that higher than basic services should be provided only where households can afford these levels of service, due to the necessity of recovering the increased capital and operating and maintenance costs. While politically difficult, this is likely to be the only way in which sustainable services can be provided in the long term. There are numerous examples of unaffordable service levels being provided with catastrophic results for both households and municipalities.

Key issues to take into account when formulating a service level policy

The following should be taken into account when formulating a service level policy:

- The types of service levels decided upon have a major impact on capital and operating costs and hence on the long-term viability of service provision. If service levels are set too high the consumers who receive them will not be able to afford to pay for them and are likely to default on their payment which will in turn, impact on the viability of the service provider.
- Service levels are related to the quantity of water used and thus there is an impact on the environment from which this water has to be abstracted and returned to. Similarly, the availability of adequate water for waterborne sanitation should be considered.
- Risks of pollution associated with the various levels of services must be considered; higher levels of service have higher risk of pollution.
- The size and density of the settlement should be taken into account when deciding levels of service. In general large settlements produce more waste and hence higher risks of pollution while pollution from smaller settlements is easier to manage.
- Desludging of septic tanks, pit emptying service and capacity of bulk sewer network and WWTWs.

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TOPIC 2: SERVICE LEVELS PROFILE

Service level targets:

- a) **New consumer units** – this refers to new units that will need to be provided as a result of natural population increase or migration to the area.
- b) **Current backlogs** – this refers to those households that are currently not adequately served, for example those having a supply less than RDP standards.
- c) **Upgrading** – this refers to those households which currently have adequate services but are to be upgraded to a higher level.

The 2022 Census Community Profiles are not yet available on sub-place level. The 2011 Census data (Households) and the number of residential consumer units, as provided by the financial system, were used to populate the residential water and sanitation service levels in the urban areas in the Municipality's Management Area. The 2011 Census data was also used for the farms in the rural areas. The 2011 Census Sub-Places were grouped together as follows for the various water distribution systems.

Table 2.1: Grouping of the 2011 Census data Sub-Places for the various distribution systems

Distribution System	2011 Census Sub-Places
Beaufort West	North End, Middledorp, Hosiptal Hill, Beaufort West SP, Hillside, Hillside 2, Spoorwegkamp, Toekomsrus, Hillside 3, Beaufort West Industrial Park, Newlands, Essopville, Nieuveland Park, Die Laning, Prince Valley, New Town SP, Hooyvlakte, Kwa-Mandlenkosi SP, Rustdene SP
Merweville	Merweville SP
Nelspoort	Nelspoort SP, Restvale
Murraysburg	Murraysburg SP, Rooivlakte SP
Farms	Beaufort West NU, Karoo National Park

The number of consumers in each user sector, for the various distribution systems in Beaufort West Municipality's Management Area, are as indicated in the table below (As confirmed by the Financial Department).

Table 2.2: Number of user connections in each user sector served by Beaufort West Municipality (As confirmed by the Financial Department)

Description	No of Residential Consumer Units	No of dry Industrial / Commercial Consumer Units	No. other Units	Total
Beaufort West	9 004	320	1 198	10 522
Merweville	437	2	102	341
Nelspoort	326	1	82	409
Murraysburg	1 311	23	340	1 674
Farms	299	4	1 118	1 421
TOTALS	11 377	350	3 840	14 567

All the formal households in the urban areas of Beaufort West Municipality's Management Area are provided with water and sewer connections inside the erven. Informal areas are supplied with shared services as an intermediary measure. There are an estimated 23 households in informal areas in Beaufort West, 9 in Merweville and 36 in Murraysburg. All these households have access to communal water services, except 29 of the 36 households in Murraysburg. None of these households have access to communal toilet facilities, except 7 of the households in Murraysburg. Beaufort West Municipality works towards a ratio of at least 1 tap per twenty-five households and 1 communal toilet per five households for their shared services. Beaufort West Municipality is committed to ensure that private landowners provide at least basic water and sanitation services to those households in the rural areas with existing services below RDP standard.

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TOPIC 2: SERVICE LEVELS PROFILE

Beaufort West Municipality's challenges with regard to the provision of basic water and sanitation services are as follows:

- To provide basic water and sanitation services in the informal areas to new citizens moving into the informal areas and to ensure that health and hygiene awareness and education is part of the process of providing basic services.
- To identify suitable land for the relocation of the people from informal areas, with existing communal services, to formal houses with a higher level of water and sanitation service (Services inside the erven).
- To identify adequate funding for the rehabilitation, maintenance, replacement and upgrading of the existing bulk and reticulation infrastructure in order to support the sustainability of the water and sanitation services.
- To monitor the provision of basic water and sanitation on privately owned land.

2.1 RESIDENTIAL WATER PROFILE

The Municipality provides water services to all towns in its area of jurisdiction. All the urban households within the Municipality's area of jurisdiction have access to a higher level of water service, except the informal areas that are supplied with communal services as an intermediary measure. The 2022 Census Community Profiles are not yet available. The 2011 residential household water service levels for the towns in Beaufort West Municipality's Management Area, as taken from the 2011 Census Data, were as follows:

Table 2.1.1: 2011 Census household water service levels								
Town	Inside Dwelling	Inside Yard	Communal Water Services				No Access	Total
			< 200m	200m – 500m	500m – 1000m	> 1000m		
Beaufort West	7 983	829	18	17	3	2	30	8 882
Merweville	421	10	11	2	0	0	1	445
Nelspoort	275	2	0	7	61	63	0	408
Murraysburg	627	613	7	0	0	0	8	1 255
Farms	1 337	657	44	25	4	0	34	2 101
Total	10 643	2 111	80	51	68	65	73	13 091

Note: **Basic Water Services Backlog**

The 2022 residential household water service levels for Beaufort West Municipality, as taken from the 2022 Census Data, were as follows:

Table 2.1.2: 2022 Census household water service levels		
Water Service Levels	Number of Households	Percentage of Total Population
Piped (tap) water inside the dwelling	16 765	87.2%
Piped (tap) water inside the yard	2 342	12.2%
Piped (tap) water on community stand	63	0.3%
No access to piped water	46	0.2%

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

Table 2.1.3: Residential water service levels													
Classification	Definitions	Beaufort West		Merweville		Nelspoort		Murraysburg		Farms		Total	
		Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH
No Water Services	Whole community never had any formal (Municipal) water supply system	0	0	0	0	0	0	0	0	116	34	116	34
Below RDP: Infrastructure Upgrade	Existing infrastructure not on RDP std:												
	Network: Too small pipes	0	0	0	0	0	0	0	0	0	0	0	0
	Storage: Add to exist / elevation	0	0	0	0	0	0	0	0	0	0	0	0
	Source: Infra. To increase exist yield	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Extension	Communities have grown structurally and there are hh that do not have water:												
	Network: New Infrastructure	0	0	0	0	0	0	0	0	99	29	99	29
	Storage: New & Adjacent	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Refurbishment	Water can be restored to RDP by:									0	0	0	0
	Repair / Replace with same existing infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	Water can be restored to RDP (Where infra. Ok) by enough & efficient staff and sufficient funds for O&M	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	Includes Source development, Local available source, new bh, pipeline, WC/WDM, Water Source quality and drinking water quality	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs		0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs and Water Resource Needs		0	0	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)		0	0	0	0	0	0	0	0	215	63	215	63
Below Housing Interim ⁴⁾	No Services: Squatter (un-orderly layout) to be addressed with temp infra	0	0	0	0	0	0	117	29	0	0	117	29
Adequate Housing Permanent ⁵⁾	Temporary Services Provided: Orderly layout where housing scheme is needed. E.g. overcrowded yard, informal areas with existing communal services	88	23	32	9	0	0	28	7	0	0	148	39
Total Housing Need		88	23	32	9	0	0	145	36	0	0	265	68
Adequate	Standpipes	0	0	0	0	0	0	0	0	150	44	150	44
	Yard Connection ⁶⁾	6 110	1 592	308	86	558	134	622	154	2 232	657	9 830	2 623
	House Connection ¹⁾	34 555	9 004	1 563	437	1 356	326	5 294	1 311	4 984	1 467	47 752	12 545
Total Adequate		40 665	10 596	1 871	523	1 914	460	5 916	1 465	7 366	2 168	57 732	15 212
Totals		40 753	10 619	1 903	532	1 914	460	6 061	1 501	7 581	2 231	58 212	15 343

Notes: 1) Number of residential consumer units for the financial year 2023/2024, as confirmed by the Financial Department.

2) Census 2011: Number of households with no access to piped (tap) water 34

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- 3) Census 2011: Number of households with communal services (200m – 500m) 25, (500m – 1000m) 4 and (>1000m) 0
- 4) Below Housing Interim in the above table is the number of households in informal areas without basic water services. There are only 29 households in Murraysburg without basic water services.
- 5) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal water services. There are 39 informal households with communal water services.
- 6) Projected number of residential households (2023/2024) – Number of residential consumers units (Confirmed by Financial Department) = Estimated number of backyard dwellers.

The table below summarise the Water Service Infrastructure Supply Level Profile for the various settlements in Beaufort West Municipality's Management Area.

Table 2.1.4: Residential water services infrastructure supply level profile												
Classification	Beaufort West		Merweville		Nelspoort		Murraysburg		Farms		Total	
	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH
Total with a water Need (Irrelevant the type of need)	0	0	0	0	0	0	117	29	215	63	332	92
Total below RDP	0	0	0	0	0	0	117	29	215	63	332	92
Piped water inside the dwelling / house	34 555	9 004	1 563	437	1 356	326	5 294	1 311	4 984	1 467	47 752	12 545
Piped water inside the yard	6 110	1 592	308	86	558	134	622	154	2 232	657	9 830	2 623
Piped water distance < 200 m	88	23	32	9	0	0	28	7	150	44	298	83
Piped water distance > 200 m	0	0	0	0	0	0	117	29	99	29	216	58
Borehole in the yard	0	0	0	0	0	0	0	0	0	0	0	0
Rain water tank in the yard	0	0	0	0	0	0	0	0	0	0	0	0
Water vendor – carrier / tanker	0	0	0	0	0	0	0	0	0	0	0	0
Stagnant water – dam / pool	0	0	0	0	0	0	0	0	0	0	0	0
Flowing water – spring / stream / river	0	0	0	0	0	0	0	0	0	0	0	0
Water other (Include no water)	0	0	0	0	0	0	0	0	116	34	116	34
Total	40 753	10 619	1 903	532	1 914	460	6 061	1 501	7 581	2 231	58 212	15 343

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The table below summarise the Water Reliability Profile for the various settlements in Beaufort West Municipality's Management Area.

Table 2.1.5: Residential water reliability profile (Households)						
Classification	Beaufort West	Merweville	Nelspoort	Murraysburg	Farms	Total
Total number of households having reliable service	10 619	532	460	1 472	2 168	15 251
Total number of households NOT having reliable service	0	0	0	29	63	92
Number of households NOT having reliable service due to: Functionality (O&M and Management)	0	0	0	0	0	0
Number of households NOT having reliable service due to: Resource	0	0	0	0	0	0
Number of households NOT having reliable service due to: Infrastructure	0	0	0	0	34	34
Number of households NOT having reliable service due to: Resource – Conservation and Demand Management	0	0	0	0	0	0
Number of households NOT having reliable service due to: New Source	0	0	0	0	0	0
Number of households NOT having reliable service due to: Infrastructure – Upgrade / Refurbishment	0	0	0	0	0	0
Number of households NOT having reliable service due to: Infrastructure – Extension	0	0	0	29	29	58
Number of households NOT having reliable service due to: Infrastructure – New Scheme	0	0	0	0	0	0
Number of households NOT having reliable service due to: Replace Old	0	0	0	0	0	0

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2.2 RESIDENTIAL SANITATION PROFILE

The 2022 Census Community Profiles are not yet available. The 2011 residential household sanitation service levels for the towns in Beaufort West Municipality's Management Area, as taken from the 2011 Census Data, were as follows:

Table 2.2.1: 2011 Census household sanitation service levels									
Area	Flush to sewerage system	Flush with Septic Tank	Chemical Toilet	Pit with Ventilation	Pit without Ventilation	Bucket	Other	None	Total
Beaufort West	8 620	174	2	3	1	3	36	43	8 882
Merweville	363	69	0	1	1	4	2	5	445
Nelspoort	397	2	0	0	0	7	0	2	408
Murraysburg	1 229	7	1	1	1	1	3	12	1 255
Farms	280	951	44	350	125	56	20	275	2 101
Total	10 889	1 203	47	355	128	71	61	337	13 091

Note: **Basic Sanitation Services Backlog**

The 2022 residential household sanitation service levels for Beaufort West Municipality, as taken from the 2022 Census Data, were as follows:

Table 2.2.2: 2022 Census household sanitation service levels		
Water Service Levels	Number of Households	Percentage of Total Population
Flush toilet	18 826	98.0%
Chemical toilet	3	0.0%
Pit toilet	108	0.6%
Bucket toilet	117	0.6%
Other	24	0.1%
None	137	0.7%

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The current sanitation service levels in Beaufort West Municipality's Management Area are estimated as follows (June 2024).

Table 2.2.3: Residential sanitation service levels													
Classification	Definitions	Beaufort West		Merweville		Nelspoort		Murraysburg		Farms		Total	
		Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH
No Sanitation Services	Whole community has never had any formal (Municipal) sanitation supply system	0	0	0	0	0	0	0	0	934	275 ³⁾	934	275
Below RDP: Infrastructure Upgrade	Existing infrastructure not on RDP standard. Typically, unimproved pit or chemical toilet. Communities have sanitation but below the minimum standard. This will normally be a bucket or an ecological toilet	0	0	0	0	0	0	0	0	833	245 ⁴⁾	833	245
	Communities at RDP standard but not appropriate due to local circumstances e.g. shallow ground water levels	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Ext.	Community partially served to RDP level	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Refurbishment	Sanitation can be restored to RDP by repair / replace with the same infrastructure.	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	Water can be restored to RDP (Where infra. ok) by enough & efficient staff and sufficient funds for O&M (Incl. pit-emptying and appropriate actions for waterborne)	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	Adequate infrastructure but not working due to inadequate water in the system	0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs		0	0	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs and Water Resource Needs		0	0	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)		0	0	0	0	0	0	0	0	1 767	520	1 767	520
Below Housing Interim ⁶⁾	No Services: Squatter (un-orderly layout) to be addressed with temp infra	88	23	32	9	0	0	117	29	0	0	237	61
Adequate Housing Permanent ⁷⁾	Temporary Services Provided: Orderly layout where housing scheme is needed. E.g. overcrowded yard, informal areas with existing communal services	0	0	0	0	0	0	28	7	0	0	28	7
Total Housing Need		88	23	32	9	0	0	145	36	0	0	265	68
Adequate	Non Waterborne	0	0	0	0	0	0	0	0	1 189	350 ⁵⁾	1 189	350
	Waterborne Low Flush	0	0	0	0	0	0	0	0	0	0	0	0
	Septic Tanks / Conservancy ¹⁾	668	174	247	69	8	2	28	7	4 625	1 361	5 576	1 613
	Waterborne WWTWs	39 997	10 422	1 624	454	1 906	458	5 888	1 458	0	0	49 415	12 792
Total Adequate ²⁾		40 665	10 596	1 871	523	1 914	460	5 916	1 465	5 814	1 711	56 180	14 755
Totals		40 753	10 619	1 903	532	1 914	460	6 061	1 501	7 581	2 231	58 212	15 343

Notes: 1) Census 2011: Number of households with septic / conservancy tanks.

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- 2) Include Backyard dwellers
- 3) Census 2011: Number of households with no toilet facility 275.
- 4) Census 2011: Number of households with existing buckets 56, chemical toilets 44, pit toilets without ventilation 125 and "other" 20
- 5) Census 2011: Number of households with pit toilets with ventilation 350.
- 6) Below Housing Interim in the above table is the number of households in informal areas without basic sanitation services. There are 61 informal households with no communal sanitation services.
- 7) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal sanitation services. There is 7 households in Murraysburg with communal sanitation services.

The table below summarise the Sanitation Service Infrastructure Supply Level Profile for the various settlements in Beaufort West Municipality's Management Area.

Table 2.2.4: Residential sanitation services infrastructure supply level profile												
Classification	Beaufort West		Merweville		Nelspoort		Murraysburg		Farms		Total	
	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH
Total with a sanitation Need (Irrelevant the type of need)	88	23	32	9	0	0	117	29	1 767	520	2 004	581
Total below RDP	88	23	32	9	0	0	117	29	1 767	520	2 004	581
Flush toilet (connected to sewerage system)	39 997	10 422	1 624	454	1 906	458	5 916	1 465	0	0	49 443	12 799
Flush toilet (with septic tank)	668	174	247	69	8	2	28	7	4 625	1 361	5 576	1 613
Chemical toilet	0	0	0	0	0	0	0	0	150	44	150	44
Pit toilet with ventilation (VIP)	0	0	0	0	0	0	0	0	1 189	350	1 189	350
Pit without ventilation	0	0	0	0	0	0	0	0	425	125	425	125
Bucket Toilet	0	0	0	0	0	0	0	0	190	56	190	56
None (Include other)	88	23	32	9	0	0	117	29	1 002	295	1 239	356
Total	40 753	10 619	1 903	532	1 914	460	6 061	1 501	7 581	2 231	58 212	15 343

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The table below summarise the Sanitation Reliability Profile for the various settlements in Beaufort West Municipality's Management Area.

Table 2.2.5: Residential sanitation reliability profile (Households)						
Classification	Beaufort West	Merweville	Nelspoort	Murraysburg	Farms	Total
Total number of households having reliable service	10 596	523	460	1 472	1 711	14 762
Total number of households NOT having reliable service	23	9	0	29	520	581
Infrastructure to be upgraded: None to VIP	23	9	0	29	295	356
Infrastructure to be upgraded: Buckets to VIP	0	0	0	0	56	56
Infrastructure requirement: None to waterborne	0	0	0	0	0	0
Infrastructure to be upgraded: Buckets to waterborne	0	0	0	0	0	0
Infrastructure to be upgraded: Pit to VIP	0	0	0	0	125	125
Infrastructure to be upgraded: Pit to waterborne	0	0	0	0	0	0
Infrastructure to be upgraded: VIPs to waterborne	0	0	0	0	0	0
Number of households NOT having reliable service due to: Resource – Water Security	0	0	0	0	0	0
Number of households NOT having reliable service due to: Functionality	0	0	0	0	44	44
Households requiring existing scheme refurbishment	0	0	0	0	0	0
Households requiring VIP refurbishment	0	0	0	0	0	0

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TOPIC 2: SERVICE LEVELS PROFILE

2.3 PUBLIC AMENITIES

2.3.1 Water Services

The previous section dealt with the water and sanitation service levels and reliability for residential stands within the municipality. The water service levels of the health and education facilities in Beaufort West Municipality's Management Area are shown in the table below.

Table 2.3.1.1: Education and health facilities water services					
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	16	14	2 (To be verified)		Unknown
Secondary school	5	5	-	-	-
Tertiary	-	-	-	-	-
Combined	-	-	-	-	-
Special needs	-	-	-	-	-
Other	5	5	-	-	-
Total	26	24	2 (To be verified)		Unknown
Health Plan					
Hospitals	3	3	-	-	-
Health Centres	1	1	-	-	-
Clinics	8	8	-	-	-
Mobile & Satellite Clinics	3	3	-	-	-
Total	15	15	-	-	-

All the schools and Community Learning Centres in the urban areas are supplied with higher levels of water services. The water service levels of the two primary schools in the rural areas however need to be verified. All the hospitals and clinics in the urban areas receive potable water through the reticulation networks of the various towns. The water quality results of the 2023/2024 financial year, as loaded onto DWS's IRIS System, are included in Annexure E.

2.3.2 Sanitation Services

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

Table 2.3.2.1: Education and health facilities sanitation services					
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	16	14	2 (To be verified)		Unknown
Secondary school	5	5	-	-	-
Tertiary	-	-	-	-	-
Combined	-	-	-	-	-
Special needs	-	-	-	-	-
Other	5	5	-	-	-
Total	26	24	2 (To be verified)		Unknown
Health Plan					
Hospitals	3	3	-	-	-
Health Centres	1	1	-	-	-
Clinics	8	8	-	-	-
Mobile & Satellite Clinics	3	3	-	-	-
Total	15	15	-	-	-

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All the schools and Community Learning Centres in the urban areas are supplied with higher levels of sanitation services. The sanitation service levels of the two primary schools in the rural areas however need to be verified. All the hospitals and clinics in the urban areas are supplied with waterborne sewer systems.

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2.3.3 Public Amenities Services

The table below gives an overview of the service levels at public amenities in Beaufort West Municipality’s Management Area.

Table 2.3.3.1: Service levels at public amenities in Beaufort West Municipality’s Management Area												
Facility Name	Adequate for Basic Services (Yes/No)	Adequate for Higher Level Services (Yes/No)	Facility Water Metered (Yes/No)	Facility Water Billed (Yes/No)	% Income Received	Total Potential Cost to bring to basic water level (Rmil)	Total Potential Cost to bring to basic sanitation level (Rmil)	Settlement Main Type (Urban / Rural / Farming)	Water Status (Adequate / Inadequate / None)	Sanitation Status (Adequate / Inadequate / None)	Water Supply Type (Communal / Controlled / Uncontrolled)	Sanitation Supply Type (Waterborne / On site Wet / On site Dry / Bucket / None)
Ebulumko Pre-Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Cornerstone Sonstraaltjie Pre-Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Lighuis Pre-Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Kleuterland Pre-Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
St. John's Pre-Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
H.M. Dikidla Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort Wes Preparatory School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Niko Brummer Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
John D Crawford Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
A.H. Barnard Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Teske Gedenk Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
St. Matthews Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Destiny Academy	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Vuurvliegje Akademie Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Mandlenkosi Secondary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Sentraal High School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort-Wes Secondary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Bastiaanse Secondary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Klawervlei Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Layton NGK Primary School	Unknown	Unknown	No	No	Not Applicable	Unknown	Unknown	Rural	Unknown	Unknown	Unknown	Unknown
George Fredericks Primary School	Unknown	Unknown	No	No	Not Applicable	Unknown	Unknown	Rural	Unknown	Unknown	Unknown	Unknown
Merweville Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Murraysburg Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Murraysburg High School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Restvale Met Primary School	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Hospital	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Hospital CHC	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
KwaMandlenkosi Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Constitution Street Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West DC Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Newtown Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Nieuvelspark Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Hillside Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Mobile Clinic 1	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Beaufort West Mobile Clinic 2	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Merweville Satellite Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Nelspoort Hospital	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Nelspoort Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Murraysburg Hospital	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne
Murraysburg Clinic	Yes	Yes	Yes	Yes	Unknown	R0.000	R0.000	Urban	Adequate	Adequate	Uncontrolled	Waterborne

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

3. WATER SERVICES ASSET MANAGEMENT

3.1 GENERAL INFORMATION

3.1.1 Asset Management Plan

An updated Asset Management Policy is in place (Reviewed and amended June 2023). The objectives of the Asset Management Policy it to ensure that assets of the Municipality are properly managed and accounted for by:

- The accurate recording of essential asset information;
- The accurate recording of asset movements;
- Exercising strict physical controls over all assets;
- Threatening the assets correctly in the Municipality's financial statements;
- Providing accurate and meaningful management information;
- Compliance with the Council's accounting policies and Generally Recognised Accounting Practices;
- Adequate insuring of assets;
- Maintenance of Council's assets;
- Ensuring that managers are aware of their responsibilities with regard to the assets; and
- Setting out the standards of management, recording and internal controls so as to safeguard the assets against inappropriate utilisation or loss.

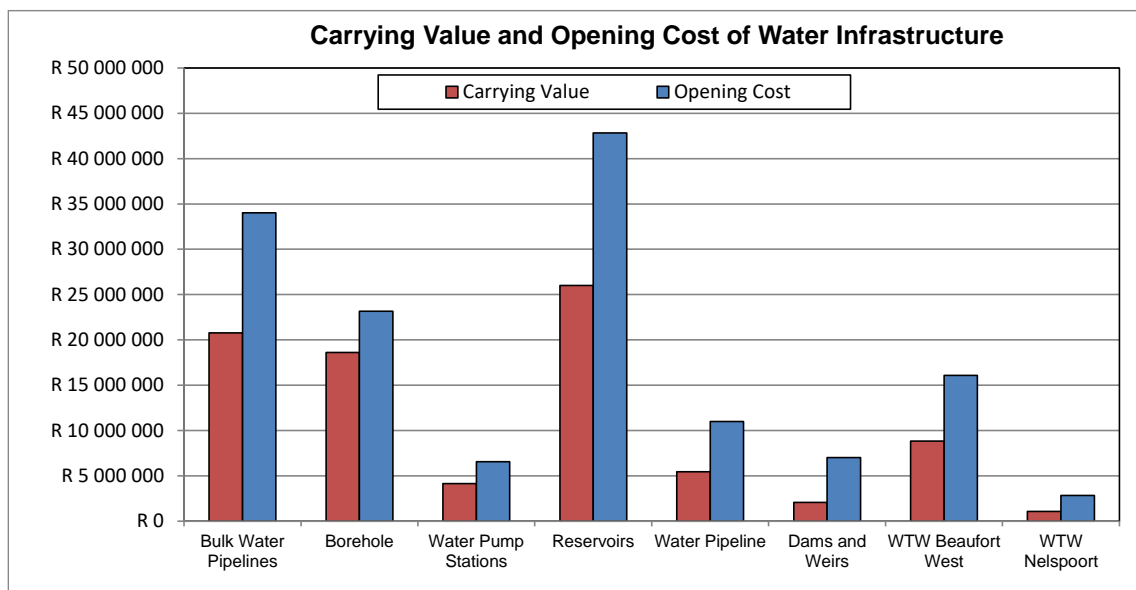
Asset Register: Beaufort West Municipality updated their current Asset Register after June 2023, in order to include the new assets constructed during the 2022/2023 financial year. The tables and graphs that follow give an overview of the current water and sewerage infrastructure included in Beaufort West Municipality's Asset Register.

Water Infrastructure: The Opening Cost and Carrying Value of the water infrastructure included in Beaufort West Municipality's current Asset Register (June 2023) is summarised in the table below.

Table 3.1.1.1: Opening Cost and Carrying Value of the water infrastructure			
Asset Type	Opening Cost	Carrying Value	% CV/OC
Bulk Water Pipelines	R34 015 907	R20 778 939	61.09%
Borehole	R23 166 084	R18 600 474	80.29%
Water Pump Stations	R6 548 546	R4 148 100	63.34%
Reservoirs	R42 839 316	R26 011 128	60.72%
Water Pipeline	R11 000 744	R5 441 592	49.47%
Dams and Weirs	R7 010 935	R2 055 858	29.32%
WTW Beaufort West (WTW-001)	R16 080 477	R8 817 844	54.84%
WTW Nelspoort (WTW-002)	R2 834 149	R1 081 107	38.15%
Totals	R143 496 158	R86 935 042	60.58%

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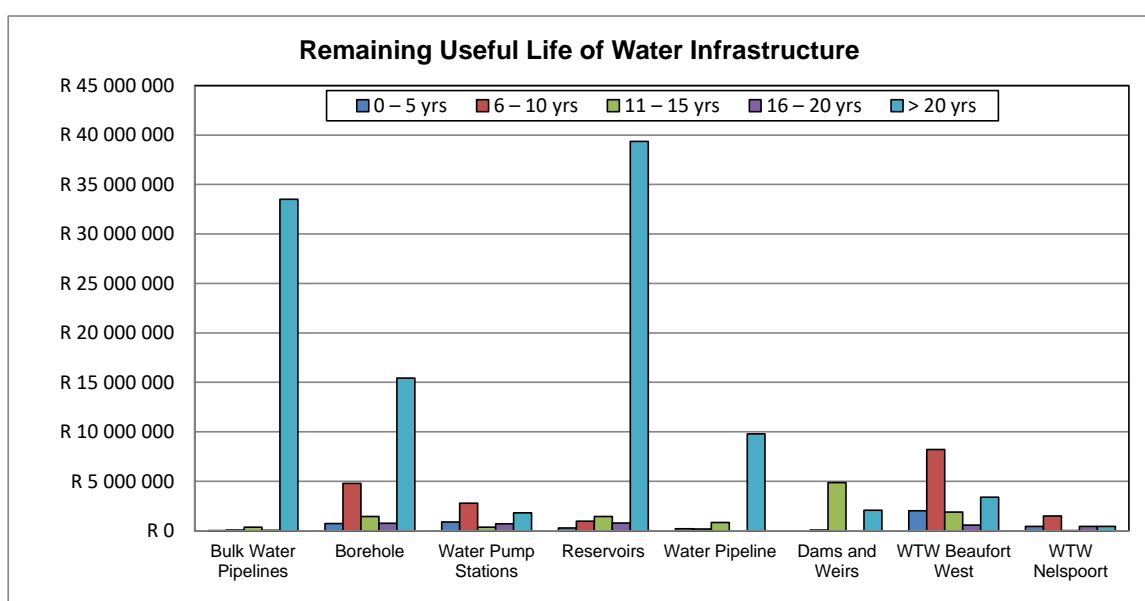
TOPIC 3: WATER SERVICES ASSET MANAGEMENT



The previous table indicates that about 39.42% of the value of the water infrastructure has been consumed.

The table and graph below give an overview of the RUL by facility type for the water infrastructure.

Table 3.1.1.2: Overview of the RUL by facility type for the water infrastructure (OC)					
Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Bulk Water Pipelines	R25 954	R77 597	R373 152	R38 566	R33 500 638
Borehole	R741 587	R4 799 462	R1 433 109	R762 357	R15 429 569
Water Pump Stations	R890 618	R2 776 470	R358 334	R701 829	R1 821 295
Reservoirs	R276 294	R973 602	R1 441 470	R782 709	R39 365 241
Water Pipeline	R194 605	R179 081	R832 156	R0	R9 794 902
Dams and Weirs	R0	R72 394	R4 857 155	R0	R2 081 386
WTW Beaufort West (WTW-001)	R2 015 926	R8 204 241	R1 890 261	R576 795	R3 393 254
WTW Nelspoort (WTW-002)	R432 690	R1 487 374	R30 605	R430 914	R452 566
Totals	R4 577 674	R18 570 221	R11 216 242	R3 293 170	R105 838 851



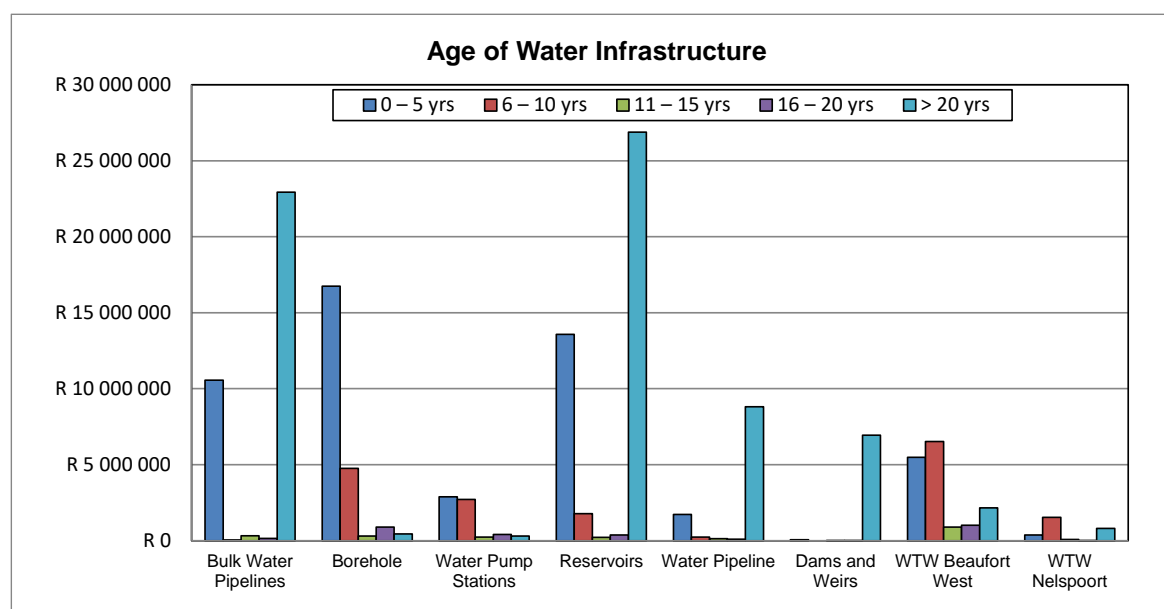
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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

The asset renewal needs for the water infrastructure assets over the next ten years is R2.315 million per year. The reinvestment required is R4.578 million in the first five years and R18.570 million in the second five-year period.

The table and graph below give an overview of the age distribution by facility type for the water infrastructure.

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Bulk Water Pipelines	R10 559 544	R46 638	R331 196	R150 816	R22 927 713
Borehole	R16 746 695	R4 758 890	R309 562	R898 373	R452 564
Water Pump Stations	R2 893 814	R2 708 322	R229 110	R418 819	R298 481
Reservoirs	R13 579 954	R1 775 479	R219 730	R376 266	R26 887 887
Water Pipeline	R1 731 635	R236 321	R129 542	R93 775	R8 809 471
Dams and Weirs	R68 158	R0	R2 342	R4 236	R6 936 199
WTW Beaufort West (WTW-001)	R5 487 689	R6 519 691	R888 268	R1 019 971	R2 164 858
WTW Nelspoort (WTW-002)	R382 183	R1 541 529	R80 940	R17 334	R812 163
Totals	R51 449 672	R17 586 870	R2 190 690	R2 979 590	R69 289 336



The age of 48.29% of the water infrastructure assets is greater than twenty years.

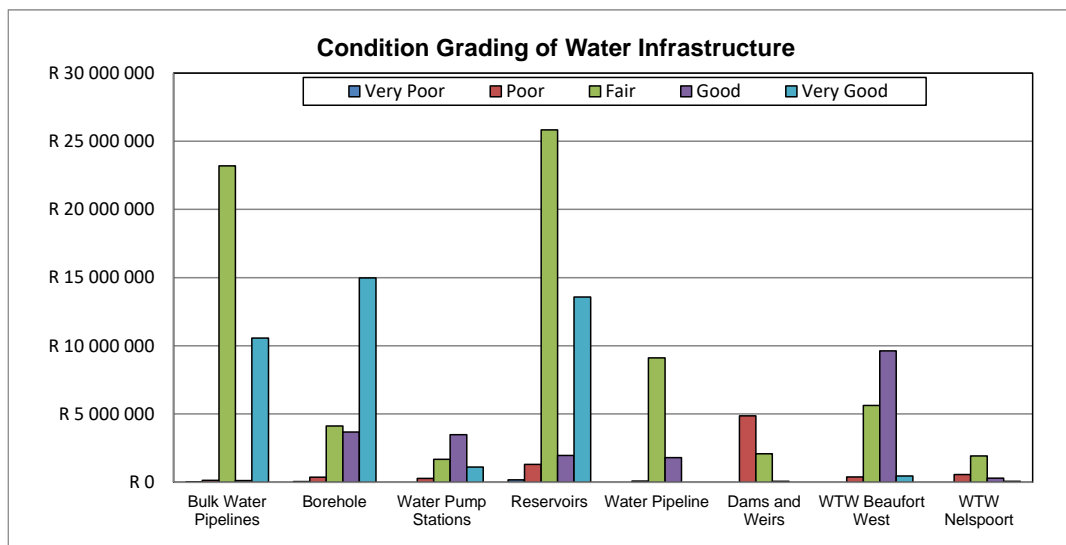
The table and graph below give an overview of the condition grading per facility for the water infrastructure.

Asset Type	Very Poor	Poor	Fair	Good	Very Good
Bulk Water Pipelines	R17 882	R127 625	R23 199 071	R111 785	R10 559 544
Borehole	R44 409	R359 181	R4 115 463	R3 673 264	R14 973 767
Water Pump Stations	R0	R273 640	R1 683 659	R3 477 086	R1 114 161
Reservoirs	R161 404	R1 301 356	R25 838 369	R1 967 554	R13 570 633
Water Pipeline	R0	R77 104	R9 119 875	R1 803 765	R0
Dams and Weirs	R0	R4 859 049	R2 083 729	R68 157	R0
WTW Beaufort West (WTW-001)	R0	R377 599	R5 620 932	R9 627 526	R454 420
WTW Nelspoort (WTW-002)	R0	R554 713	R1 917 076	R293 305	R69 055
Totals	R223 695	R7 930 267	R73 578 174	R21 022 442	R40 741 580

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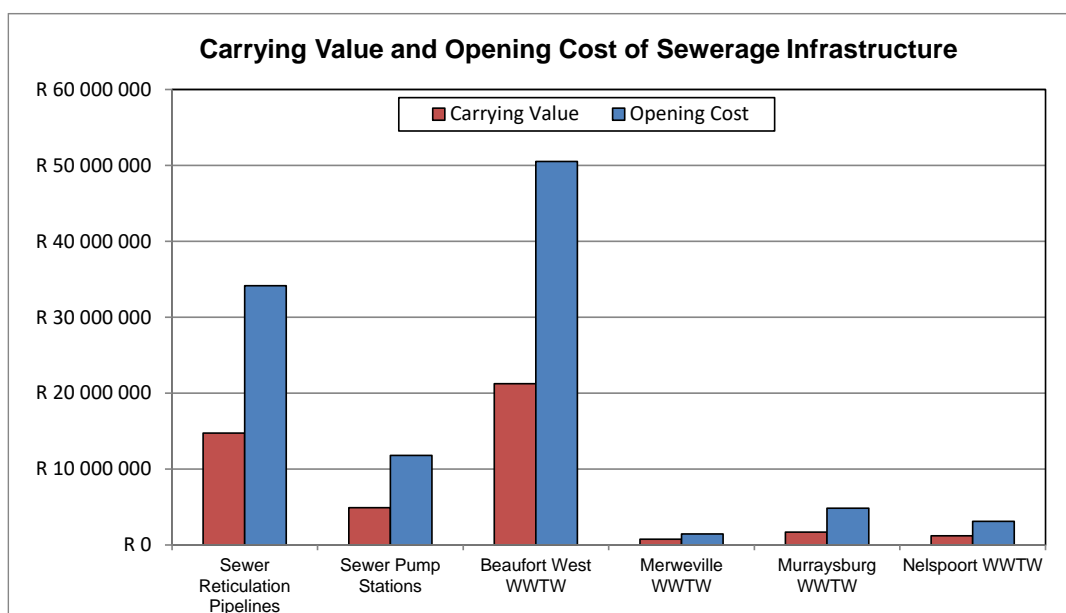
TOPIC 3: WATER SERVICES ASSET MANAGEMENT

About 5.68% of the water supply infrastructure is in a poor or very poor condition and the condition backlog is in the order of R8.154 million. The bulk of the backlog is made up of reservoir assets.



Sewerage Infrastructure: The Opening Cost and Carrying Value of the sewerage infrastructure included in Beaufort West Municipality's current Asset Register (June 2023) is summarised in the table below.

Asset Type	Opening Cost	Carrying Value	% CV/OC
Sewer Reticulation Pipelines	R34 146 897	R14 750 211	43.20%
Sewer Pump Stations	R11 794 625	R4 901 249	41.55%
Beaufort West WWTW (WWTW-01)	R50 518 555	R21 240 855	42.05%
Merweville WWTW (WWTW-02)	R1 439 279	R747 378	51.93%
Murraysburg WWTW WWTW-03)	R4 842 655	R1 697 745	35.06%
Nelspoort WWTW (WWTW-04)	R3 105 095	R1 222 603	39.37%
Totals	R105 847 106	R44 560 041	42.10%



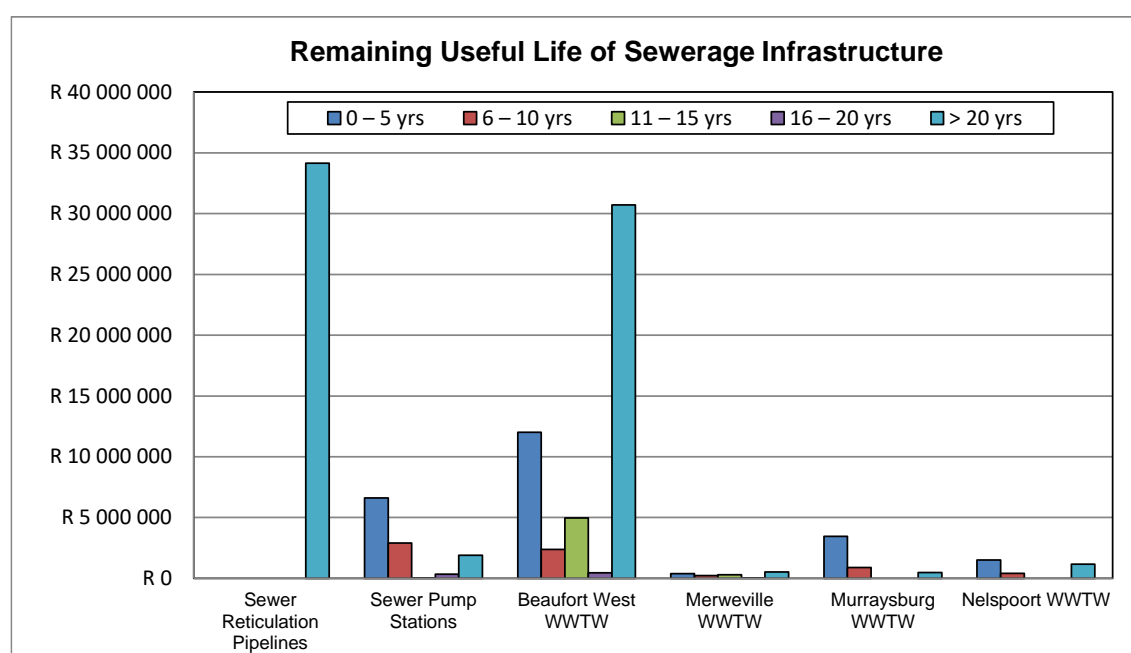
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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

The previous table indicates that about 57.90% of the value of the sewerage infrastructure has been consumed.

The table and graph below give an overview of the RUL by facility type for the sewerage infrastructure.

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Sewer Reticulation Pipelines	R0	R0	R0	R0	R34 146 897
Sewer Pump Stations	R6 622 767	R2 913 775	R1 772	R346 925	R1 909 386
Beaufort West WWTW (WWTW-01)	R12 014 861	R2 382 331	R4 962 232	R451 939	R30 707 192
Merweville WWTW (WWTW-02)	R384 618	R232 149	R289 943	R18 175	R514 394
Murraysburg WWTW (WWTW-03)	R3 458 715	R899 520	R0	R0	R484 420
Nelspoort WWTW (WWTW-04)	R1 519 017	R414 033	R0	R0	R1 172 045
Totals	R23 999 978	R6 841 808	R5 253 947	R817 039	R68 934 334



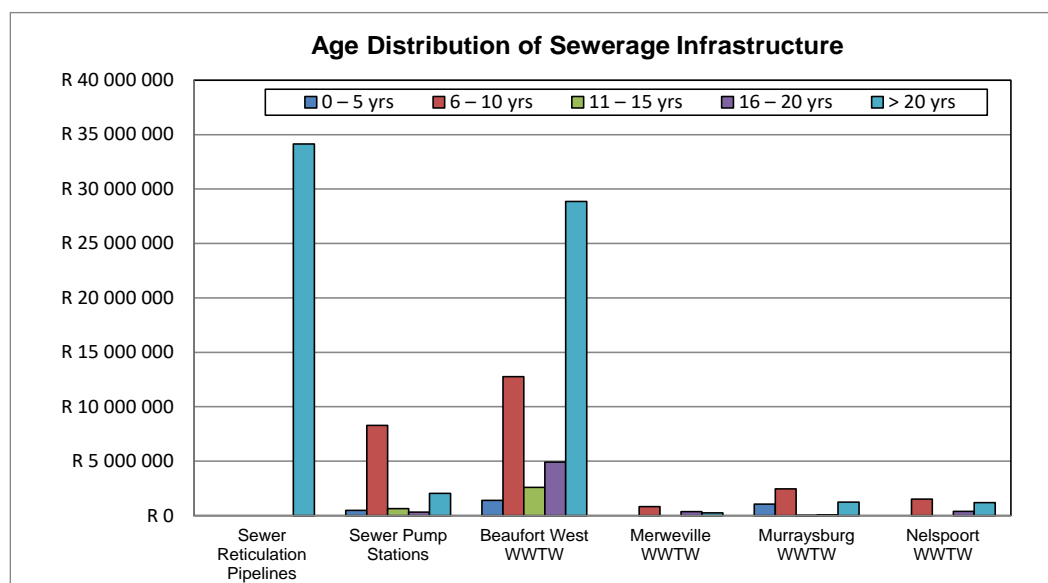
The asset renewal needs for the sewerage infrastructure assets over the next ten years is R3.084 million per year. The reinvestment required is R24.000 million in the first five years and R6.842 million in the second five-year period.

The table and graph below give an overview of the age distribution per facility for the sewerage infrastructure.

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Sewer Reticulation Pipelines	R0	R0	R0	R0	R34 146 897
Sewer Pump Stations	R486 880	R8 298 695	R636 452	R317 640	R2 054 958
Beaufort West WWTW (WWTW-01)	R1 396 535	R12 763 093	R2 599 702	R4 909 746	R28 849 479
Merweville WWTW (WWTW-02)	R0	R821 269	R0	R362 923	R255 087
Murraysburg WWTW (WWTW-03)	R1 057 683	R2 460 413	R1 000	R81 261	R1 242 298
Nelspoort WWTW (WWTW-04)	R0	R1 519 017	R0	R382 980	R1 203 098
Totals	R2 941 098	R25 862 487	R3 237 154	R6 054 550	R67 751 817

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

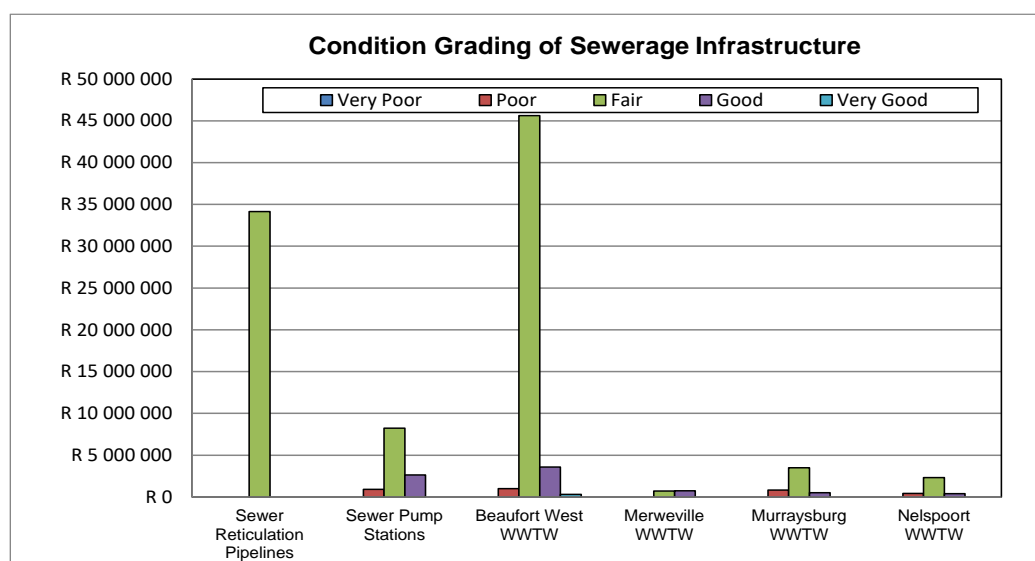


The age of 64.01% of the sewerage infrastructure assets is greater than 20 years.

The table and graph below give an overview of the condition grading per facility for the sewerage infrastructure.

Table 3.1.1.8: Condition grading per sewerage facility type					
Asset Type	Very Poor	Poor	Fair	Good	Very Good
Sewer Reticulation Pipelines	R0	R0	R34 146 897	R0	R0
Sewer Pump Stations	R0	R923 781	R8 228 537	R2 642 307	R0
Beaufort West WWTW (WWTW-01)	R0	R984 933	R45 631 859	R3 595 763	R306 000
Merweville WWTW (WWTW-02)	R0	R0	R709 321	R729 958	R0
Murraysburg WWTW (WWTW-03)	R0	R840 501	R3 494 782	R507 372	R0
Nelspoort WWTW (WWTW-04)	R0	R414 033	R2 308 082	R382 980	R0
Totals	R0	R3 163 248	R94 519 478	R7 858 380	R306 000

About 2.99% of the sewerage infrastructure is in a poor or very poor condition and the condition backlog is in the order of R3.163 million. The bulk of the backlog is made up of the sewer pump stations and the WWTWs.



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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

3.1.2 Disaster Management Plan

Beaufort West Municipality has an existing Risk Management Policy and Framework that enables management to proactively identify and respond appropriately to all significant risks that could impact on business objectives. The top ten risks of Beaufort West Municipality are listed in Table A.2.7.

Risk Management in the municipality is guided and monitored by various committees at Council and administrative level such as the Municipal Public Accounts Committee (MPAC), Risk Committee and the Audit Committee. Additionally, the municipality appointed an Internal Auditor and a Compliance officer as part of the reasonable steps taken to maintain an effective efficient and transparent system of financial and general risk management.

3.1.3 Untreated Effluent Management Plan

All effluent discharged in the urban areas in Beaufort West Municipality are treated at the existing WWTWs and there is no known untreated effluent discharged to the environment. W₂RAPs still need to be prepared for all the wastewater treatment systems.

EXISTING MAIN INFRASTRUCTURE

Water is supplied via independent water distribution systems to Beaufort West, Merweville, Nelspoort and Murraysburg. Beaufort West and Nelspoort are reliant on surface and groundwater sources, while Merweville and Murraysburg only utilise groundwater sources. Beaufort West Municipality also operates its own WTWs and WWTWs. The table below gives an overview of the major water infrastructure components of the various water distribution systems in Beaufort West Municipality's Management Area.

Table 3.1: Existing main water infrastructure for the various water distribution systems

Water Distribution System	Resources	WTW		Bulk and Reticulation	Number of Water PS	Reservoir and Water Tower Storage	
		Capacity	Treatment Processes			MI	No.
Beaufort West	Gamka Dam, Fountains, large number of Boreholes and Reclamation Plant	Beaufort West WTW 4.320 MI/d	Coagulation, flocculation, sedimentation, filtration, stabilisation, disinfection, sludge drying beds and reactive treatment.	269.941	5 (RW) 2 (PW)	3*	14.750
		Reclamation WTW 2.144 MI/d	Sand filtration, ultra-filtration, reverse osmosis, pH correction, UV disinfection and chlorination.				
Merweville	Nine Boreholes	-	Sodium Hypochlorite disinfection	10.550	-	2	0.600
Nelspoort	Sout River and Three Boreholes	Nelspoort WTW 0.500 MI/d	Aeration, filtration and disinfection	10.567	1 (RW) 1 (PW)	1	0.911
Murraysburg	Four Boreholes	-	Sodium Hypochlorite disinfection	34.766	-	3 **	1.200
Total				325.824	9	9	17.461

Note: * Beaufort West: Exclude the raw water reservoirs
 ** Murraysburg: Exclude the steel reservoir currently not in use.

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

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

Table 3.2: Existing main sewerage infrastructure						
Sewer Drainage Systems	Sewer Drainage Network (km)		Number of Sewer PS	WWTWs and Treatment Processes		
	Rising	Gravity		Hydraulic Design Capacity	Organic Design Capacity (kg COD/d)	Treatment Processes
Beaufort West	1.100	126.700	3	4.659	Unknown	Activated Sludge: Archimedes screw PS, Inlet works (Mechanical front raked screen), Bio Reactor, SST, Sludge drying beds, Disinfection (Chlorine gas), Maturation Pond.
Merweville	0.000	4.400	-	0.111	Unknown	Oxidation pond system: Inlet works with hand raked screen and two unlined primary ponds, one secondary pond, two tertiary ponds and one final irrigation pond.
Nelspoort	1.831	4.200	2	0.240	176	Oxidation pond system: Inlet works with hand raked screen and two grit channels, three lined primary ponds, one secondary pond, two tertiary ponds and one evaporation pond.
Murraysburg	2.875	30.000 (Est)	1	0.500	280	Oxidation pond system: Two anaerobic ponds, one primary pond, two secondary ponds, three tertiary ponds and one irrigation pond.
Total	5.806	165.300	6	5.510	-	-

Beaufort West: The town relies on a large number of groundwater sources, as well as on surface water supplied from the Gamka Dam and fountains. The raw water is treated at the WTW. The water reclamation plant, where secondary treated water from the Beaufort West WWTW is further treated to potable standard, further augment the existing water sources. Three bulk storage reservoirs are available, which are used to store treated water for supply to users in Beaufort West. The sizes of the three reservoirs are 4.500 MI (x2) and 5.750 MI, providing a total treated water storage capacity of 14.750 MI.

A total of 102.996 km of pipes, ranging from 50mm dia. to >450mm dia. transfer bulk water within the Beaufort West area. The potable water reticulation network consists of a total of 166.946 km of pipework ranging from less than 45mm dia. to 355mm dia. There are five raw water pump stations with pumps ranging from 30 kW to 90 kW and one potable water pump station at the WTW, with two 11 kW pumps, and one potable water pump station at the reclamation plant with two 75 kW pumps. The treated water from the reclamation plant is pumped to the town's main storage reservoirs.

Beaufort West is fully serviced with a formal sewer reticulation system. The reticulation system consists of 126.700 km of gravity pipelines and 1.100 km of rising mains. There are three sewer pump stations.

The existing water and sewer networks and proposed master plan items are included on the following Maps and Figures.

Table 3.3: List of maps and figures for the existing water and sewer networks and the proposed master plan items for Beaufort West				
Service	Map / Figure / Table	Description	Report	Annexure
Water & Sewer	Aerial Photo Map 2A1	Existing water and sewer networks	Overview	A
Water	Aerial Photo Map 2A2	Existing bulk infrastructure and bulk water meters	Overview	A
Water	Figure BWW 2.1a	Existing water system layout – Beaufort West	Overview	B
Water	Figure BWW 2.2a	Existing distribution zones – Beaufort West	Overview	B
Water & Sewer	Figure BWW 4.1a	Potential future developments – Beaufort West	Future	A
Water	Figure BWW 6.4a	Future distribution zones – Beaufort West	Future	A
Water	Figure BWW 6.5a	Master Plan – Beaufort West	Future	A
Sewer	Figure BWS 2.1a	Existing sewer system layout – Beaufort West	Overview	B

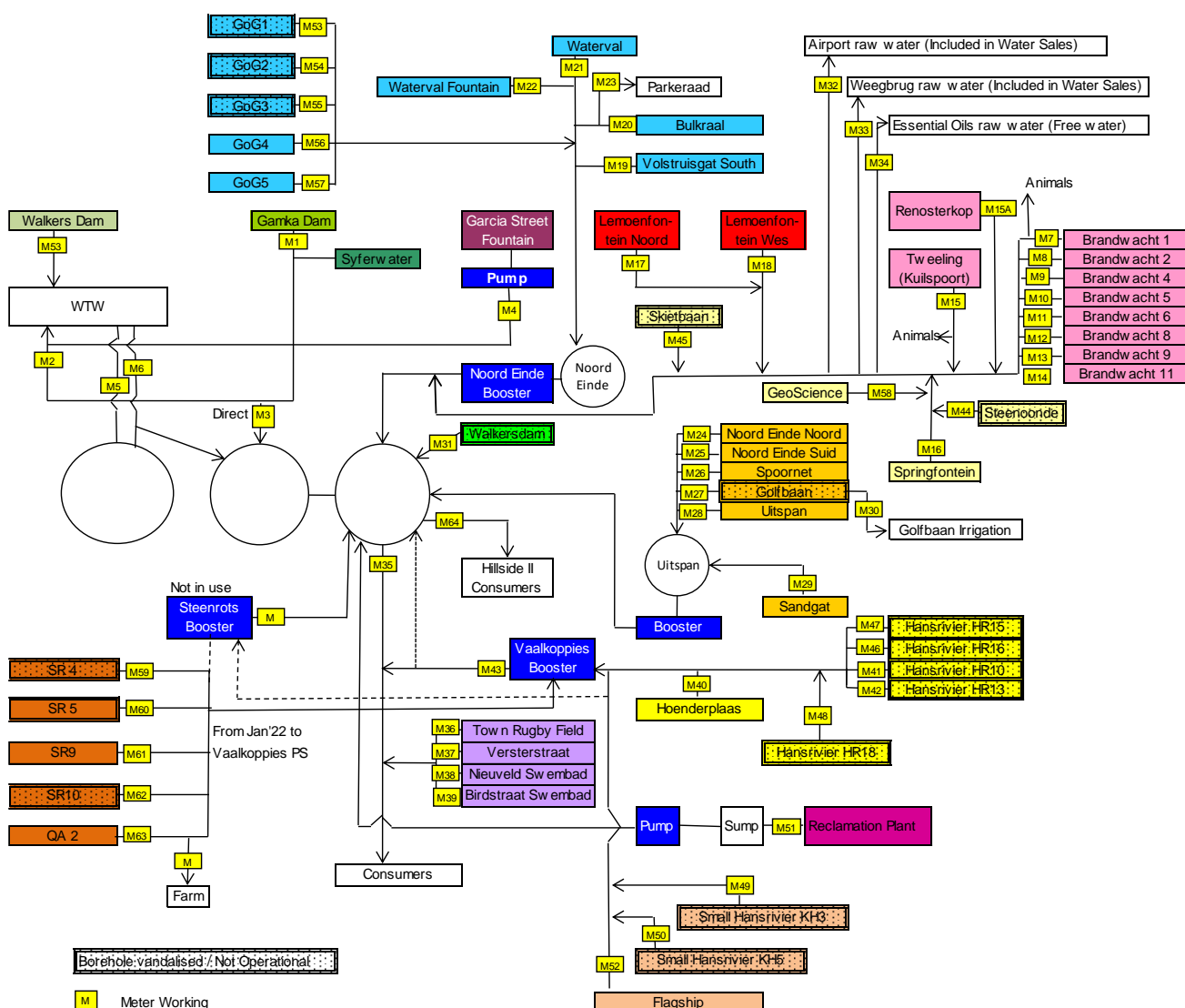
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Table 3.3: List of maps and figures for the existing water and sewer networks and the proposed master plan items for Beaufort West

Service	Map / Figure / Table	Description	Report	Annexure
Sewer	Figure BWS 2.2a	Existing drainage areas – Beaufort West	Overview	B
Sewer	Figure BWS 6.3a	Future drainage areas – Beaufort West	Future	A
Sewer	Figure BWS 6.4a	Master Plan – Beaufort West	Future	A

The bulk water distribution system and infrastructure of Beaufort West are also indicated on the schematic layout below.



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Merweville: The town currently relies on nine production boreholes for bulk water supply to the town. There are three additional boreholes that are currently not in use. There are two storage reservoirs with a total storage capacity of 0.600 MI.

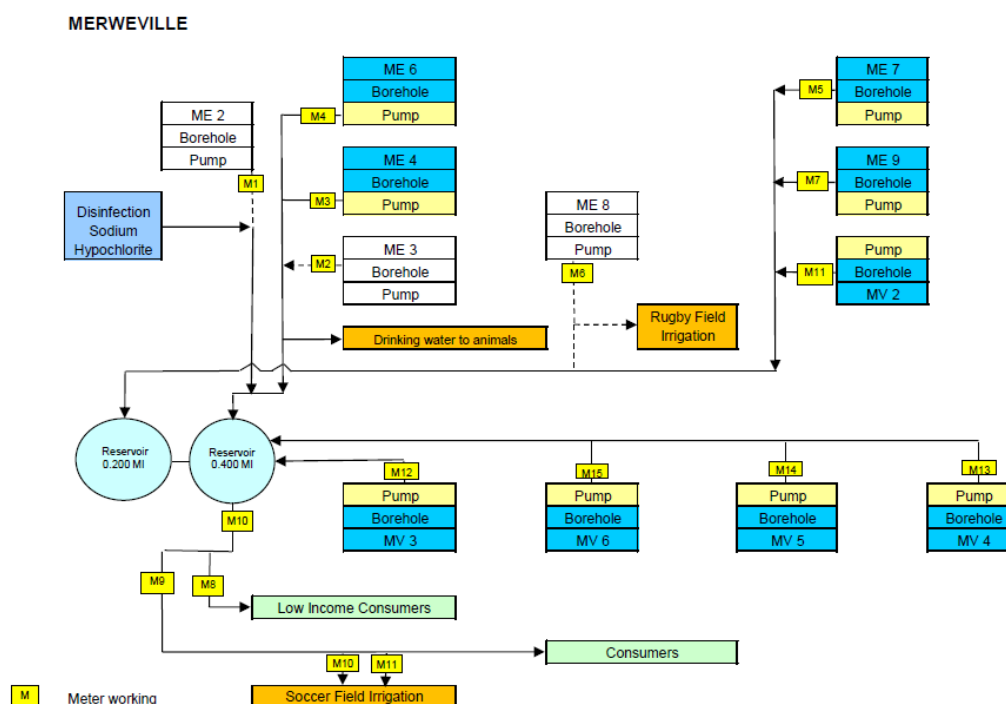
A total of 1.052 km of water pipelines transfer the bulk raw water from the boreholes to the town's reservoirs. The potable water reticulation network consists of a total of 9.498 km of water pipelines. There are no internal water pump stations and all water gravitates from the town's two reservoirs to the consumers.

Merweville is partly serviced with a formal sewer reticulation system (New area). The reticulation system consists of 4.400 km of gravity pipelines. There are no sewer pump stations and the sewage gravitates to the oxidation ponds.

The existing water and sewer networks and proposed master plan items are included on the following Maps and Figures.

Table 3. 4: List of maps and figures for the existing water and sewer networks and the proposed master plan items for Merweville				
Service	Map / Figure	Description	Report	Annexure
Water & Sewer	Aerial Photo Map 2B	Existing water and sewer networks	Overview	A
Water	Figure BWW 2.1b	Existing water system layout – Merweville	Overview	B
Water	Figure BWW 2.2b	Existing distribution zones – Merweville	Overview	B
Water & Sewer	Figure BWW 4.1b	Potential future developments – Merweville	Future	A
Water	Figure BWW 6.4b	Future distribution zones - Merweville	Future	A
Water	Figure BWW 6.5b	Master Plan – Merweville	Future	A
Sewer	Figure BWS 2.1b	Existing sewer system layout – Merweville	Overview	B
Sewer	Figure BWS 2.2b	Existing drainage areas – Merweville	Overview	B
Sewer	Figure BWS 6.3b	Future drainage areas - Merweville	Future	A
Sewer	Figure BWS 6.4b	Master Plan – Merweville	Future	A

The bulk water distribution system and infrastructure of Merweville are also indicated on the schematic layout below.



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Nelspoort: The town relies on three boreholes, as well as on surface water supplied from the Sout River. The raw water is treated at the WTW, where after it is pumped to the town's main reservoir from where it gravitates to the town's consumers. The storage capacity of the one reservoir is 0.911 MI.

A total of 2.150 km of water pipelines transfer the bulk raw water from the boreholes and the Sout River to the WTW. The potable water reticulation network consists of a total of 9.515 km of water pipelines. There is one raw water pump station that pump the water from the Sout River to the filters and one potable water pump station at the WTW, with two 18 kW pumps of which one was removed, which pump the treated water to the reservoir.

Nelspoort is fully serviced with a formal sewer reticulation system. The reticulation system consists of 4.200 km of gravity pipelines and 1.831 km of rising mains. There are two sewer pump stations.

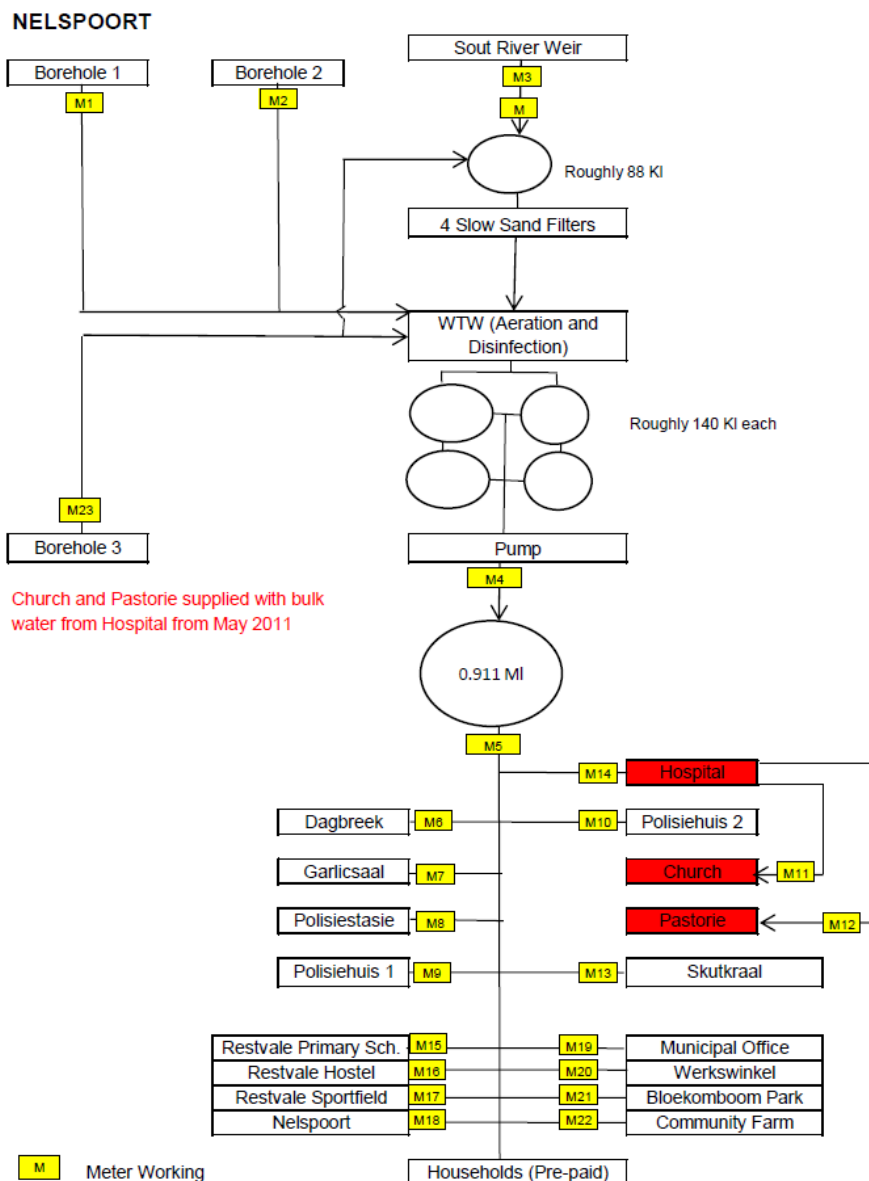
The existing water and sewer networks and proposed master plan items are included on the following Maps and Figures.

Table 3. 5: List of maps and figures for the existing water and sewer networks and the proposed master plan items for Nelspoort				
Service	Map / Figure	Description	Report	Annexure
Water & Sewer	Aerial Photo Map 2C	Existing water and sewer networks	Overview	A
Water	Figure BWW 2.1c	Existing water system layout – Nelspoort	Overview	B
Water	Figure BWW 2.2c	Existing distribution zones – Nelspoort	Overview	B
Water & Sewer	Figure BWW 4.1c	Potential future developments – Nelspoort	Future	A
Water	Figure BWW 6.4c	Future distribution zones - Nelspoort	Future	A
Water	Figure BWW 6.5c	Master Plan – Nelspoort	Future	A
Sewer	Figure BWS 2.1c	Existing sewer system layout – Nelspoort	Overview	B
Sewer	Figure BWS 2.2c	Existing drainage areas – Nelspoort	Overview	B
Sewer	Figure BWS 6.3c	Future drainage areas - Nelspoort	Future	A
Sewer	Figure BWS 6.4c	Master Plan – Nelspoort	Future	A

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The bulk water distribution system and infrastructure of Nelspoort are also indicated on the schematic layout below.



Murraysburg: The town is divided into two main sections called the North and Southern Section. Each one of these Sections receives water from its own groundwater sources. Four production boreholes supply potable water to the town. There is no WTW and the groundwater is disinfected with sodium hypochlorite at the Riverside, Moddergat and Victoria West boreholes. There are no water pump stations and all the water gravitates from the three operational storage reservoirs to the consumers.

There is one main sewer pump station from where the sewage is pumped through a rising main to the oxidation dams.

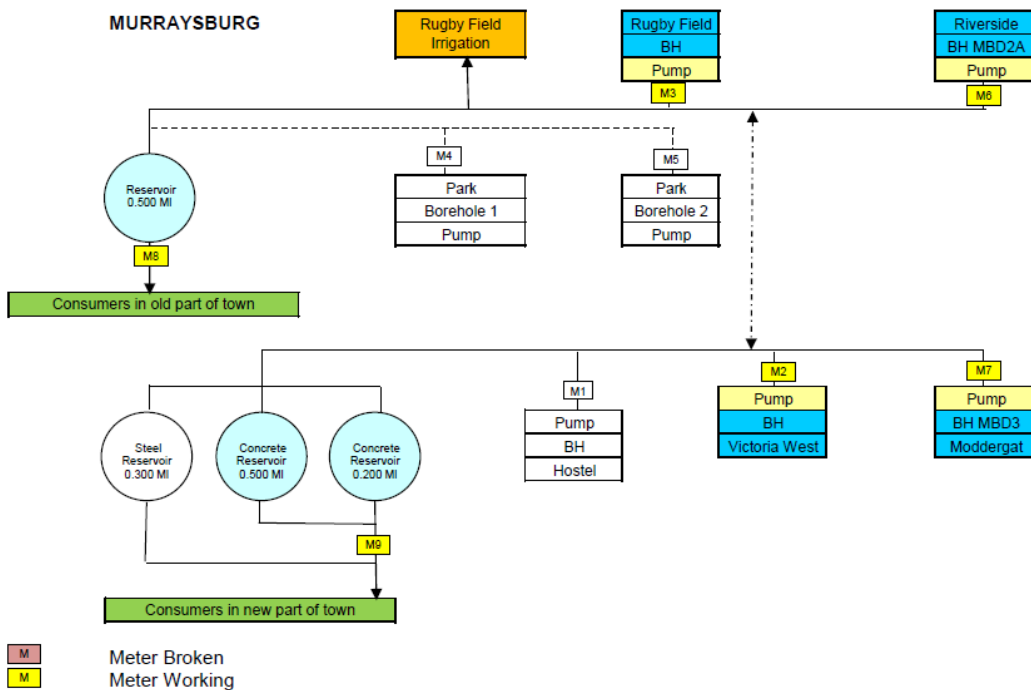
The existing water and sewer networks are included on the following Map.

Table 3.6: Map for the existing water and sewer networks for Murraysburg				
Service	Map	Description	Report	Annexure
Water & Sewer	Aerial Photo Map 2D	Existing water and sewer networks	Overview	A

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

The bulk water distribution system and infrastructure of Murraysburg are also indicated on the schematic layout below.



EXISTING GROUNDWATER INFRASTRUCTURE (BOREHOLES)



Brandwacht BH No 1



Brandwacht BH No 2



Brandwacht BH No 3



Brandwacht BH No 4



Brandwacht BH No 5



Brandwacht BH No 6



Brandwacht BH No 8



Brandwacht BH No 9



Brandwacht BH No 11



Rhenosterkop BH



Kuilspoort BH (Tweeling)



Steenonde BH



Springfontein Dam BH



Geoscience BH 1



Geoscience BH 2

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Skietbaan BH



Lemoenfontein North BH



Lemoenfontein West BH



GoG BH No 1



GoG BH No 3



GoG BH No 4



GoG BH No 5



Waterval BH



Walkersdam BH



Noord Einde North BH



Noord Einde South BH



Spoornet BH



Golfbaan BH



Uitspan BH



Sandgat BH

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BH SR4



BH SR5



BH SR9



BH SR10



BH QA2



BH HR15



BH HR16



BH HR10



BH HR13



BH HR18



Hoenderplaas BH (HKND)



BH KH3



BH KH5



Flagship BH

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Merweville ME4 Borehole



Merweville ME6 Borehole



Merweville ME7 Borehole



Merweville ME9 Borehole



Merweville MV2 Borehole



Merweville MV3 Borehole



Merweville MV4 Borehole



Merweville MV5 Borehole



Merweville MV6 Borehole



Nelspoort Borehole 1



Nelspoort Borehole 2



Nelspoort Borehole 3



Murraysburg Rugby Field BH3



Murraysburg Hostel BH4



Victoria West BH

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Moddergat BH (MBD3)



Riverside BH (MBD2A)

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 1	BH 2	BH 3	BH 4	BH 5	BH 6	BH 7	BH 8
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301
Borehole Name	Brandwacht 1 BH	Brandwacht 2 BH	Brandwacht 3 BH	Brandwacht 4 BH	Brandwacht 5 BH	Brandwacht 6 BH	Brandwacht 8 BH	Brandwacht 9 BH
Provincial Borehole ID	CK0301001	CK0301002	CK0301003	CK0301004	CK0301005	CK0301006	CK0301007	CK0301008
Alternative Borehole ID	EC/L11/0201	EC/L11/0202	-	EC/L11/0204	EC/L11/0205	EC/L11/0206	EC/L11/0207	EC/L11/0208
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	Various
Community name served by borehole	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	None	None	None	None	None	None	None
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)		Yes						
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)		347.862 (Registration)						
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Low	Low	High	Low	Low	High	Low	Low
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Dysfunctional	Dysfunctional	Operational	Operational	Dysfunctional	Operational	Operational
Total refurbishment needs cost %	0.0%	44.4%	43.5%	0.0%	0.0%	42.5%	0.0%	0.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.750	R0.750	R0.000	R0.000	R0.750	R0.000	R0.000
Refurbishment cost for the next 5 years (RM)	R0.000	R0.750	R0.750	R0.000	R0.000	R0.750	R0.000	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	25.3%	20.7%	20.3%	24.5%	25.0%	19.9%	26.6%	21.7%
Total replacement needs cost for next 15 years (RM)	R0.450	R0.350	R0.350	R0.450	R0.450	R0.350	R0.450	R0.450
Replacement cost for the next 5 years (RM)	R0.100	R0.000	R0.000	R0.100	R0.100	R0.000	R0.100	R0.100
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Long	Short	Short	Long	Long	Short	Short	Long
Estimated replacement value (RM): CRC	R1.780	R1.688	R1.725	R1.838	R1.800	R1.763	R1.692	R2.075
Already reached Useful Life (Yes/No)	No	Yes	Yes	No	No	Yes	Yes	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.018	R0.017	R0.017	R0.018	R0.018	R0.018	R0.017	R0.021
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.009	R0.008	R0.009	R0.009	R0.009	R0.009	R0.008	R0.010
Borehole Depth (m)	85	58	Unknown	73	Unknown	74	85	79
Altitude above mean sea level (mamsl)	965	961	966	963	959	971	958	971
Pump installed in borehole	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Motor driving pump	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Water level (mbgl)	13	22	Unknown	40	30	25	40	32
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	1.50	0.33	1.00	1.90	2.00	Unknown	0.40	2.00
Current abstraction (Ml/a) – (July 2023 to June 2024)	98.248	0.000	0.000	69.779	48.633	0.000	0.025	0.000

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TOPIC 3: WATER SERVICES ASSET MANAGEMENT

Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 9	BH 10	BH 11	BH 12	BH 13	BH 14	BH 15	BH 16
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301
Borehole Name	Brandwacht 11 BH	Rhenosterkop BH	Kuilspoort BH (Tweeling)	Steenoonde BH	Springfontein Dam BH	Geoscience BH 2	Geoscience BH 4	Skietbaan BH
Provincial Borehole ID	CK0301009	CK0301010	CK0301011	CK0301012	CK0301013	CK0301014	CK0301015	CK0301016
Alternative Borehole ID	EC/L11/0209	GZ00490	GZ00530	GZ00524	GZ00523	GZ00520	GZ00521	GZ00522
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	Various
Community name served by borehole	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	None	None	Regular	Sporadic	Sporadic	Sporadic	Regular
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)				Yes	Yes			Yes
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)				105.120 (Licence)	39.178 (Registration)			52.560 (Licence)
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Low	None	Low	High	Medium	None	None	High
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Prime Condition	Prime Condition	Vandalised	Operational	Prime Condition	Prime Condition	Dysfunctional
Total refurbishment needs %	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.000	R0.000	R1.000	R0.000	R0.000	R0.000	R0.750
Refurbishment cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R1.000	R0.000	R0.000	R0.000	R0.750
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	26.3%	22.5%	26.2%	35.0%	26.1%	22.5%	22.5%	46.7%
Total replacement needs cost for next 15 years (RM)	R0.450	R0.450	R0.450	R0.350	R0.450	R0.450	R0.450	R0.350
Replacement cost for the next 5 years (RM)	R0.100	R0.100	R0.100	R0.000	R0.100	R0.100	R0.100	R0.000
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Long	Long	Long	Short	Medium	Long	Long	Medium
Estimated replacement value (RM): CRC	R1.713	R2.000	R1.718	-	R1.721	R2.000	R2.000	R0.750
Already reached Useful Life (Yes/No)	No	No	No	Yes	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.017	R0.020	R0.017	-	R0.017	R0.020	R0.020	R0.008
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.009	R0.010	R0.009	-	R0.009	R0.010	R0.010	R0.004
Borehole Depth (m)	Unknown	Unknown	110	84	78	Unknown	Unknown	87
Altitude above mean sea level (mamsl)	959	955	965	864	862	865	885	864
Pump installed in borehole	Unknown	Unknown	Unknown	-	Unknown	Unknown	Unknown	Unknown
Motor driving pump	Unknown	Unknown	Unknown	-	Unknown	Unknown	Unknown	Unknown
Water level (mbgl)	29	21	25	Unknown	9	22	17	12
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	1.50	4.90	2.13	3.30	1.20	5.40	3.80	1.70
Current abstraction (Ml/a) – (July 2023 to June 2024)	0.000	69.663	67.106	0.000	38.423	233.513		0.000

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 17	BH 18	BH 19	BH 20	BH 21	BH 22	BH 23	BH 24
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301
Borehole Name	Lemoenfontein North BH	Lemoenfontein West BH	GoG BH No 1	GoG BH No 2	GoG BH No 3	GoG BH No 4	GoG BH No 5	Waterval BH
Provincial Borehole ID	CK0301017	CK0301018	CK0301019	CK0301020	CK0301021	CK0301022	CK0301023	CK0301024
Alternative Borehole ID	GZ00518	GZ00519	GZ00497	GZ00498	GZ00499	GZ00500	GZ00501	GZ00502
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	Various
Community name served by borehole	Beaufort West	-	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	None	None	None	None	None	None	None
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)	Yes							Yes
Is abstraction recorded? (Yes / No)	Yes	Not Applicable	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)	156.660 (Registration)							263.658 (Registration)
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Low	Low	Medium	Medium	Medium	Low	Low	Low
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Operational	Dysfunctional	Dysfunctional	Dysfunctional	Operational	Operational	Operational
Total refurbishment needs cost %	0.0%	0.0%	20.0%	20.0%	20.0%	0.0%	0.0%	0.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.000	R0.100	R0.100	R0.100	R0.000	R0.000	R0.000
Refurbishment cost for the next 5 years (RM)	R0.000	R0.000	R0.100	R0.100	R0.100	R0.000	R0.000	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	24.5%	23.7%	35.0%	35.0%	35.0%	45.0%	45.0%	45.0%
Total replacement needs cost for next 15 years (RM)	R0.450	R0.450	R0.175	R0.175	R0.175	R0.225	R0.225	R0.450
Replacement cost for the next 5 years (RM)	R0.100	R0.100	R0.000	R0.000	R0.000	R0.050	R0.050	R0.100
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.075	R0.075	R0.075	R0.075	R0.075	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.100	R0.100	R0.100	R0.100	R0.100	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	0%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Medium	Medium	Short	Short	Short	Long	Long	Long
Estimated replacement value (RM): CRC	R1.837	R1.901	R0.500	R0.500	R0.500	R0.500	R0.500	R1.000
Already reached Useful Life (Yes/No)	No	No	Yes	Yes	Yes	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.018	R0.019	R0.005	R0.005	R0.005	R0.005	R0.005	R0.010
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.009	R0.010	R0.003	R0.003	R0.003	R0.003	R0.003	R0.005
Borehole Depth (m)	61	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	91.5
Altitude above mean sea level (mamsl)	892	885	949	949	949	949	949	949
Pump installed in borehole	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Motor driving pump	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Water level (mbgl)	28	35	Unknown	Unknown	Unknown	Unknown	Unknown	10
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	5.00	3.00	2.00	1.00	1.00	1.75	1.00	3.52
Current abstraction (Ml/a) – (July 2023 to June 2024)	125.538	0.000	0.000	0.000	0.000	106.862	27.986	113.389

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 25	BH 26	BH 27	BH 28	BH 29	BH 30	BH 31	BH 32
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301
Borehole Name	Bulkraal BH	Walkersdam BH	Volstruisgat BH	Noord Einde North BH	Noord Einde South BH	Spoornet BH	Golfbaan BH	Uitspan BH
Provincial Borehole ID	CK0301025	CK0301026	CK0301027	CK0301028	CK0301029	CK0301030	CK0301031	CK0301032
Alternative Borehole ID	GZ00496	GZ00531	GZ00509	GZ00504	GZ00505		GZ00503	GZ00508
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	Various
Community name served by borehole	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	Regular	None	Sporadic	Sporadic	Sporadic	Regular	None
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)		Yes	Yes					
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)		72.675 (Registration)	684.639 (Registration)					
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Low	High	Low	Medium	Medium	Low	High	Low
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Vandalised	Operational	Operational	Operational	Operational	Vandalised	Operational
Total refurbishment needs %	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R1.000	R0.000	R0.000	R0.000	R0.000	R0.250	R0.000
Refurbishment cost for the next 5 years (RM)	R0.000	R1.000	R0.000	R0.000	R0.000	R0.000	R0.250	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	25.6%	35.0%	25.6%	26.2%	26.2%	45.0%	70.0%	45.0%
Total replacement needs cost for next 15 years (RM)	R0.450	R0.350	R0.450	R0.450	R0.450	R0.450	R0.350	R0.450
Replacement cost for the next 5 years (RM)	R0.100	R0.000	R0.100	R0.100	R0.100	R0.100	R0.000	R0.100
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Long	Short	Long	Medium	Medium	Long	Short	Medium
Estimated replacement value (RM): CRC	R1.760	-	R1.760	R1.718	R1.718	R1.000	R0.500	R1.000
Already reached Useful Life (Yes/No)	No	Yes	No	No	No	No	Yes	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.018	-	R0.018	R0.017	R0.017	R0.010	R0.005	R0.010
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.009	-	R0.009	R0.009	R0.009	R0.005	R0.003	R0.005
Borehole Depth (m)	85	60	79	86	86	Unknown	Unknown	Unknown
Altitude above mean sea level (mamsl)	904	872	875	862	861	861	858	857
Pump installed in borehole	Unknown	-	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Motor driving pump	Unknown	-	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Water level (mbgl)	17	58	25	13	8	Unknown	Unknown	16
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	4.30	2.30	3.00	2.50	2.00	1.00	4.00	1.00
Current abstraction (Ml/a) – (July 2023 to June 2024)	130.073	0.000	0.000	130.706	245.407	0.000	0.000	0.000

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 33	BH 34	BH 35	BH 36	BH 37	BH 38	BH 39	BH 40
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301
Borehole Name	Sandgat BH	Steenrots BH SR4	Steenrots BH SR5	Steenrots BH SR9	Steenrots BH SR10	Steenrots BH QA2	Hansrivier BH HR15	Hansrivier BH HR16
Provincial Borehole ID	CK0301033	CK0301034	CK0301035	CK0301036	CK0301037	CK0301038	CK0301039	CK0301040
Alternative Borehole ID	GZ00506	GZ00527	GZ00528	GZ00529	GZ00526	GZ00525	GZ00512	GZ00513
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	Various
Community name served by borehole	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)		94.608 (Licence)	94.608 (Licence)	42.048 (Licence)	131.400 (Licence)	63.073 (Licence)	52.560 (Licence)	52.560 (Licence)
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Medium	High	Low	Low	High	Low	High	High
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Vandalised	Prime Condition	Prime Condition	Vandalised	Prime Condition	Vandalised	Vandalised
Total refurbishment needs %	0.0%	20.0%	0.0%	0.0%	12.0%	0.0%	100.0%	100.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.500	R0.000	R0.000	R0.300	R0.000	R1.000	R1.000
Refurbishment cost for the next 5 years (RM)	R0.000	R0.500	R0.000	R0.000	R0.300	R0.000	R1.000	R1.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	26.5%	14.0%	18.0%	18.0%	14.0%	18.0%	35.0%	35.0%
Total replacement needs cost for next 15 years (RM)	R0.450	R0.350	R0.450	R0.450	R0.350	R0.450	R0.350	R0.350
Replacement cost for the next 5 years (RM)	R0.100	R0.000	R0.100	R0.100	R0.000	R0.100	R0.000	R0.000
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Medium	Short	Long	Long	Short	Long	Short	Short
Estimated replacement value (RM): CRC	R1.697	R2.500	R2.500	R2.500	R2.500	R2.500	-	-
Already reached Useful Life (Yes/No)	No	Yes	No	No	Yes	No	Yes	Yes
Annual Operating Cost (RM) (1.0% of CRC)	R0.017	R0.025	R0.025	R0.025	R0.025	R0.025	-	-
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.008	R0.013	R0.013	R0.013	R0.013	R0.013	-	-
Borehole Depth (m)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	108	130
Altitude above mean sea level (mamsl)	856	803	801	797	811	804	848	848
Pump installed in borehole	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	-	-
Motor driving pump	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	-	-
Water level (mbgl)	5	5	11	13	23	20	Unknown	Unknown
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	1.00	3.60	3.60	1.60	4.17	2.40	2.000	2.000
Current abstraction (Ml/a) – (July 2023 to June 2024)	0.000	0.000	119.350	77.819	114.594	53.670	0.000	0.000

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 41	BH 42	BH 43	BH 44	BH 45	BH 46	BH 47	
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	
Borehole Name	Hansrivier HR10 BH	Hansrivier HR13 BH	Hansrivier HR18 BH	Hoenderplaas HKNDA BH	Small Hansrivier KH3 BH	Small Hansrivier KH5 BH	Flagship BH	
Provincial Borehole ID	CK0301041	CK0301042	CK0301043	CK0301044	CK0301045	CK0301046	CK0301047	
Alternative Borehole ID	GZ00510		GZ00514	GZ00493	GZ00516	GZ00517	GZ00515	
Community ID served by borehole	Various	Various	Various	Various	Various	Various	Various	
Community name served by borehole	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Sporadic	Regular	Regular	Sporadic	
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	
Is the abstraction registered with DWS? (Yes / No)			Yes	Yes	Yes	Yes	Yes	
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
License abstraction (Ml/a)			39.420 (Licence)	288.532 (Registration)	183.960 (Licence)	118.260 (Licence)	63.072 (Licence)	
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	High	High	High	Low	High	High	Low	
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Vandalised	Vandalised	Vandalised	Prime Condition	Vandalised	Vandalise	Prime Condition	
Total refurbishment needs %	100.0%	100.0%	100.0%	0.0%	40.0%	100.0%	0.0%	
Total refurbishment needs cost for next 15 years (RM)	R1.000	R1.000	R1.250	R0.000	R0.250	R1.000	R0.000	
Refurbishment cost for the next 5 years (RM)	R1.000	R1.000	R1.250	R0.000	R0.250	R1.000	R0.000	
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Total replacement needs %	35.0%	35.0%	28.0%	18.0%	35.0%	35.0%	18.0%	
Total replacement needs cost for next 15 years (RM)	R0.350	R0.350	R0.350	R0.450	R0.350	R0.350	R0.450	
Replacement cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.100	R0.000	R0.000	R0.100	
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Short	Short	Short	Long	Short	Short	Long	
Estimated replacement value (RM): CRC	-	-	-	R2.500	R1.000	-	R2.500	
Already reached Useful Life (Yes/No)	Yes	Yes	Yes	No	Yes	Yes	No	
Annual Operating Cost (RM) (1.0% of CRC)	-	-	-	R0.025	-	-	R0.025	
Annual Maintenance Cost (RM) (0.5% of CRC)	-	-	-	R0.013	-	-	R0.013	
Borehole Depth (m)	Unknown	Unknown	80	74	62.2	75	Unknown	
Altitude above mean sea level (mamsl)	846	846	822	836	812	823	830	
Pump installed in borehole	-	-	-	Unknown	-	-	Unknown	
Motor driving pump	-	-	-	Unknown	-	-	Unknown	
Water level (mbgl)	Unknown	Unknown	6	10	21	13	8	
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	8.50	6.50	1.00	3.30	5.80	3.75	2.00	
Current abstraction (Ml/a) – (July 2023 to June 2024)	0.000	0.000	0.000	158.101	0.000	10.249	72.799	

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 48	BH 49	BH 50	BH 51	BH 52	BH 53	BH 54	BH 55
Scheme Name	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville
Scheme Number	CK0302	CK0302	CK0302	CK0302	CK0302	CK0302	CK0302	CK0302
Borehole Name	Merweville ME2 BH	Merweville ME3 BH	Merweville ME4 BH	Merweville ME6 BH	Merweville ME7 BH	Merweville ME8 BH	Merweville ME9 BH	Merweville MV2 BH
Provincial Borehole ID	CK0302001	CK0302002	CK0302003	CK0302004	CK0302005	CK0302006	CK0302007	CK0302008
Alternative Borehole ID								
Community ID served by borehole	01J24B001	01J24B001	01J24B001	01J24B001	01J24B001	01J24B001	01J24B001	01J24B001
Community name served by borehole	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville	Merweville
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	None	None	None	None	None	None	None
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Is the abstraction registered with DWS? (Yes / No)	No	No	Yes	Yes	Yes	No	Yes	Yes
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
License abstraction (Ml/a)	-	-	54.400 (Registration)	In Process	In Process	-	In Process	In Process
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	High	High	Low	Low	Low	High	Low	None
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Dysfunctional	Dysfunctional	Operational	Operational	Operational	Dysfunctional	Operational	Prime Condition
Total refurbishment needs %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total replacement needs %	0.0%	0.0%	18.0%	18.0%	18.0%	0.0%	18.0%	12.5%
Total replacement needs cost for next 15 years (RM)	R0.000	R0.000	R0.450	R0.450	R0.450	R0.000	R0.450	R0.350
Replacement cost for the next 5 years (RM)	R0.000	R0.000	R0.100	R0.100	R0.100	R0.000	R0.100	R0.000
Replacement cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.150	R0.150	R0.150	R0.000	R0.150	R0.150
Replacement cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.200	R0.200	R0.200	R0.000	R0.200	R0.200
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Short	Short	Long	Long	Long	Short	Long	Long
Estimated replacement value (RM): CRC	-	-	R2.500	R2.500	R2.500	-	R2.500	R2.800
Already reached Useful Life (Yes/No)	Yes	Yes	No	No	No	Yes	No	No
Annual Operating Cost (RM) (1.0% of CRC)	-	-	R0.025	R0.025	R0.025	-	R0.025	R0.028
Annual Maintenance Cost (RM) (0.5% of CRC)	-	-	R0.013	R0.013	R0.013	-	R0.013	R0.014
Borehole Depth (m)	105	87	59	74	70	Unknown	54	113
Altitude above mean sea level (mamsl)	715	715	719	717	731	720	726	724
Pump installed in borehole	-	-	Unknown	Unknown	Unknown	-	Unknown	Unknown
Motor driving pump	-	-	Unknown	Unknown	Unknown	-	Unknown	Unknown
Water level (mbgl)	Unknown	Unknown	21	18	16	Unknown	20	17
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	0.00	0.00	0.40	0.70	0.30	0.00	0.25	0.63
Current abstraction (Ml/a) – (July 2023 to June 2024)	0.000	0.000	6.300	17.528	9.608	0.000	3.329	4.633

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 56	BH 57	BH 58	BH 59	BH 60	BH 61	BH 62	
Scheme Name	Merweville	Merweville	Merweville	Merweville	Nelspoort	Nelspoort	Nelspoort	
Scheme Number	CK0302	CK0302	CK0302	CK0302	CK0303	CK0303	CK0303	
Borehole Name	Merweville MV3 BH	Merweville MV4 BH	Merweville MV5 BH	Merweville MV6 BH	Borehole 1	Borehole 2	Borehole 3	
Provincial Borehole ID	CK0302009	CK0302010	CK0302011	CK0302012	CK0303001	CK0303002	CK0303003	
Alternative Borehole ID								
Community ID served by borehole	01J24B001	01J24B001	01J24B001	01J24B001	01L11E004	01L11E004	01L11E004	
Community name served by borehole	Merweville	Merweville	Merweville	Merweville	Nelspoort	Nelspoort	Nelspoort	
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	None	None	None	None	None	None	
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	
Is the abstraction registered with DWS? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
License abstraction (Ml/a)	In Process	In Process	In Process	In Process	In Process	In Process	In Process	
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	None	None	None	None	Low	Low	None	
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Prime Condition	Prime Condition	Prime Condition	Prime Condition	Operational	Operational	Prime Condition	
Total refurbishment needs cost %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Total replacement needs %	12.5%	12.5%	12.5%	14.0%	60.0%	60.0%	22.5%	
Total replacement needs cost for next 15 years (RM)	R0.350	R0.350	R0.350	R0.350	R0.450	R0.450	R0.450	
Replacement cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.100	R0.100	R0.100	
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	R0.150	
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	R0.200	
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Long	Long	Long	Long	Long	Long	Long	
Estimated replacement value (RM): CRC	R2.800	R2.800	R2.800	R2.500	R0.750	R0.750	R2.000	
Already reached Useful Life (Yes/No)	No	No	No	No	No	No	No	
Annual Operating Cost (RM) (1.0% of CRC)	R0.028	R0.028	R0.028	R0.025	R0.008	R0.008	R0.020	
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.014	R0.014	R0.014	R0.013	R0.004	R0.004	R0.010	
Borehole Depth (m)	112	120	120	50	Unknown	29.15	Unknown	
Altitude above mean sea level (mamsl)	709	705	700	705	1005	1005	1009	
Pump installed in borehole	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Motor driving pump	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Water level (mbgl)	24	3	6	5	Uknown	Unknown	Unknown	
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	0.60	0.40	0.90	0.80	1.70	3.20	3.93	
Current abstraction (Ml/a) – (July 2023 to June 2024)	8.669	1.194	2.793	12.606	59.694	15.810	27.628	

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Table 3.7: Existing groundwater infrastructure (Boreholes)								
3.1 General information	BH 63	BH 64	BH 65	BH 66	BH 67	BH 68	BH 69	
Scheme Name	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	
Scheme Number	CK0304	CK0304	CK0304	CK0304	CK0304	CK0304	CK0304	
Borehole Name	Rugby Field BH3	Murraysburg Hostel Borehole 4	Park Borehole 1	Park Borehole 2	Victoria West BH	Moddergat BH (MBD3)	Riverside BH (MBD2A)	
Provincial Borehole ID	CK0304001	CK0304002	CK0304003	CK0304004	CK0304005	CK0304006	CK0304007	
Alternative Borehole ID								
Community ID served by borehole	01L21E001, 01L21E002, 01L21E003							
Community name served by borehole	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	Murraysburg	
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
3.2 Operation								
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	None	None	None	
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	
Is the abstraction registered with DWS? (Yes / No)	Yes	No	No	No	Yes	Yes	Yes	
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
License abstraction (Ml/a)	In Process	-	-	-	In Process	In Process	In Process	
3.3 Functionality Observation								
Refurbishment needs (High, Medium, Low, None)	Low	Medium	High	High	None	None	None	
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Dysfunctional	Dysfunctional	Dysfunctional	Prime Condition	Prime Condition	Prime Condition	
Total refurbishment needs %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Total replacement needs %	22.5%	0.0%	0.0%	0.0%	14.0%	12.5%	12.5%	
Total replacement needs cost for next 15 years (RM)	R0.450	R0.000	R0.000	R0.000	R0.350	R0.350	R0.350	
Replacement cost for the next 5 years (RM)	R0.100	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.000	R0.000	R0.000	R0.150	R0.150	R0.150	
Replacement cost for the next 11 - 15 years (RM)	R0.200	R0.000	R0.000	R0.000	R0.200	R0.200	R0.200	
Total new development cost for next 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 5 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 6 - 10 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
New development cost for the next 11 - 15 years (RM)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	
3.4 Asset Assessment Spectrum								
Total expected lifespan (Short, Medium, Long)	Long	Medium	Short	Short	Long	Long	Long	
Estimated replacement value (RM): CRC	R2.000	R1.500	-	-	R2.500	R2.800	R2.800	
Already reached Useful Life (Yes/No)	No	No	Yes	Yes	No	No	No	
Annual Operating Cost (RM) (1.0% of CRC)	R0.020	R0.015	-	-	R0.025	R0.028	R0.028	
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.010	R0.008	-	-	R0.013	R0.014	R0.014	
Borehole Depth (m)	60	100	Unknown	Unknown	Unknown	66	84	
Altitude above mean sea level (mamsl)	1180	1190	1187	1187	1177	1176	1176	
Pump installed in borehole	Unknown	Unknown	-	-	Unknown	Unknown	Unknown	
Motor driving pump	Unknown	Unknown	-	-	Unknown	Unknown	Unknown	
Water level (mbgl)	Unknown	18	Unknown	Unknown	Unknown	Unknown	Unknown	
Water Class	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Blow yield (l/s)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	
Recommended borehole yield (l/s) / Capacity – Over 24 hrs	5.00	0.00	0.00	0.00	5.70	6.67	4.25	
Current abstraction (Ml/a) – (July 2023 to June 2024)	49.703	0.722	0.000	0.000	60.353	225.167	126.047	

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EXISTING SURFACE WATER INFRASTRUCTURE (ABSTRACTION POINTS)

Table 3.8: Existing surface water infrastructure (Abstraction points)				
3.1 General information	SW 1	SW 2	SW 3	SW 4
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Nelspoort
Scheme Number	CK0301	CK0301	CK0301	CK0303
Description	Gamka Dam	Garcia Fountain	Waterval Fountain	Sout River
Abstraction Number	CK0301001	CK0301002	CK0301003	CK0303001
Abstraction Status (Existing / Future)	Existing	Existing	Existing	Existing
Abstraction Class (Regional / Internal)	Regional	Internal	Internal	Internal
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown
3.2 Operation				
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	None	Sporadic	None	Sporadic
Is the abstraction registered with DWS? (Yes / No)	Yes	Yes	Yes	Yes
Is abstraction recorded? (Yes / No)	Yes	Yes	Yes	Yes
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular
License abstraction (Ml/a)	500.000	Unknown	Unknown	98.926
3.3 Functionality Observation				
Refurbishment needs (High, Medium, Low, None)	None	Low	Low	Medium
Observation (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Operational	Operational	Operational
Total refurbishment needs %	0.0%	18.0%	18.0%	20.0%
Total refurbishment needs cost for next 15 years (RM)	R0.000	R0.180	R0.180	R3.000
Refurbishment cost for the next 5 years (RM)	R0.000	R0.060	R0.060	R1.000
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.060	R0.060	R1.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.000	R0.060	R0.060	R1.000
Total replacement needs %	0.0%	12.0%	12.0%	10%
Total replacement needs cost for next 15 years (RM)	R0.000	R0.120	R0.120	R1.500
Replacement cost for the next 5 years (RM)	R0.000	R0.040	R0.040	R0.500
Replacement cost for the next 6 - 10 years (RM)	R0.000	R0.040	R0.040	R0.500
Replacement cost for the next 11 - 15 years (RM)	R0.000	R0.040	R0.040	R0.500
Total new development cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000
New development cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%
3.4 Asset Assessment Spectrum				
Total expected lifespan (Short, Medium, Long)	Long	Long	Long	Medium
Estimated replacement value (RM): CRC	-	R1.000	R1.000	R15.000
Already reached Useful Life (Yes/No)	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	-	R0.010	R0.010	R0.150
Annual Maintenance Cost (RM) (0.5% of CRC)	-	R0.005	R0.005	R0.075
Current abstraction (Ml/a) – (Average July 2023 to June 2024)	863.017	169.341	5.703	69.974
Full supply storage capacity (Ml)	2 170	-	-	-
Capacity - Total daily assured yield (Ml/day)	1.022	0.161	0.304	0.271
Type of structure (Dam, Weir, Canal, Run of River)	Dam	Fountain	Fountain	Weir

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EXISTING BULK WATER PIPELINE AND WATER RETICULATION NETWORK INFRASTRUCTURE

Table 3.9: Existing bulk water pipeline infrastructure				
3.1 General information	BW 1	BW 2	BW 3	BW 4
Scheme Name	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	CK0301	CK0302	CK0303	CK0304
Description	Bulk supply pipeline	Bulk supply pipeline	Bulk supply pipeline	Bulk supply pipeline
Bulk Status (Existing / Future)	Existing	Existing	Existing	Existing
Bulk Class (Regional / Internal)	Internal	Internal	Internal	Internal
Bulk Type (Water / Sewer)	Water	Water	Water	Water
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown
Length of pipeline (km)	269.941	10.550	10.567	34.766
3.2 Operation				
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (R: Regular, P: Periodic, S: Sporadic, N: None)	Regular	Regular	Regular	Regular
3.3 Functionality Observation				
Refurbishment needs (High, Medium, Low, None)	Medium	Low	Low	Low
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Operational	Operational	Operational
Total refurbishment needs %	7.2%	7.5%	7.5%	7.5%
Total refurbishment needs cost for next 15 years (RM)	R30.000	R0.750	R0.825	R2.370
Refurbishment cost for the next 5 years (RM)	R10.000	R0.250	R0.275	R0.790
Refurbishment cost for the next 6 - 10 years (RM)	R10.000	R0.250	R0.275	R0.790
Refurbishment cost for the next 11 - 15 years (RM)	R10.000	R0.250	R0.275	R0.790
Total replacement needs %	14.4%	14.9%	15.1%	15.0%
Total replacement needs cost for next 15 years (RM)	R60.000	R1.500	R1.650	R4.740
Replacement cost for the next 5 years (RM)	R20.000	R0.500	R0.550	R1.580
Replacement cost for the next 6 - 10 years (RM)	R20.000	R0.500	R0.550	R1.580
Replacement cost for the next 11 - 15 years (RM)	R20.000	R0.500	R0.550	R1.580
Total new development cost for next 15 years (RM)	R5.596	R0.440	R0.000	R2.510
New development cost for the next 5 years (RM)	R1.782	R0.000	R0.000	R1.415
New development cost for the next 6 - 10 years (RM)	R1.111	R0.000	R0.000	R0.451
New development cost for the next 11 - 15 years (RM)	R2.703	R0.440	R0.000	R0.644
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%
3.4 Asset Assessment Spectrum				
Total expected lifespan (Short, Medium, Long)	Long	Long	Long	Long
Estimated replacement value (RM): CRC	R415.397	R10.067	R10.942	R31.641
Already reached Useful Life (Yes/No)	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R4.154	R0.101	R0.109	R0.316
Annual Maintenance Cost (RM) (0.5% of CRC)	R2.077	R0.050	R0.055	R0.158
Pipe material (Most common)	AC	uPVC	uPVC	AC
Average discharge rate (l/sec), Based on 2023/2024 AADD	118	2	4	12

EXISTING WATER TREATMENT WORKS INFRASTRUCTURE

BEAUFORT WEST WTW: Under normal operating condition (i.e. when surface water is available from the Gamka Dam) the water supplied to Beaufort West is a blend of surface and groundwater from various sources. The surface water from the Gamka Dam is fully treated at the WTW, whereas the groundwater is only chlorinated prior to distribution. A wastewater reclamation plant was also constructed at the Beaufort West WWTW.

The WTW in Beaufort West is registered with the DWS as a Class C works. The WTW was constructed in 1986 and was designed to treat the water from the Gamka Dam and has a capacity of 4.32 Ml/d. The maximum treatment capacity of the WTW, however, almost matches the licensed peak withdrawal from the Gamka Dam, namely 4.92 Ml/d.

Previous emergency measures implemented during the drought period included the treatment of the water from the Walkers and Springfontein Dams at the WTW until both surface water sources were depleted. The treatment processes at the WTW includes coagulation, flocculation, sedimentation, filtration, disinfection (Chlorine gas) and sludge management.



Beaufort West WTW



Raw water inlet



Aluminium Sulphate dosing



Sedimentation



Two gravity sand filters



Disinfection (Chlorine gas)

BEAUFORT WEST WASTEWATER RECLAMATION PLANT: The wastewater reclamation plant was originally constructed to deliver 1 Ml/day due to the limited available wastewater at the WWTW. The capacity of the plant was gradually increased over the last number of years and the current capacity of the plant is 2.144 Ml/day. The reclamation plant is registered with the DWS as a Class C works. The final treated water is added to the potable water distribution networks at the high-level reservoirs. The treatment processes at the reclamation plant include rapid sand filtration (Two filters), ultra-filtration, reverse osmosis (Stage 1 was 12 filters and Stage 2 was 9 filters), pH correction, UV disinfection and final chlorination (Sodium Hypochlorite)

The design is aimed at removing the remaining solids, impurities and organisms from the treated wastewater. However, the reverse osmosis process also demineralises the water. The design does not include re-mineralisation as the blend between the town's borehole water and the reclaimed water would comply with drinking water quality standards.

The UV disinfection stage is over and above to the filtration steps ("insurance"), whereas the final disinfection stage (chlorination) is to ensure that a residual chlorine buffer remains in the pipelines, minimising growth of organisms in pipelines (continued disinfection).

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Inlet for Reclamation Plant



Sand filtration



Ultra Filters



RO Bank of Filters



Chemical storage tanks

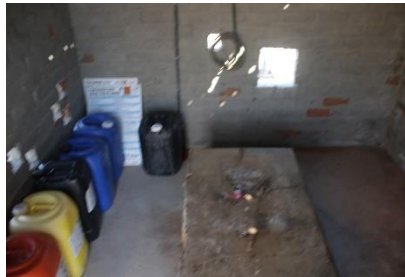


UV Disinfection

MERWEVILLE WTW: No formal WTW exists to treat the water supplied from the boreholes and the water is only disinfected (Sodium Hypochlorite) prior to distribution to end users. The WTW in Merweville is registered with the DWS as Class E works.



Disinfection (Sodium Hypochlorite)



NELSPOORT WTW: The water from the Salt River, as well as water supplied from the three boreholes, is treated at the 0.5 MI/d Nelspoort WTW. The Nelspoort WTW is registered with the DWS as a Class E works. The treatment processes at the Nelspoort WTW include aeration, filtration and disinfection (Chlorine gas).



Slow Sand filtration



Aeration



Disinfection pumps (Chlorine gas)

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MURRAYSBURG WTW: All bulk raw water supply to Murraysburg is from boreholes. There is no formal WTW for Murraysburg and the water is disinfected (Sodium Hypochlorite) at the Moddergat and Riverside boreholes prior to pumping it to the reservoirs for distribution to the end users. The WTW is registered with the DWS as Class E works.



Disinfection at Moddergat Borehole
(Sodium Hypochlorite)



Disinfection at Riverside Borehole (Sodium Hypochlorite)

EXISTING WATER TREATMENT WORKS INFRASTRUCTURE

Table 3.10: Existing water treatment works infrastructure					
3.1 General information	WTW 1	WTW 2	WTW 3	WTW 4	WTW 5
Scheme Name	Beaufort West	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	BW0301	BW0301	BW0302	BW0303	BW0304
WTW Name	Beaufort West WTW	Beaufort West Reclamation Plant	Merweville WTW	Nelspoort WTW	Murraysburg WTW
WTW Number	CK0301001	CK0301002	CK0302001	CK0303001	CK0304001
WTW Classification (A, B, C, D, E, Unknown)	C	C	E	E	E
WTW Class (Regional / Internal)	Internal	Internal	Internal	Internal	Internal
WTW Status (Existing / Future)	Existing	Existing	Existing	Existing	Existing
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown
Water Quality Monitoring Programme in place - Compliance and Operational (Yes / No)	Yes (Operational and Compliance)	Yes (Operational and Compliance)	Yes (Compliance)	Yes (Compliance)	Yes (Compliance)
3.2 Operation					
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Regular	Sporadic	Sporadic	Sporadic
Incidents, including security problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular
Average operating hours per day					
Blue Drop Status (Yes / No)	No	No	No	No	No
Blue Drop Score 2023 (%)	56.90%	56.90%	34.85%	30.65%	26.65%
Incident Management Protocol in place (Yes / No)	Yes	Yes	Yes	Yes	Yes
Proper Process Control in place (Yes / No)	Yes	Yes	Yes	Yes	Yes
Failure Response Management in place (Yes / No)	Yes	Yes	Yes	Yes	Yes
Sample Analysis Credibility (Percentage)	100%	100%	100%	100%	100%
Authorisation Compliance (Yes / No)	Yes	Yes	Yes	Yes	Yes
3.3 Functionality Observation					
Refurbishment needs (High, Medium, Low, None)	Medium	None	Medium	High	None
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Prime Condition	Operational	Operational	Prime Condition
Total refurbishment needs %	15.0%	15.0%	80%	18%	100.0%
Total refurbishment needs cost for next 15 years (RM)	R12.960	R6.000	R0.060	R1.800	R0.150
Refurbishment cost for the next 5 years (RM)	R4.320	R2.000	R0.030	R0.000	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R4.320	R2.000	R0.000	R0.900	R0.075
Refurbishment cost for the next 11 - 15 years (RM)	R4.320	R2.000	R0.030	R0.900	R0.075
Total replacement needs %	7.5%	10%	80%	9%	100.0%
Total replacement needs cost for next 15 years (RM)	R6.480	R4.000	R0.060	R0.900	R0.150
Replacement cost for the next 5 years (RM)	R2.160	R0.000	R0.030	R0.000	R0.000
Replacement cost for the next 6 - 10 years (RM)	R2.160	R2.000	R0.000	R0.450	R0.075
Replacement cost for the next 11 - 15 years (RM)	R2.160	R2.000	R0.030	R0.450	R0.075
Total new development cost for next 15 years (RM)	R0.000	R0.000	R0.000	R18.000	R0.000

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Table 3.10: Existing water treatment works infrastructure

3.1 General information	WTW 1	WTW 2	WTW 3	WTW 4	WTW 5
New development cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R18.000	R0.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000
Number of Permanent Staff on site	4	2	-	2	-
% Where of the WSA Self is the Current Owner	100.0%	100.0%	100.0%	100.0%	100.0%
% Where of the WSA Self is the Current Operator	100.0%	0.0%	100.0%	100.0%	100.0%
3.4 Asset Assessment Spectrum					
Total Expected Lifespan, RUL (Short, Medium, Long)	Medium	Long	Long	Short	Long
Estimated replacement value (RM): CRC	R86.400	R40.000	R0.075	R10.000	R0.150
Already reached use full life span (Yes / No)	No	No	No	Yes	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.864	R5.399 (R7/Kl)	R0.030	R0.100	R0.050
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.432	R0.200	R0.015	R0.050	R0.025
Capacity (Ml/day)	4.320	2.144	-	0.500	-
Total volume of water received and treated per day for 2023/2024 (Ml/day)	3.915	2.113	-	0.474	-
Discharge volume per day for 2023/2024 (Ml/day)	3.687	1.170	-	0.337	-
Capacity sufficient (Yes / No)	Yes	Yes	Yes	No	Yes

EXISTING WATER PUMP STATIONS



Vaalkoppies Water PS (x2)



Garcia Street Water PS (x1)



Uitspan Booster PS (x2)



Noord Einde Booster PS (x2)



Noord Einde Booster PS (x2)



Steenrots Booster PS (x2)



Beaufort West WTW: Final Water PS (x2)



Beaufort West RO Final Treated Water PS

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Sout River Weir with submersible pumps (x2) Nelspoort Final WTW Treated Water PS (x2)

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EXISTING WATER PUMP STATIONS

Table 3.11: Existing water pump station infrastructure										
3.1 General information	WPS 1	WPS 2	WPS 3	WPS 4	WPS 5	WPS 6	WPS 7	WPS 8	WPS 9	WPS 10
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Nelspoort	Nelspoort
Scheme Number	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0301	CK0303	CK0303
Pump Number	CK0301001	CK0301002	CK0301003	CK0301004	CK0301005	CK0301006	CK030107	CK0301008	CK0303001	CK0303002
Description (RW – Raw Water, PW – Potable Water)	Vaalkoppies (Hans River) PS (RW)	Garcia Street PS (RW)	Uitspan PS (RW)	Noordeinde PS (RW)	Noordeinde PS (RW)	Steenrots PS (RW)	Beaufort West WTW Final Water PS (PW)	Reclamation Plant PS (PW)	Sout River Raw Water PS (RW)	Nelspoort WTW PS (PW)
Pump Station Status (Existing / Future)	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing
Pump Station Class (Regional / Internal)	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Pump Type (Water / Sewer)	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
3.2 Operation										
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Are there any standby pumps available? (Yes / No)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of pumps	2	1	2	2	2	2	2	2	2	2
3.3 Functionality Observation										
Refurbishment needs (High, Medium, Low, None)	None	Low	High	Low	High	None	Medium	None	Medium	High
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Prime Condition	Operational	Operational	Operational	Operational	Prime Condition	Operational	Prime Condition	Operational	Operational
Total refurbishment needs %	13.3%	20.0%	81.7%	20.0%	81.7%	13.3%	19.9%	13.4%	20.0%	20.1%
Total refurbishment needs cost for next 15 years (RM)	R0.600	R0.450	R2.287	R0.651	R2.001	R0.640	R0.159	R0.334	R0.549	R0.351
Refurbishment cost for the next 5 years (RM)	R0.000	R0.150	R2.100	R0.217	R1.838	R0.000	R0.053	R0.000	R0.183	R0.117
Refurbishment cost for the next 6 - 10 years (RM)	R0.300	R0.150	R0.000	R0.217	R0.000	R0.320	R0.053	R0.167	R0.183	R0.117
Refurbishment cost for the next 11 - 15 years (RM)	R0.300	R0.150	R0.187	R0.217	R0.163	R0.320	R0.053	R0.167	R0.183	R0.117
Total replacement needs %	6.7%	10.0%	28.3%	10.0%	28.4%	6.7%	10.2%	6.6%	10.0%	9.9%
Total replacement needs cost for next 15 years (RM)	R0.300	R0.225	R0.793	R0.324	R0.695	R0.320	R0.081	R0.166	R0.276	R0.174
Replacement cost for the next 5 years (RM)	R0.000	R0.075	R0.700	R0.108	R0.613	R0.000	R0.027	R0.000	R0.092	R0.058
Replacement cost for the next 6 - 10 years (RM)	R0.150	R0.075	R0.000	R0.108	R0.000	R0.160	R0.027	R0.083	R0.092	R0.058
Replacement cost for the next 11 - 15 years (RM)	R0.150	R0.075	R0.093	R0.108	R0.082	R0.160	R0.027	R0.083	R0.092	R0.058
Total new development cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum										
Total expected lifespan (Short, Medium, Long)	Long	Long	Short	Medium	Medium	Long	Medium	Long	Medium	Medium
Estimated replacement value (RM): CRC	R4.500 (Incl. Generator)	R2.250 (Incl. Generator)	R2.800	R3.250 (Incl. Generator)	R2.450	R4.800	R0.800	R2.500	R2.750	R1.750
Already reached Useful Life (Yes/No)	No	No	No	No	No	No	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.045	R0.023	R0.028	R0.033	R0.025	R0.048	R0.008	R0.025	R0.028	R0.018
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.023	R0.011	R0.014	R0.016	R0.012	R0.024	0.004	R0.013	R0.014	R0.009
Delivery capacity (l/s)	20.0	15.0							Unknown	
Type of Motor (Number)	Actom (x2)	Eberle (x1)	Able (x1) BMM (x1)	Siemens (x2)	Dutchi (x1) Motorelli (x1)	Actom (x2)	BMM (x2)	Motorelli (x2)	Unknown	WEG TE160L (x1) Actom (x1)
Type of Pump (Number)	KSB Type ETANORM 100-080-250 (x2)	Unknown (x1)	KSB Type ETANORM 080-065-250 (x1) Salsa Type VEG65	Removed (x1) APE (x1) (Not in use)	KSB Type ETA 80-250 (x1) Removed (x1)	KSB Type WKLn 80/3 (x2)	KSB Type New 125-200 (x2)	KSB Type WKLn 80/3 (x2)	Submersible Unknown	M&B Normaflo NF 40-250 (x1) (Removed) KSB Type ETANORM 065-040-250 (x1)
Motor (kW)	75kW (x2)	18.5kW (x1)	37kW (x1) 30kW (x1)	45kW (x2)	44.4kW (x1) Unknown (x1)	90kW (x2)	11kW (x2)	75kW (x2)	Unknown	18.5kW (x1) 18.0kW (x1)

EXISTING RESERVOIR INFRASTRUCTURE



Beaufort West 4.500 MI



Beaufort West 4.500 MI



Beaufort West 5.750 MI



Noordeinde 0.580 MI



Uitspan 0.260 ML



Steenrots Storage Tank 0.104 ML



Vaalkoppies Reservoir 0.100 ML



Merweville 0.400 MI



Merweville 0.200 MI



Nelspoort 0.911 MI



Nelspoort Four WTW Reservoirs (0.140 MI)



Nelspoort Raw Water Reservoir



Murraysburg Dokterskop 0.500 MI

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Murraysburg 0.300 MI (Not in use)



Murraysburg 0.500 MI



Murraysburg 0.200 MI

EXISTING RESERVOIR INFRASTRUCTURE

Table 3.12: Existing reservoir infrastructure												
3.1 General information	RES 1	RES 2	RES 3	RES 4	RES 5	RES 6	RES 7	RES 8	RES 9	RES 10	RES 11	RES 12
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Beaufort West	Merweville	Merweville	Nelspoort	Nelspoort	Nelspoort
Scheme Number	BW0301	BW0301	BW0301	BW0301	BW0301	BW0301	BW0301	BW0302	BW0302	BW0303	BW0303	BW0303
Reservoir Number	CK0301001	CK0301002	CK0301003	CK0301004	CK0301005	CK0301006	CK0301007	CK0302001	CK0302002	CK0303001	CK0303002	CK0303003
Description	Beaufort West Reservoir No.1	Beaufort West Reservoir No.2	Beaufort West Reservoir No.3	Uitspan Reservoir	Noordeinde	Steenrots Reservoir	Vaalkoppies Reservoir	Merweville Reservoir	Merweville Reservoir	Nelspoort Reservoir	Nelspoort WTW Reservoirs	Nelspoort Raw Water Reservoir
Reservoir Status (Existing / Future)	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing
Reservoir Class (Regional / Internal)	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3.2 Operation												
O&M Occurrence (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
What is the storage factor (x daily use)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.9	1.9	1.3	1.3	1.3
3.3 Functionality Observation												
Refurbishment needs (High, Medium, Low, None)	Low	Low	Low	High	Medium	None	None	None	None	Medium	High	High
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised)	Operational	Operational	Operational	Operational	Operational	Prime Condition	Prime Condition	Operational	Prime Condition	Operational	Operational	Operational
Total refurbishment needs %	10.0%	10.0%	10.0%	100.0%	50.0%	13.2%	20.1%	10.0%	10.0%	10.0%	100.0%	50.0%
Total refurbishment needs cost for next 15 years (RM)	R1.484	R1.484	R1.747	R1.654	R1.470	R0.108	R0.128	R0.127	R0.229	R0.339	R2.435	R0.175
Refurbishment cost for the next 5 years (RM)	R0.742	R0.742	R0.873	R1.654	R1.470	R0.000	R0.000	R0.000	R0.000	R0.113	R2.435	R0.175
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.054	R0.064	R0.063	R0.114	R0.113	R0.000	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.742	R0.742	R0.874	R0.000	R0.000	R0.054	R0.064	R0.064	R0.115	R0.113	R0.000	R0.000
Total replacement needs %	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total replacement needs cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.054	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Replacement cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Replacement cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.027	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Replacement cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.027	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
Total new development cost for next 15 years (RM)	R15.530	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R3.285	R0.000	R3.285	R0.000	R0.000
New development cost for the next 5 years (RM)	R15.530	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R3.285	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000	R3.285	R0.000	R0.000	R0.000	R0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum												
Total Expected Lifespan, RUL (Short, Medium, Long)	Long	Long	Long	Short	Medium	Long	Long	Long	Long	Medium	Short	Short
Estimated replacement value (RM): CRC	R14.837	R14.837	R17.468	R1.654	R2.939	R0.817	R0.636	R1.272	R2.291	R3.393	R2.435	R0.350
Already reached Useful Life (Yes/No)	No	No	No	Yes	No	No	No	No	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.148	R0.148	R0.175	R0.017	R0.029	R0.008	R0.006	R0.013	R0.023	R0.034	R0.024	R0.004
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.074	R0.074	R0.087	R0.008	R0.015	R0.004	R0.003	R0.006	R0.011	R0.017	R0.012	R0.002
Capacity (Ml)	4.500	4.500	5.750	0.260	0.580	0.104	0.100	0.200	0.400	0.911	0.140 (x4)	0.088
TWL (m.asl)	905.781	903.625	906.638	Unknown	Unknown	Unknown	Unknown	735.0	735.0	1060.300	Unknown	Unknown

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Table 3.12: Existing reservoir infrastructure												
3.1 General information	RES 13	RES 14	RES 15	RES 16								
Scheme Name	Murraysburg	Murraysburg	Murraysburg	Murraysburg								
Scheme Number	BW0304	BW0304	BW0304	BW0304								
Reservoir Number	CK0304001	CK0304002	CK0304003	CK0304004								
Description	Murraysburg North Dokterskop Reservoir	Murraysburg South Reservoir (Not in use)	Murraysburg South Reservoir	Murraysburg South Reservoir								
Reservoir Status (Existing / Future)	Existing	Existing	Existing	Existing								
Reservoir Class (Regional / Internal)	Internal	Internal	Internal	Internal								
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown								
3.2 Operation												
O&M Occurrence (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic								
Incidents, including Security Problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic								
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular								
What is the storage factor (x daily use)	0.6	0.6	0.6	0.6								
3.3 Functionality Observation												
Refurbishment needs (High, Medium, Low, None)	None	Medium	None	Low								
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised)	Prime Condition	Dysfunctional	Prime Condition	Operational								
Total refurbishment needs %	5.0%	50.0%	5.0%	10.0%								
Total refurbishment needs cost for next 15 years (RM)	R0.113	R0.921	R0.064	R0.227								
Refurbishment cost for the next 5 years (RM)	R0.000	R0.307	R0.000	R0.075								
Refurbishment cost for the next 6 - 10 years (RM)	R0.000	R0.307	R0.000	R0.076								
Refurbishment cost for the next 11 - 15 years (RM)	R0.113	R0.307	R0.064	R0.076								
Total replacement needs %	0.0%	25.0%	0.0%	10.0%								
Total replacement needs cost for next 15 years (RM)	R0.000	R0.460	R0.000	R0.227								
Replacement cost for the next 5 years (RM)	R0.000	R0.153	R0.000	R0.075								
Replacement cost for the next 6 - 10 years (RM)	R0.000	R0.153	R0.000	R0.076								
Replacement cost for the next 11 - 15 years (RM)	R0.000	R0.154	R0.000	R0.076								
Total new development cost for next 15 years (RM)	R3.502	R3.502	R0.000	R0.000								
New development cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.000								
New development cost for the next 6 - 10 years (RM)	R3.502	R3.502	R0.000	R0.000								
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000								
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%								
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%								
3.4 Asset Assessment Spectrum												
Total Expected Lifespan, RUL (Short, Medium, Long)	Long	Short	Long	Long								
Estimated replacement value (RM): CRC	R2.266	R1.841	R1.272	R2.266								
Already reached Useful Life (Yes/No)	No	No	No	No								
Annual Operating Cost (RM) (1.0% of CRC)	R0.023	R0.018	R0.013	R0.023								
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.011	R0.009	R0.006	R0.011								
Capacity (Ml)	0.500	0.300	0.200	0.500								
TWL (m.asl)	1206.0	1221.0	1221.0	1221.0								

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EXISTING BULK SEWER PIPELINE AND SEWER DRAINAGE NETWORK INFRASTRUCTURE

Table 3.13: Existing bulk sewer pipeline and sewer drainage network infrastructure				
3.1 General information	BS and Drainage Network 1	BS and Drainage Network 2	BS and Drainage Network 3	BS and Drainage Network 4
Scheme Name	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	CK0301	CK0302	CK0303	CK0304
Description	Bulk sewer pipelines and sewer drainage networks	Bulk sewer pipelines and sewer drainage networks	Bulk sewer pipelines and sewer drainage networks	Bulk sewer pipelines and sewer drainage networks
Bulk Status (Existing / Future)	Existing	Existing	Existing	Existing
Bulk Class (Regional / Internal)	Internal	Internal	Internal	Internal
Bulk Type (Water / Sewer)	Sewer	Sewer	Sewer	Sewer
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown
Length of pipeline (km)	127.800	4.400	6.031	32.875 (Est)
3.2 Operation				
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including security problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular
3.3 Functionality Observation				
Refurbishment needs (High, Medium, Low, None)	Medium	Low	Low	Medium
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Operational	Operational	Operational
Total refurbishment needs %	7.5%	7.5%	7.5%	38.0%
Total refurbishment needs cost for next 15 years (RM)	R11.502	R0.396	R0.543	R15.000
Refurbishment cost for the next 5 years (RM)	R3.834	R0.132	R0.181	R15.000
Refurbishment cost for the next 6 - 10 years (RM)	R3.834	R0.132	R0.181	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R3.834	R0.132	R0.181	R0.000
Total replacement needs %	15.0%	15.0%	15.0%	10.0%
Total replacement needs cost for next 15 years (RM)	R23.004	R0.792	R1.086	R3.946
Replacement cost for the next 5 years (RM)	R7.668	R0.264	R0.362	R0.000
Replacement cost for the next 6 - 10 years (RM)	R7.668	R0.264	R0.362	R1.973
Replacement cost for the next 11 - 15 years (RM)	R7.668	R0.264	R0.362	R1.973
Total new development cost for next 15 years (RM)	R11.851	R6.883	R1.386	R0.000
New development cost for the next 5 years (RM)	R8.338	R0.168	R0.336	R0.000
New development cost for the next 6 - 10 years (RM)	R3.513	R6.715	R1.050	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%
3.4 Asset Assessment Spectrum				
Total Expected Lifespan, RUL (Short, Medium, Long)	Long	Long	Long	Long
Estimated replacement value (RM): CRC	R153.360	R5.280	R7.237	R39.450
Already reached Useful Life (Yes/No)	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R1.534	R0.053	R0.072	R0.395
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.767	R0.026	R0.036	R0.197
Pipe material (Most common)	AC	AC	AC	AC
Average discharge rate for period July 2023 to June 2024 (l/sec)	47.3	0.8	2.1	6.2

EXISTING SEWER PUMP STATIONS



Prince Valley Sewer Pump Station (S8)



Prince Valley Sewer Pump Station



Kwamandlenkosi Sewer Pump Station



Nelspoort Garage Sewer Pump Station



Nelspoort Main Sewer Pump Station



Murraysburg Main Sewer Pump Station

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EXISTING SEWER PUMP STATIONS

Table 3.14: Existing sewer pump stations						
3.1 General information	SPS 1	SPS 2	SPS 3	SPS 4	SPS 5	SPS 6
Scheme Name	Beaufort West	Beaufort West	Beaufort West	Nelspoort	Nelspoort	Murraysburg
Scheme Number	CK0301	CK0301	CK0301	CK0303	CK0303	CK0304
Pump Number	CK0301001	CK0301002	CK0301003	CK0303001	CK0303002	CK0304001
Description	Prince Valley (S8)	Prince Valley	Kwamandlen -kosi	Garage	Main	Murraysburg
Pump Station Status (Existing / Future)	Existing	Existing	Existing	Existing	Existing	Existing
Pump Station Class (Regional / Internal)	Internal	Internal	Internal	Internal	Internal	Internal
Asset Register Group Name (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Pump Type (Water / Sewer)	Sewer	Sewer	Sewer	Sewer	Sewer	Sewer
3.2 Operation						
O&M Occurrence (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including security problems (Regular, Periodic, Sporadic, None)	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
Safety Inspection performed (Regular, Periodic, Sporadic, None)	Regular	Regular	Regular	Regular	Regular	Regular
Are there any standby pumps available? (Yes / No)	Yes	No	Yes	No	Yes	No
Number of pumps	2	1	2	1	2	1
3.3 Functionality Observation						
Refurbishment needs (High, Medium, Low, None)	Low	High	Low	Low	Medium	High
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised)	Operational	Operational	Operational	Operational	Operational	Operational
Total refurbishment needs %	30.0%	75.0%	25.0%	24.0%	25.0%	70.0%
Total refurbishment needs cost for next 15 years (RM)	R0.750	R1.500	R0.750	R0.300	R0.500	R1.750
Refurbishment cost for the next 5 years (RM)	R0.250	R1.000	R0.250	R0.100	R0.000	R1.750
Refurbishment cost for the next 6 - 10 years (RM)	R0.250	R0.250	R0.250	R0.100	R0.250	R0.000
Refurbishment cost for the next 11 - 15 years (RM)	R0.250	R0.250	R0.250	R0.100	R0.250	R0.000
Total replacement needs %	30.0%	75.0%	25.0%	24.0%	25.0%	20.0%
Total replacement needs cost for next 15 years (RM)	R0.750	R1.500	R0.750	R0.300	R0.500	R0.500
Replacement cost for the next 5 years (RM)	R0.250	R1.000	R0.250	R0.100	R0.000	R0.000
Replacement cost for the next 6 - 10 years (RM)	R0.250	R0.250	R0.250	R0.100	R0.250	R0.250
Replacement cost for the next 11 - 15 years (RM)	R0.250	R0.250	R0.250	R0.100	R0.250	R0.250
Total new development cost for next 15 years (RM)	R0.000	R0.000	R0.000	R0.300	R1.500	R0.000
New development cost for the next 5 years (RM)	R0.000	R0.000	R0.000	R0.300	R1.500	R0.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000	R0.000	R0.000
% Where of the WSA Self is the Current Owner	100%	100%	100%	100%	100%	100%
% Where of the WSA Self is the Current Operator	100%	100%	100%	100%	100%	100%
3.4 Asset Assessment Spectrum						
Total expected lifespan (Short, Medium, Long)	Long	Short	Long	Long	Short	Short
Estimated replacement value (RM): CRC	R2.500	R2.000	R3.500	R1.250	R2.000	R2.500
Already reached Useful Life (Yes/No)	No	No	No	No	No	No
Annual Operating Cost (RM) (1.0% of CRC)	R0.250	R0.200	R0.350	R0.125	R0.200	R0.250
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.125	R0.100	R0.175	R0.063	R0.100	R0.125
Pump Capacity (l/s) – Master Plan						
Motors kW	Unknown	5.5kW	23kW (x2)	Unknown	Unknown	Unknown

EXISTING WASTE WATER TREATMENT INFRASTRUCTURE

BEAUFORT WEST WWTW: The Beaufort West WWTW is an activated sludge system, with a hydraulic design capacity of 4.659 Ml/day. The 2021 Green Drop Score for Beaufort West was 64% and the CRR of the plant increased from 47.1% in 2022 to 64.7% in 2023.

Beaufort West WWTW previously had a combination of biological trickling filters and an activated sludge process plant. The biological trickling filters are however not in use anymore. The inlet pumping station is equipped with two Archimedeian screw lifting pumps (Busy with refurbishment of one). Furthermore the inlet works consist of a single front rake mechanical screen and one pista degritter (Currently not operational and no standby functionality). Screenings are burnt in an incinerator on-site (Not operational, diesel supply pipe was vandalised).

From the inlet works, the screened effluent gravitates to a sump from where it is pumped to the distribution tower, which currently divert all flow to the activated sludge reactor (ASR, MLE process). The three primary sedimentation tanks, the two biological trickling filters and the humus tanks are not in use anymore. The ASR is served by four surface aerators. The mixed liquor from the ASR is settled in a secondary clarifier. The flow from the SST is disinfected, before it is discharge to the maturation river. The chlorinated effluent is used for the wastewater reclamation plant and a maturation structure serve as a combined chlorine contact channel and maturation facility. Both the inflow to the WWTW and the inflow to the reclamation plant are currently measured. Sludge from the ASR secondary clarifier is drawn off to the sludge ponds on site.



Inlet Structure (Mechanical screen)



Sludge Pumps (Only one operational)



Bio Reactor



Secondary Settling Tank



Disinfection building (Chlorine)



Sludge drying beds

MERWEVILLE WWTW: The Merweville WWTW is an oxidation pond system with a hydraulic design capacity of 0.111 Ml/day. The 2021 Green Drop Score for the Merweville was 64% and the CRR of the plant increased from 35.3% in 2022 to 91.7% in 2023.

All wastewater gravitates to the oxidation pond system, consisting of Primary, Secondary, Tertiary and Evaporation ponds. The final effluent PS was vandalised. Currently there is no discharge from the ponds. The WWTW is in a very poor condition (May 2024) and the operator mentioned that the pipes between the different ponds are also blocked. The plant is also not adequately fenced to prevent unauthorised access. The final effluent PS was vandalised and the potable water JoJo tanks are drifting in one of the two primary ponds. The terrain is not adequately maintained, due to a shortage of personnel.

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 3: WATER SERVICES ASSET MANAGEMENT



Inlet Structure



One of the two unlined Primary Ponds



Secondary Pond (x1)



Tertiary Ponds (x2)



Final Irrigation Pond (x1)



Final Effluent Pump Station (Vandalised)

NELSPOORT WWTW: The Nelspoort WWTW is an oxidation pond system with a hydraulic design capacity of 0.240 Ml/day and an organic design capacity of 176 kg COD/day. The 2021 Green Drop Score for Nelspoort was 56% and the CRR of the plant increased from 35.3% in 2022 to 93.3% in 2023.

All the wastewater from the town gravitates to a central sewer pump station that lifts all flows to the WWTW. The pump station is equipped with manual screening facilities. The length of the network combined with the depth and size of the sump causes long retention times, resulting in anaerobic conditions occurring from time to time. During such periods hydrogen sulphide and even methane gasses are released and build up in the sump (heavier than air), resulting in dangerous and potentially fatal conditions for operators cleaning the sump.

The WWTW consists of an inlet structure, with a 20mm hand raked screen and two grit channels, three lined primary ponds, one secondary unlined pond, two tertiary ponds and a new evaporation pond. The fence of the plant was vandalised in some places and the current fence is not adequate to prevent unauthorised access.



Inlet Structure with grit channels



Lined Primary Ponds (x3)



Secondary Pond (x1)



Tertiary Ponds No. 1



Tertiary Pond No. 2



Evaporation Pond (x1)

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 3: WATER SERVICES ASSET MANAGEMENT

MURRAYSBURG WWTW: The Murraysburg WWTW is an oxidation pond system, with a hydraulic design capacity of 0.500 Ml/day and an organic design capacity of 280 kg COD/day. The 2021 Green Drop Score for Murraysburg was 16% and the CRR of the plant increased from 52.9% in 2022 to 80.0% in 2023. The plant is not adequately fenced to prevent unauthorised access.



Anaerobic Pond No. 1



Anaerobic Pond No. 2



Primary Pond (x1)



Secondary Pond (x2)



Tertiary Pond (x3)



Irrigation Pond (x1)

EXISTING WASTE WATER TREATMENT INFRASTRUCTURE

Table 3.15: Existing waste water treatment works infrastructure

3.1 General information	WWTW 1	WWTW 2	WWTW 3	WWTW 4
Scheme Name	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	BW0301	BW0302	BW0303	BW0304
WWTW Name	Beaufort West WWTW	Merweville WWTW	Nelspoort WWTW	Murraysburg WWTW
WWTW Number	BW0301001	BW0302001	BW0303001	BW0304001
Description	Beaufort West WWTW	Merweville WWTW	Nelspoort WWTW	Murraysburg WWTW
Category (Scheme Based, NSB Social Services, NSB Mines and Industries, NSB Small Works, Septic Tanks)	Scheme Based	Scheme Based	Scheme Based	Scheme Based
WWTW Classification (A, B, C, D, E, Unknown)	C	E	E	Unknown
WWTW Status (Existing / Future)	Existing	Existing	Existing	Existing
WWTW Class (Regional / Internal)	Internal	Internal	Internal	Internal
Main Type of Process (Advanced, Activated Sludge, Bio-filter, None, Oxidation ponds lined, Oxidation ponds unlined, Package Plant, Maturation Ponds)	Activated Sludge	Oxidation Ponds Unlined	Oxidation Ponds Lined	Oxidation Ponds Unlined
Asset Register ID (Included in Asset Register)	Unknown	Unknown	Unknown	Unknown
Proper Asset Management Processes and Plans in place (Yes / No)	Yes	Yes	Yes	Yes
Is there a plan in place to manage untreated effluent? (Yes / No)	Yes	Yes	Yes	Yes
Down Stream User – Agricultural	Yes	No	No	No
Down Stream User – Recreational	No	No	No	No
Down Stream User – Industrial	No	No	No	No
Down Stream User – Domestic	No	No	No	No
Down Stream User – Mining	No	No	No	No
Down Stream User - None	No	Yes	Yes	Yes
Is there any Down Stream Objectives	No	No	No	No
Down Stream Objectives achieved (%)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Ecological Status of Down Stream Receiving Body (Good, Fair, Bad)	Fair	Not Applicable	Not Applicable	Not Applicable
3.2 Operation				
O&M Occurrence (Regular, Periodic, Sporadic, None, Occasional, When needed)	Sporadic	Sporadic	Sporadic	Sporadic
Incidents, including security problems (Regular, Periodic, Sporadic,	Sporadic	Sporadic	Sporadic	Sporadic

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
TOPIC 3: WATER SERVICES ASSET MANAGEMENT

Table 3.15: Existing waste water treatment works infrastructure

3.1 General information	WWTW 1	WWTW 2	WWTW 3	WWTW 4
None)				
Safety Inspection performed (R: Regular, P: Periodic, S: Sporadic, N: None)	Regular	Regular	Regular	Regular
Average operating hours per day	24	24	24	24
Green Drop Status (Yes / No)	No	No	No	No
Green Drop Score 2021 (%)	64%	64%	56%	16%
Incident Management Protocol in place (Yes / No)	No	No	No	No
Proper Process Control in place (Yes / No)	No	No	No	No
Failure Response Management in place (Yes / No)	No	No	No	No
Waste Water Monitoring Programme in place - Compliance and Operational (Yes / No)	No	No	No	No
How often is effluent quality monitored (Daily, Weekly, Monthly, Annually, Never)	Never	Never	Never	Never
How often is influent quality monitored (Daily, Weekly, Monthly, Annually, Never)	Never	Never	Never	Never
Sample Analysis Credibility (%)	-	-	-	-
Compliance Monitoring: % of tests performed as required by General Limits / Special Limits / License Requirements (Average % over previous 12 months)	Unknown	Unknown	Unknown	Unknown
Operational Monitoring: % of tests performed as required by General Limits / Special Limits / License Requirements (Average % over previous 12 months)	Unknown	Unknown	Unknown	Unknown
Chemical (Results of tests performed. Average % sample failure over previous 12 months)	Unknown	Unknown	Unknown	Unknown
Microbiological (Results of tests performed. Average % sample failure over previous 12 months)	Unknown	Unknown	Unknown	Unknown
Physical Compliance (Results of tests performed. Average % sample failure over previous 12 months)	Unknown	Unknown	Unknown	Unknown
Authorised Effluent Release (ML/day)		0.000	0.000	0.000
Type of Authorisation (General, Exemption Permit, Permit, Licence, No Licence, Undetermined)	Licence	GA	GA	GA
Authorisation Compliance (Yes / No)	Yes	Yes	Yes	Yes
Effluent controlled (%)	100%	100%	100%	100%
Solid waste disposal (m³/day)	Unknown	Unknown	Unknown	Unknown
Where is solid waste disposed of (Registered waste site, Irrigation, Sludge trench on site, Water Course, Other)	Incinerator	Sludge trench on site	Sludge trench on site	Sludge trench on site
Sludge produced (dry tonnes per day)	Unknown	0	0	0
% Of time that effluent is chlorinated	100%	0%	0%	0%
3.3 Functionality Observation				
Refurbishment needs (High, Medium, Low, None)	High	High	Low	Low
General physical condition (Dysfunctional, Operational, Prime Condition, Vandalised, Destitute)	Operational	Operational	Operational	Operational
Total refurbishment needs %	13.3%	96.0%	20.0%	3%
Total refurbishment needs cost for next 15 years (RM)	R12.424	R4.800	R1.500	R0.300
Refurbishment cost for the next 5 years (RM)	R0.000	R4.500	R0.500	R0.000
Refurbishment cost for the next 6 - 10 years (RM)	R6.212	R0.000	R0.500	R0.150
Refurbishment cost for the next 11 - 15 years (RM)	R6.212	R0.300	R0.500	R0.150
Total replacement needs %	6.7%	14.0%	13.3%	1%
Total replacement needs cost for next 15 years (RM)	R6.212	R0.700	R1.000	R0.100
Replacement cost for the next 5 years (RM)	R0.000	R0.500	R0.500	R0.000
Replacement cost for the next 6 - 10 years (RM)	R3.106	R0.000	R0.250	R0.050
Replacement cost for the next 11 - 15 years (RM)	R3.106	R0.200	R0.250	R0.050
Total new development cost for next 15 years (RM)	R49.800	R0.000	R0.000	R10.000
New development cost for the next 5 years (RM)	R49.800	R0.000	R0.000	R10.000
New development cost for the next 6 - 10 years (RM)	R0.000	R0.000	R0.000	R0.000
New development cost for the next 11 - 15 years (RM)	R0.000	R0.000	R0.000	R0.000
Number of Permanent Staff on site	2	0	0	0
Compliance to Supervisory staff requirements - Green Drop (Yes / No)	Yes	Yes	Yes	Yes
Compliance to Process Control staff requirements - Green Drop (Yes / No)	No	No	No	No
Compliance to O&M staff requirements - Green Drop (Yes / No)	Yes	Yes	Yes	Yes
Sufficient Management Capacity and Efficiency (Yes / No)	Yes	Yes	Yes	Yes
% Where of the WSA Self is the Current Owner	100.0%	100.0%	100.0%	100.0%
% Where of the WSA Self is the Current Operator	100.0%	100.0%	100.0%	100.0%

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
TOPIC 3: WATER SERVICES ASSET MANAGEMENT

Table 3.15: Existing waste water treatment works infrastructure

3.1 General information	WWTW 1	WWTW 2	WWTW 3	WWTW 4
3.4 Asset Assessment Spectrum				
Date of Commission (Start to Operate)	1960	2001	1974	Unknown
Year of last upgrade	2005	2001	2005	Unknown
Total Expected Lifespan, RUL (Short, Medium, Long)	Medium	Short	Long	Long
Estimated replacement value (RM): CRC	R93.180	R5.000	R7.500	R10.000
Already reached Useful Life (Yes/No)	No	No	No	No
Critical elements of refurbishment (Next five years)	Raw water PS, degritter, aerators, recycle and sludge pumps	Fence, Flow Meter, Final effluent PS, Terrain	Fence	Fence
Date of assessment	June 2024	June 2024	June 2024	June 2024
Assessment done by	Water and Wastewater Engineering	Water and Wastewater Engineering	Water and Wastewater Engineering	Water and Wastewater Engineering
Comments	Plant to be upgraded	Plant in poor condition	New fence to be installed	New fence to be installed
Annual Operating Cost (RM) (1.0% of CRC)	R0.932	R0.050	R0.075	R0.100
Annual Maintenance Cost (RM) (0.5% of CRC)	R0.466	R0.025	R0.038	R0.050
Total volume of water received and treated per day for period July 2022 to June 2023 (MI/day)	4.090	0.071	0.180	0.536
Discharge volume for period July 2023 to June 2024 (MI/day)	0.992	0.000	0.000	0.000
Volume of effluent recycled for period July 2023 to June 2024 (MI/day)	2.113	0.000	0.000	Unknown
Capacity Sufficient (Yes / No)	No	Yes	Yes	No
Hydraulic Design Capacity (MI/day)	4.659	0.111	0.240	0.500
Hydraulic capacity in use (%)	87.8%	64.0%	75.0%	107.2%
Organic Design Capacity (kg COD/day)	Unknown	Unknown	176	280
Organic capacity in use (%)	Unknown	Unknown	Unknown	Unknown

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
TOPIC 3: WATER SERVICES ASSET MANAGEMENT

3.5 WATER AND SANITATION SCHEMES

3.5.1 Water Schemes

Table 3.5.1.1: Existing water schemes in Beaufort West Municipality's Management Area				
Water Schemes	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Scheme Name	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	BW0301	BW0302	BW0303	BW0304
Scheme ID	BW0301	BW0302	BW0303	BW0304
Water Services Authority Name	Beaufort West Municipality			
Blue Drop Compliance Score (2023)	56.90%	34.85%	30.65%	26.65%
Classification (Regional / Internal Bulk)	Internal	Internal	Internal	Internal
Status (Existing / Future)	Existing	Existing	Existing	Existing
Owner Type (DM, LM, Water Board, Agencies, Private)	LM	LM	LM	LM
Owner Name	Beaufort West Municipality			
Refurbishment Needs Priority (High, Medium, Low, None)	High	Low	Low	Medium
O&M Needs Priority (High, Medium, Low, None)	High	Low	Low	Medium
Requirement Type (Upgrade, Refurbishment, O&M, Replace, Resource, Combination, None)	Combination	Combination	Combination	Combination
How many illegal connections to date?	Unknown	Unknown	Unknown	Unknown
Already reached Useful Life (Yes/No)	No	No	No	No
Blue Drop Status 2022 (Yes/No)	No	No	No	No
Number of Sources: Groundwater	47	9	3	4
Reclamation	1	0	0	0
Number of Sources: Surface Water	3	0	1	0
IWA WATER BALANCE				
See Tables included under Section 5.2				
FUTURE SOURCES (Next 15 years)				
Additional source available no. of: Groundwater	19 *	0	0	3
Additional source available no. of: Surface water	0	0	0	0
Additional source available no. of: External sources Bulk Purchase	0	0	0	0
Additional source available potential volume: Groundwater Ml/a	1 812 *	0	0	38.106
Additional source available potential volume: Surface water Ml/a	0	0	0	0
Additional source available potential volume: External Sources Bulk Purchase Ml/a	0	0	0	0

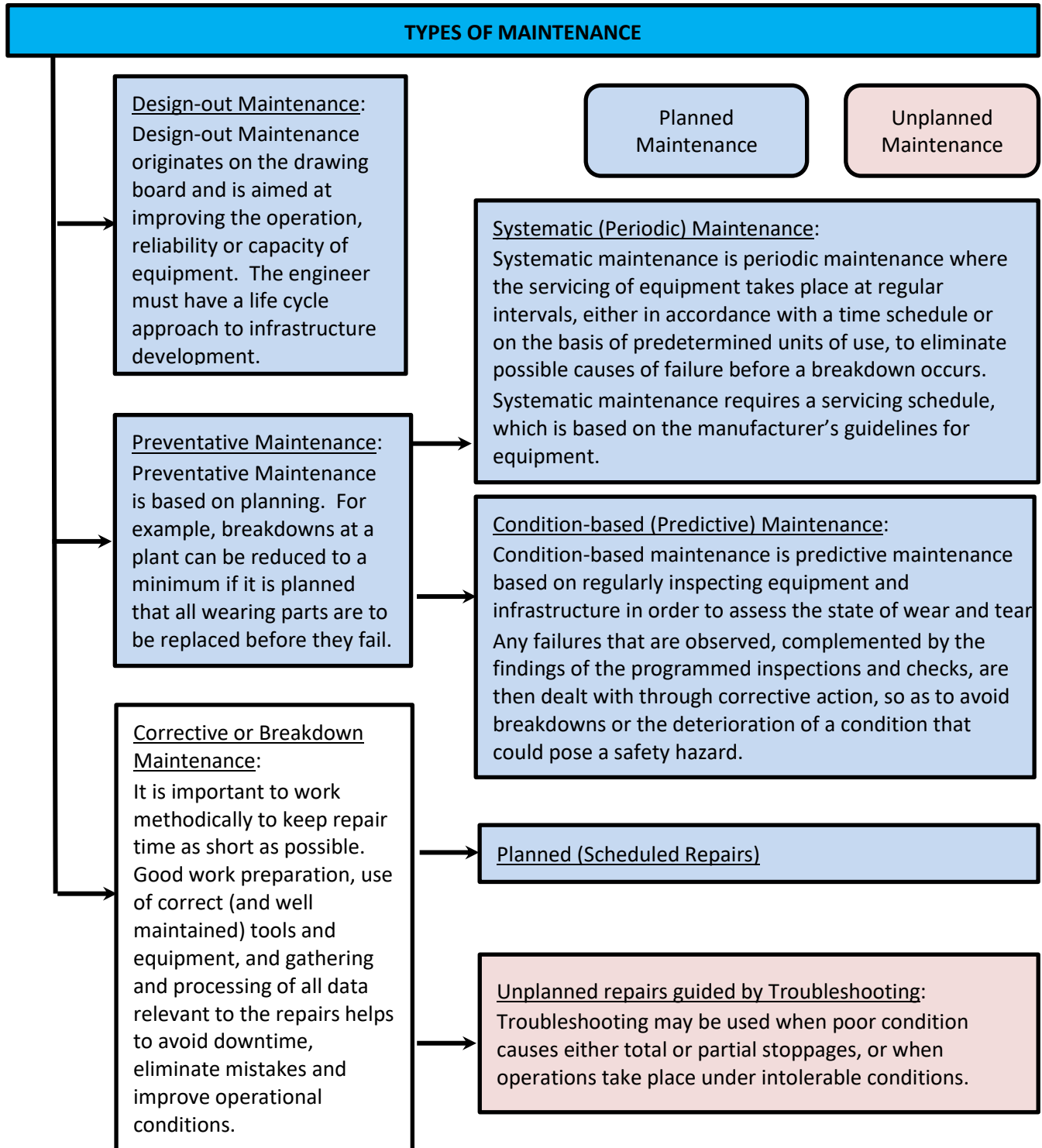
Note: * Current non-operational and vandalised boreholes.

3.5.2 Sanitation Schemes

Table 3.5.2.1: Existing sanitation schemes in Beaufort West Municipality's Management Area				
Sanitation Schemes	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Scheme Name	Beaufort West	Merweville	Nelspoort	Murraysburg
Scheme Number	BW0301	BW0302	BW0303	BW0304
Scheme ID	BW0301	BW0302	BW0303	BW0304
Water Services Authority Name	Beaufort West Municipality			
Classification (Regional / Internal Bulk)	Internal	Internal	Internal	Internal
Status (Existing Future)	Existing	Existing	Existing	Existing
Owner Type (DM, LM, Water Board, Agencies, Private)	LM	LM	LM	LM
Owner Name	Beaufort West Municipality			
Refurbishment Needs Priority (High, Medium, Low, None)	High	Low	Low	Medium
O&M Needs Priority (High, Medium, Low, None)	High	Low	Low	Medium
Requirement Type (Upgrade, Refurbishment, O&M, Replace, Resource, Combination, None)	Combination	Combination	Combination	Combination
How many illegal connections to date?	Unknown	Unknown	Unknown	Unknown
Already reached Useful Life (Yes/No)	No	No	No	No
Green Drop Status 2021 (Yes/No)	No	No	No	No
Green Drop Compliance Score 2021	64%	64%	56%	16%

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. Maintenance may be divided into planned and unplanned maintenance. The section below gives an overview of the different types of maintenance.



WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
TOPIC 4: WATER SERVICES OPERATION AND MAINTENANCE

4.1 OPERATION AND MAINTENANCE PLAN

The focus on improvement of levels of service through creating new infrastructure at great cost results often in overlooking the importance of the development and implementation of sound asset management practices. Through the assessment of this important function WSAs are enabled to identify areas of concern and it should form the base for the development of an Asset Management Plan as discussed in Topic 3. Neglecting the implementation of best practice operational and maintenance procedures would result in ineffective service delivery and shortened life span expectancy of assets. Additional capital expenditure for refurbishment or replacement will eventually be unavoidable.

The two important aspects of asset management under consideration are:

- Operations
- Maintenance

Table 4.1.1: Definitions for Operational and Maintenance Assessments and Plans

Element Description		Assessment Criteria
4.2 Resources	Staff	<ul style="list-style-type: none"> • Sufficient staff numbers • Competency level of staff at all levels • Level of service provided by staff • Empowerment and training: <ul style="list-style-type: none"> ○ Adequately trained for position ○ Safety regulation ○ Commitment • Responsibility allocation (organisational structure) and acceptance thereof
	External resources	<ul style="list-style-type: none"> • Need for external resource providers • Competency level and value for money • Management and control over these providers
	Spare Parts	<ul style="list-style-type: none"> • Adequate materials provisioning • Store management <ul style="list-style-type: none"> ○ Sufficient stock kept ○ Stock control ○ Delivery time
	Tools & equipment	<ul style="list-style-type: none"> • Adequate tools and equipment provided • Control and maintenance
	Budget	<ul style="list-style-type: none"> • Adequate budget provided • Budget control • Identification and documentation of needs • Budget preparation and motivation

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW
TOPIC 4: WATER SERVICES OPERATION AND MAINTENANCE

Table 4.1.1: Definitions for Operational and Maintenance Assessments and Plans

Element Description		Assessment Criteria
4.3 Information	Manuals	<ul style="list-style-type: none"> Existence of manuals (operation / maintenance or manufacturer) Record keeping / safekeeping and control Utilisation of manuals by staff
	Asset register	<ul style="list-style-type: none"> Existence of an asset register Maintenance / updating of asset register Accessibility of information Control over assets Stock taking
	As-built information	<ul style="list-style-type: none"> Existence of as-built drawings Existence of important reports e.g. design reports etc. Record keeping / safekeeping and control Accessibility of information Updating of records
	Tools and Equipment	<ul style="list-style-type: none"> Existence of information on tools and equipment Record keeping / safekeeping and control Accessibility of information
	Contingency and safety plan	<ul style="list-style-type: none"> Compliance to safety requirements Safety equipment and maintenance thereof Existence of safety plan where required Existence of contingency plan where required
4.4 Activity Control and Management	Procedures	<ul style="list-style-type: none"> Existence of procedures for all activities Existence of policies – standardisation, quality, operational and maintenance, etc Correctness of procedures – if in place
	Record keeping	<ul style="list-style-type: none"> Existence of record keeping system Process of data Actions activated
	Quality control	<ul style="list-style-type: none"> Quality management plan Quality assurance Quality control <ul style="list-style-type: none"> Inspections Control charts Trend analysis Process adjustment and rework Quality improvement
	Risk management	<ul style="list-style-type: none"> Risk management planning Risk identification Risk probability and impact assessment Risk response planning Risk monitoring and control
	Reporting	<ul style="list-style-type: none"> Production and activity reporting <ul style="list-style-type: none"> Completeness Evaluation and action activation Management reporting

WSDP: ADMINISTRATION, INFORMATION AND COMPREHENSIVE OVERVIEW

TOPIC 4: WATER SERVICES OPERATION AND MAINTENANCE

Table 4.1.1: Definitions for Operational and Maintenance Assessments and Plans

Element Description	Assessment Criteria
	<ul style="list-style-type: none"> ○ Completeness ○ Evaluation and action activation ● Performance monitoring

Status Quo – The current situation on each component of the water distribution system was evaluated / assessed in terms of the previous list. The following criteria are applicable:

- N/R - Not required
- Z - Zero compliance (if there is no capacity / resources or information)
- 1 - Below minimum requirement
- 2 - Minimum requirement
- 3 - Above minimum requirement

“Minimum requirement” is considered to be a good judgement of what is required to ensure proper operation and maintenance that could be maintained given the specific conditions and infrastructure.

Impact – Secondly the impact on having access to the resources / information or capability listed should be assessed in terms of the importance for providing operational and maintenance services on each component.

Criteria applicable is as follows: C – Critical, M – Medium, L – Low and No - No impact

Operation and Maintenance Plan	Yes / No
Is there an Operation and Maintenance Plan?	Yes

Beaufort West Municipality’s key focus is on the optimal operation and maintenance of their water and sewer networks, which will have minimum breakdowns when it is:

- Correctly designed and constructed.
- Properly operated and maintained
- Correctly used by the customers
- Kept clean and protected from pollution

Pipe bursts and other serious damage to pipes immediately interrupts services to the affected area and is addressed by Beaufort West Municipality within the specified time period. O&M is a continuous process for Beaufort West 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. Beaufort West Municipality’s O&M Plan depends on a range of factors such as the age and condition of the water supply system, requirements of the Municipality and DWS as the regulating authority, the availability of staff, plant, equipment, spares, budget and other resources.

Beaufort West 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 malfunctioning equipment, vandalism, emergency situations, etc. This allows Beaufort West Municipality to be able to assess service breakdowns and re-allocate staff and resources to do unscheduled repairs, and then return to the regular and scheduled O&M activities. The technical personnel ensure that sufficient repair materials, consumables and back-up equipment are available in the stores.

COMPONENT		4.1 WATER SERVICES OPERATION AND MAINTENANCE: OPERATIONAL ASSESSMENT																											
		4.2 RESOURCES										4.3 INFORMATION								4.4 ACTIVITY CONTROL AND MANAGEMENT									
		Staff		External resources		Spare Parts		Tools & Equipment		Budget		Manuals Available		Asset Register		As-Built information		Contingency & Safety Plan		Policies & Procedures		Record keeping in place		Quality control procedures established		Risk Management		Reporting (data analysis & report generation procedures established)	
1	EXISTING GROUND WATER INFRASTRUCTURE	2	C	N/R	No	1	C	2	L	1	C	2	C	2	M/H	2	M/H	1	C	3	C	3	C	3	C	1	C	3	C
2	EXISTING SURFACE WATER INFRASTRUCTURE	2	M/H	N/R	No	2	M/H	2	L	2	M/H	2	L	2	L	2	L	1	M/H	2	M/H	3	M/H	3	C	1	C	2	M/H
3	EXISTING WASTE WATER TREATMENT WORKS INFRASTRUCTURE	2	C	N/R	No	1	M/H	2	L	1	C	2	M/H	2	M/H	2	M/H	1	C	2	C	2	C	3	C	1	C	2	C
4	EXISTING WATER TREATMENT WORKS INFRASTRUCTURE	2	C	N/R	No	1	M/H	2	L	1	C	2	M/H	2	M/H	2	M/H	1	C	2	C	2	C	3	C	1	C	2	C
5	EXISTING PUMP STATION INFRASTRUCTURE	2	C	N/R	No	2	C	2	L	2	C	1	C	2	M/H	2	M/H	1	C	2	M/H	2	C	2	M/H	2	M/H	2	C
6	EXISTING BULK PIPELINE INFRASTRUCTURE	2	M/H	N/R	No	2	M/H	2	L	2	M/H	1	L	2	L	2	M/H	1	M/H	2	M/H	2	L	2	M/H	2	M/H	2	M/H
7	EXISTING RESERVOIR & WATER TOWER INFRASTRUCTURE	2	M/H	N/R	No	2	M/H	2	L	2	C	1	M/H	2	M/H	2	M/H	1	M/H	2	M/H	2	L	2	C	2	C	2	M/H
8	EXISTING RETICULATION INFRASTRUCTURE	2	C	N/R	No	2	C	2	L	2	C	1	L	2	L	2	M/H	1	M/H	2	M/H	2	M/H	2	C	2	M/H	2	C

Legend:

STATUS QUO:

- N/R - Not required
- Z - Zero compliance
- 1 - Below minimum requirement
- 2 - Minimum basic requirement
- 3 - Above minimum requirement

IMPACT:

- C - Critical
- M - Meduim / High
- L - Low
- No - No impact

STATUS QUO:
N/R - Not required

IMPACT:
C - Critical
M - Medium / High
L - Low
No - No impact

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4.6

5. CONSERVATION AND DEMAND MANAGEMENT

Promoting the efficient use of water should be a driver of the WSDP process, particularly since South Africa is a water scarce country. Water required as a result of the service level targets may exceed water availability. There are two options in this case, either build new infrastructure (which is very costly), or institute a WC/WDM strategy, or a combination of the two. The need to implement WC/WDM is not limited to water resource requirements. The implementation of WC/WDM can have a significant impact in ensuring effective, affordable and sustainable water services with social, economic and environmental benefits.

Key WC/WDM issues, as included in the new NWRS 2, are as follows:

- The National Water Act recognises the pivotal role of WC/WDM in water resource management, with the objective of enabling all user sectors to gain equitable access to the desired quantity, quality and reliability of water.
- WC/WDM is the foremost Reconciliation Strategy to balance water supply and demand.
- WC/WDM can be implemented in a shorter time than new infrastructure development and can significantly postpone the need for new water resources infrastructure and new WTWs and WWTWs.
- WC/WDM is more cost effective than new water infrastructure development.
- WC/WDM is important in the light of climate change when more frequent droughts and floods will impact adversely on the availability of water.

A WC/WDM Strategy is a fundamental step in promoting water use efficiency and is consistent with the National Water Act, which emphasises effective management of water resources.

WC/WDM Strategy

The Directorate Water Conservation has prepared comprehensive guidelines in this regard, including a model strategy for WSAs. The WC/WDM strategy for WSAs also needs to form part of the regional WC/WDM strategy. It is important to recognise that although WSAs are ultimately at the interface of WC/WDM initiatives the needs and objectives of the strategy need to be looked at from various perspectives including consumers, municipalities, bulk suppliers, catchment management agencies and the national perspective.

The purpose of the WC/WDM model strategies is to enhance the management of water services in order to achieve sustainable, efficient and 100 per cent affordable services to all consumers. The aim of the model strategies is to influence all functions and business plans related to water services. The emphasis of the model strategies is to influence water services to incorporate social, environmental, economic and technical considerations.

Many of the elements of such a strategy are part of the WSDP requirements. However, particularly the larger, more capacitated WSAs are encouraged to produce specific strategies based on the above-mentioned model strategy. Should this be the case, the WSA should include their strategy in the Master Plan Module of the WSDP.

The implementation of a WC/WDM strategy does not only refer to measures that reduce water wastage and inefficient use, but also include measures to effectively manage and sustain efficiency targets. Some of the priority requirements are to install systems that measure and identify certain key parameters such as minimum night flows and systems to enable detailed and regular water audits and water balances.

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Depending on the circumstances, the initial focus of reducing demand could be the reduction in water losses and a reduction on the wastage and inefficient use of NRW consumption (i.e. the reduction of involuntary water usage by non-paying consumers). However, this does not mean that Beaufort West Municipality should not target paying consumers and should also consider implementing other activities to reduce water consumption.

Beaufort West Municipality will continue with the implementation of their various WC/WDM measures. The purpose of the WC/WDM Strategy and other WC/WDM activities are to further conserve and protect available resources and to ensure the effective utilisation of the available water resources. The average annual growth percentage in total raw water requirements for Beaufort West Municipality over the period 2013/2014 to 2023/2024 (last ten years) was 5.03 %/a.

The overall percentage of NRW for the 2023/2024 financial year was extremely high at 77.74% (System Input – Revenue Water) and the percentage of Water losses was 77.54% (System Input – Authorised Consumption). It is not possible to accurately calculate the NRW and Water Losses for Beaufort West Municipality, as indicated under Section 5.2.

DWS's scorecard for assessing the potential for WC/WDM efforts, as completed for Beaufort West Municipality, is included in Annexure D. 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 Beaufort West Municipality is 62 out of 100 suggesting that there is sufficient areas that can be further improved with regard to the implementation of specific WC/WDM activities.**

5.1 WATER RESOURCE MANAGEMENT

Water resource management interventions should deal with interventions such as the removal of invading plants, artificial recharge of aquifers, and rehabilitation of wetlands and clean up campaigns of rivers. Total figures for NRW are reported as part of the water balance, however activities to reduce the percentage of NRW and water inefficiencies are unpacked in this section.

Losses (Apparent and Real) is defined as the difference between the measured volumes of water put into the supply system and the total authorised consumption. Internal plumbing leaks are leaks past the consumer meter. Such leaks can be assessed through sample surveys of consumer households and by analysing the minimum night flow of bulk meters.

5.1.1 Reducing Unaccounted for Water and Water Inefficiencies

It is not possible at this stage to differentiate between the water loss through reticulation leaks, illegal connections, un-metered connections and internal plumbing leaks. Beaufort West Municipality's commitment is to ensure that all the connections, providing an uncontrolled volume of water, are metered. Detail IWA water balance models for each of the water distribution systems are included in Annexure C. Leakage Benchmarking Sheets for each of the systems are also included in Annexure D.

Table 5.1.1.1: Resources available to reduce water losses and water inefficiencies	
Activities	Resources Available
Night flow metering	Partially
Day flow metering	Yes
Reticulation leaks	Yes
Illegal connections	Partially
Un-metered connections	Partially

5.1.1.1 Night flow metering

Beaufort West Municipality previously implemented specific pressure management projects in Beaufort West. The distribution system in Beaufort West consists of various water management zones. The bulk water meters were supplied with data loggers to log both the flow and pressure, in order to establish the Minimum Night Flow (MNF) per zone. The difference between the theoretical and actual MNF is called “Excess night flow” and gives a good estimate of the physical water leakage in an area. The higher the excess flow the higher the expected water leakage. The monitoring of the MNFs also enabled Beaufort West Municipality to identify areas for the implementation of pressure management and to monitor the savings achieved.

The outflows for most of the reservoirs are further logged through the Municipality’s Telemetry System and the night flows are therefore also monitored to some extent at each of the reservoirs.

5.1.1.2 Day flow metering

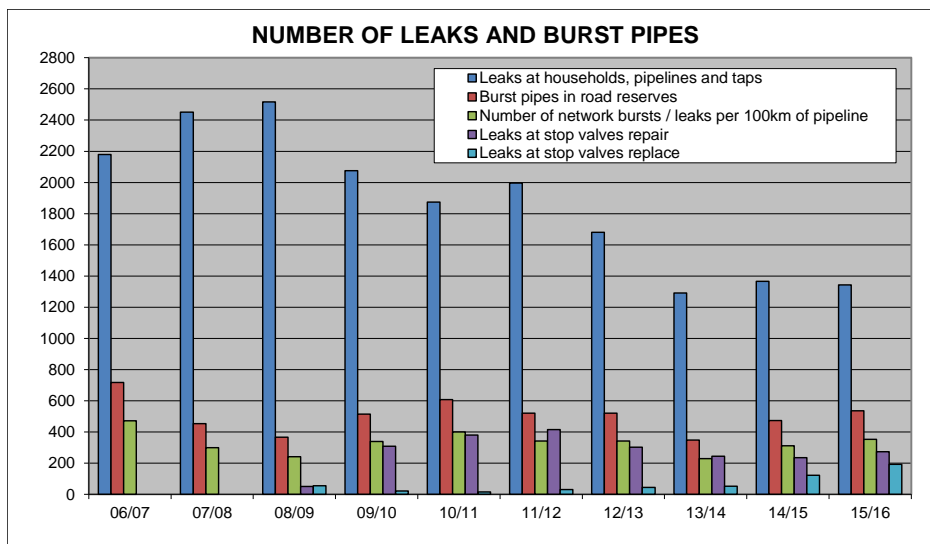
All surface and groundwater sources are supplied with bulk water meters, which are read monthly. Comprehensive water management zones were also established in Beaufort West as part of the pressure management initiatives, which will enable the Municipality to better monitor and manage their future NRW.

The comprehensive set of bulk water meters enables Beaufort West Municipality to monitor their NRW and water losses accurately and to identify specific areas for the implementation of WDM activities in order to address the specific problems causing high NRW and water losses.

All new water connections are provided with water meters, once a customer apply for a new water connection. Beaufort West Municipality try to ensure that all water connections used for irrigation purposes at parks and public ablution facilities are also provided with water meters, in order to ensure that all connections are metered. Pressure management zones are in place, which enable the Municipality to better monitor and manage their NRW and water losses.

5.1.1.3 Reticulation leaks

Leaks on the reticulation systems are repaired as soon as it is noticed or reported. Standby teams are also available over weekends and after hours. The focus is thus on visible leaks. Leak repair has not yet progressed to the point of active leak detection. The following graph gives an overview of the number of leaks and burst pipes reported and repaired over the various financial years.



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Beaufort West Municipality continues with the implementation of their pipeline replacement programme for all the priority areas with old reticulation networks and frequent pipe failures. **It can be noted from the above graph that there was a drastic drop in the number of "leaks at households, pipelines and taps" over the last number of years.** It is important for Beaufort West Municipality to continue with the implementation of their Leakage Management Programme (Measure the volume of water that is lost, Identify and quantify losses, Conduct operational and network audits, Improve performance: network upgrade, design actions plans and Sustain performance with good staffing / organization structures).

Zones were also identified through the night flow analysis with higher than expected leakages and PRVs were installed for these zones to reduce the pressures.

5.1.1.4 Un-metered connections

All un-metered consumer connections are immediately supplied with water meters and formalised once noticed by Beaufort West Municipality.

Beaufort West Municipality's treasury data was analysed by GLS, during the 2015/2016 financial year, and the information with regard to the metering and billing of consumers in Beaufort West Municipality's Management Area is summarised in the two tables below.

Table 5.1.1.4.1: Summary of Beaufort West Municipality's cadastral linked with the treasury data					
Number of Erven	Linked to Treasury Data Set		Developed erven without meter		Erven with a water meter, but demand < 0.1 kl/day
	Number	%	Number	%	
6 041	6 041	100%	3 725	61.7%	2 938 (48.6%)

Table 5.1.1.4.2: Summary of Beaufort West Municipality's treasury data linked with GIS							
Number of Records	Number of unlinked Records	Number of Stands	Stands linked to GIS		Number of Meters	Meters linked to GIS	
			Number	%		Number	%
6 041	146	6 041	5 895	98%	5 805	5 644	98%

It is important that a new Swift Analysis be done for Beaufort West Municipality in order to identify the unmetered erven and the erven with a meter, but with zero consumption.

5.1.2 Leak and Meter Repair Programmes

Beaufort West Municipality monitors the water usage of their consumers on a monthly basis through their billed metered consumption data.

In potable water distribution systems, the main component of water losses which is of concern is Water Losses, which can be categorised into real and apparent losses. Real losses include leakage, pipe bursts, flushing, overflows, etc., while apparent losses are inaccurate measurements and the inaccurate reading of meters. It is not possible to effectively manage real losses until steps have been taken to manage the non-physical losses, as inaccurate measurements create a "garbage in – garbage out" scenario, and can result incorrect actions being taken to curb the real losses.

Meter error is often thought to be the main cause of apparent losses (Often referred to as non-physical or paper losses) in a water system and can be due to wear and tear, incorrect meter installation, lack of maintenance, incorrect meter type or incorrect sizing. Another contribution to apparent losses in South Africa and other developing countries is theft or illegal connections. In addition to blatant theft, many accounts go unnoticed in the system.

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The table below gives a summary of the suggested apparent loss percentages for a typical system.

Table 5.1.2.1: Suggested apparent loss percentages for a typical distribution system		
Meter age and accuracy	Good Water Quality	Poor Water Quality
Poor > 10 years	8%	10%
Average 5 – 10 years	4%	8%
Good < 5 years	2%	4%
Illegal connections		
Very high		10%
High		8%
Average		6%
Low		4%
Very low		2%
Data Transfer		
Very poor		9%
Poor		7%
Average		5%
Good		3%
Very good		1%

Table 5.1.2.2: Resources available to perform leak and meter repair programmes	
Activities	Resources Available
Leak repair assistance programme	No
Retro-fitting of water inefficient toilets	No
Meter repair programme	Partially

5.1.2.1 Leak Repair Assistance Programme

WSAs should prioritise assistance programmes in the low income and informal areas. Such assistance programmes should include a number of measures that will ensure efficient water usage and build trust between the consumers and the WSA. Houses in the low income and informal areas are not always adequately maintained, which often result in significant plumbing leaks and the consumers do not always have the funds or knowledge to fix the leaks themselves or to purchase water efficient devices.

Beaufort West Municipality is not yet focusing on Assistance Programmes in the low income areas and properties occupied or owned by indigent households, due to a lack of human and financial resources to implement these Assistance Programmes.

5.1.2.2 Retro-fitting of Water Inefficient Toilets

It is a common problem in South Africa that many buildings have high internal plumbing leakage and that water in-efficient devices are still being used in the ablution facilities. One of the key contributors to water wastage in public buildings is tip-tray urinals. These urinals flush continuously and can be retrofitted with a push button flush mechanisms, which will only flush when activated by a user.

The municipal buildings were provided with dry systems, but no further progress has been made with the installation of water efficient devices at the schools. In order to reduce the water demand and the percentage NRW in the future it is important for the Municipality to raise awareness regarding conservation products and the installation of these products.

Beaufort West Municipality currently has no programme in place to retro-fit water efficient toilets. Consumers are required to retrofit such devices at their own expenses.

5.1.2.3 Meter Repair Programme

The installation of meters enables Beaufort West Municipality to monitor and control the provision of services and to ensure that the services delivered are sustainable. The following is ensured by the installation of meters.

- For consumers to be accountable and take responsibility for the water they use.
- Calculation of real water losses and that WC/WDM measures can be implemented.
- That a free basic water policy can be implemented.

Monthly statistics with regard to the number of meters installed, replaced, repaired and tested were not made available by the Municipality for the WSDP. It is important for the Municipality to keep monthly records of the work done on the water meters per system.

Beaufort West Bulk Water Meters



Steenrots Booster PS (150mm)



Vaalkoppies PS (150mm)



Inlet of WTW (150mm)



Outlet of WTW (150mm)



Outlet of WTW (150mm)



Hillside II supply (150mm)



Supply from Reclamation Plant at WTW



Bulk supply to town (300mm) at reservoirs



Uitspan PS rising main

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Merweville Bulk Water Meters



Reservoir outlet (100mm)



Bulk supply pipeline to town



Bulk supply pipeline to town (100mm)



Reclamation Plant: UV feed flow meter



Reclamation Plant: RO feed flow meter



Reclamation Plant: Waste flow meter



Reclamation Plant: Final flow display unit

Nelspoort Bulk Water Meters



Bulk supply pipeline to town (200mm)



Supply from Sout River



BH No.1 (40mm)

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BH No.2 (40mm)



WTW Pump Station (100mm)



Sout River PS (100mm)



BH No.3 (100mm)

Murraysburg Bulk Water Meters



0.5 MI Dokterskop reservoir meter



Rugby Filed BH (50mm)



Moddergat BH (100mm)



Riverside BH (80mm)



Victoria Wes BH (50mm)



Hostel BH (80mm)



Outlet of South reservoirs (80mm)

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Bulk water meters are in place to effectively monitor the NRW and water losses for all the water distribution systems. The table below gives an overview of the bulk water meters on the bulk water pipelines and at the various reservoirs, water pump stations and WTWs as visited during the WSDP site visits.

Table 5.1.2.3.1: Bulk water meters on the bulk water pipelines and at the various reservoirs, water pump stations and WTWs					
System Component	Bulk Water Meter (Position)	Size	Model	Factor	Condition of Meter
Beaufort West					
Source	Noordeinde Noord	Unknown	Sensus	m ³	Operational
Source	Noordeinde Suid	Unknown	Sensus	m ³	Operational
Source	Spoornet	Unknown	Unknown	m ³	Operational
Source	Golfbaan (Vandalised)	-	-	-	-
Source	Sandgat	DN100	Sensus WP Dynamic 100	m ³	Operational
Source	Uitspan	Unknown	Unknown	m ³	Operational
Source	SR4 (Vandalised)	-	-	-	-
Source	SR5	DN80	Precision Meters LXLC/FX-80A	m ³	Excellent
Source	SR9	DN50	Precision Meters LXLC/FX-50A	m ³	Operational
Source	SR10 (Vandalised)	DN80	SA Metering Solutions LXLC-80E2	m ³	Excellent
Source	QA2	DN50	Precision Meters LXLC/FX-50A	m ³	Operational
Source	Hansrivier HR10 (Vandalised)	-	-	-	-
Source	Hansrivier HR13 (Vandalised)	-	-	-	-
Source	Hansrivier HR15 (Vandalised)	-	-	-	-
Source	Hansrivier HR16 (Vandalised)	-	-	-	-
Source	Hansrivier HR18 (Vandalised)	-	-	-	-
Source	Hoenderplaas	DN80	Census WP Dynamic 80	m ³	Excellent
Source	Small Hansrivier KH3 (Vandalised)	-	-	-	-
Source	Small Hansrivier KH5 (Vandalised)	-	-	-	-
Source	Flagship	DN80	Precision Meters LXLC/FX-80A	m ³	Excellent
Source	Lemoenfontein Noord	DN100	Elster	m ³	Operational
Source	Volstruisgat	Unknown	Unknown	Unknown	Operational
Source	Bulkraal	Unknown	Unknown	Unknown	Operational
Source	Waterval Fountain	Unknown	Unknown	Unknown	Operational
Source	GoG1 (Not operational)	DN50	Sensus WP Dynamic 50	m ³	Operational
Source	GoG2 (Not operational)	DN50	Sensus WP Dynamic 50	m ³	Operational
Source	GoG3 (Not operational)	DN50	Sensus WP Dynamic 50	m ³	Operational
Source	GoG4	DN50	Sensus WP Dynamic 50	m ³	Operational
Source	GoG5	DN50	Sensus WP Dynamic 50	m ³	Operational
Source	Waterval Borehole	Unknown	Elster	m ³	Operational
Source	Brandwacht No.1	Unknown	Elster	m ³	Operational
Source	Brandwacht No.2 (Not operational)	Unknown	Elster	m ³	Operational
Source	Brandwacht No.3 (Not operational)	Unknown	Unknown	m ³	Operational
Source	Brandwacht No.4	Unknown	Precision Meter	m ³	Operational
Source	Brandwacht No.5	Unknown	Precision Meter	m ³	Operational
Source	Brandwacht No.6 (Not operational)	Unknown	Unknown	m ³	Operational
Source	Brandwacht No.8	Unknown	Unknown	m ³	Operational
Source	Brandwacht No.9	DN100	Sensus WP Dynamic 100	m ³	Operational
Source	Brandwacht No.11	DN80	Precision Meter	m ³	Excellent
Source	Tweeling (Kuilspoort)	DN50	Magflow	m ³	Excellent
Source	Rhenosterkop	DN80	Magflow	m ³	Excellent

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Table 5.1.2.3.1: Bulk water meters on the bulk water pipelines and at the various reservoirs, water pump stations and WTWs

System Component	Bulk Water Meter (Position)	Size	Model	Factor	Condition of Meter
Source	Springfontein	DN50	Precision Meter	m ³	Operational
Source	Skietbaan (Vandalised)	Unknown	Elster	m ³	Operational
Source	Council of Geo Science No.1	DN80	Precision Meter	m ³	Excellent
Source	Council of Geo Science No.2	DN80	Magflow	m ³	Excellent
Source	Steenoonde (Vandalised)	-	-	-	-
Source	Walkersdam (Vandalised)	-	-	-	-
Pump Station	Uitspan PS	Unknown	Elster	m ³	Operational
Pump Station	Steenrots Booster PS	DN150	E&H Magflow	m ³	Excellent
Pump Station	Vaalkoppies PS	DN150	E&H Magflow	m ³	Excellent
WTW	Raw water inlet at WTW	DN150	Sensus WP Dynamic 150	X10 m ³	Operational
WTW	Final water outlet at WTW	DN150	Elster H4000	X10 m ³	Operational
WTW	Final water outlet at WTW	DN150	Elster H4000	X10 m ³	Operational
Bulk Pipeline	Hillside II supply pipeline at WTW	DN150	Elster H4000	X10 m ³	Operational
WTW	Supply from Reclamation Plant at reservoirs	Unknown	Elster H4000	m ³	Operational
Reservoirs	Bulk supply to town	DN300	Elster H4000	X10 m ³	Operational
WTW	Reclamation Plant UV feed	Unknown	Siemens	m ³	Operational
WTW	Reclamation Plant RO feed	Unknown	Siemens	m ³	Operational
WTW	Reclamation Plant Waste	Unknown	Siemens	m ³	Operational
WTW	Reclamation Plant Final flow	Unknown	Unknown	m ³	Operational
Merweville					
Source	Borehole ME4	DN25	Magflow	m ³	Excellent
Source	Borehole ME6	DN25	Magflow	m ³	Excellent
Source	Borehole ME7	DN25	Magflow	m ³	Excellent
Source	Borehole ME9	DN25	Magflow	m ³	Excellent
Source	Borehole MV2	DN25	Magflow	m ³	Excellent
Source	Borehole MV3	DN25	Magflow	m ³	Excellent
Source	Borehole MV4	DN25	Magflow	m ³	Excellent
Source	Borehole MV5	DN25	Magflow	m ³	Excellent
Source	Borehole MV6	DN25	Magflow	m ³	Excellent
Reservoir	Outlet of 0.4 MI reservoir	DN100	Precision Meter LXLC/FX-100A	m ³	Excellent
Bulk Pipeline	Supply line to town	Unknown	Elster H4000	m ³	Operational
Bulk Pipeline	Supply line to town	DN100	ABB H4000	m ³	Operational
Nelspoort					
Bulk Pipeline	Supply line to town	DN200	Elster H4000	X10 m ³	Operational
Source	Supply from Sout River at filters	Unknown	Elster H4000	m ³	Operational
Source	Borehole No.1	DN40	Elster H4000	m ³	Operational
Source	Borehole No.2	DN40	Elster H4000	m ³	Operational
Pump Station	Rising main from PS at WTW	DN100	ABB H4000	m ³	Operational
Source	Sout River PS	DN100	Elster H4000	m ³	Operational
Source	Borehole No.3	DN100	Meistream	m ³	Excellent
Murraysburg					
Reservoir	Outlet of 0.5MI Dokterskop reservoir	Unknown	Magflow	m ³	Excellent
Source	Rugby Field Borehole	DN50	Magflow	m ³	Excellent
Source	Moddergat Borehole (MBD3)	DN100	Magflow	m ³	Excellent
Source	Riverside Borehole (MBD2A)	DN80	Magflow	m ³	Excellent
Source	Victoria Wes Borehole	DN50	Magflow	m ³	Excellent
Source	Hostel Borehole	DN80	Kent Helix H4000	m ³	Operational
Reservoir	Outlet of South Reservoirs	DN80	Magflow	m ³	Excellent

The main reasons for inaccuracy are incorrect selection, incorrect sizing, incorrect installation, incorrect reading and lack of maintenance. It is important for Beaufort West Municipality to continue with the implementation of their Meter Replacement Programme, whereby all faulty and leaking meters are replaced / repaired immediately and all consumer water meters older than eight (8) years are replaced systematically, as funding becomes available.

5.1.3 Consumer / End-use Demand Management: Public Information and Education Programmes

There are a number of ways of ensuring the reduction of water demand by consumers. These can generally be divided into two categories. The first is to influence the behaviour of consumers and the second is through the implementation of assistance projects.

Assistance projects are interventions of best management practices, which are funded or partially funded by WSAs. Examples include projects to repair plumbing leaks, to retrofit dual-flush toilets, installation of dual water distribution systems and to replace exotic gardens with alternative water wise gardens.

More efficient use can also be made through recycling of water. This can be to different standards depending on what it will be used for. For example, consumers can be encouraged to use grey water, i.e. bath, shower, etc. for watering of their gardens.

Basic service must include an education component. Many water and sanitation projects carried out by Municipalities have lacked this important aspect in the past and this need to be addressed.

Education programmes could include information on:

- Sanitation promotion.
- Sources of water pollution (e.g. sewage with specific reference to downstream users of rivers and groundwater sources).
- Dangers of people using water from polluted rivers, boreholes or wells.
- Waterborne diseases.
- Health and hygiene awareness including initiatives to reduce waterborne diseases, such as hand washing.
- The need to conserve water and use it efficiently.

There are a number of different methods in which these messages can be distributed and thought should be given to which groups will be targeted, possible health messages, communication methods, roles of different institutions, timeframes, who will carry it out and how skills will be transferred.

These methods include:

- Public meetings, workshops and seminars;
- Notices on billboards, shopping centres and washrooms;
- Competitions;
- Development and distribution of leaflets, fliers and posters;
- Distribution of small gadgets and stickers;
- Radio/newspaper slots and press releases; or
- Household visits by health officials

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Specific numbers of consumers targeted by Beaufort West Municipality for awareness and education are not defined. All low income housing developments are however targeted for education, once water services were installed.

One of the key elements of a sustainable WC/WDM strategy is to develop and promote activities that are also beneficial to consumers. WSAs are encouraged to adopt a “win-win” approach and not introduce punitive measures unless they have to. One of the most effective ways to encourage consumers to use water more efficiently is through tariff mechanisms.

Table 5.1.3.1: Resources available to perform Consumer / End-use Demand Management	
Activities	Resources Available
Schools targeted by education programmes	No
Consumers targeted by public information programmes	Partially

5.1.3.1 Schools Targeted by Education Programmes

The schools in Beaufort West Municipality’s Management Area are not yet targeted with awareness around water education programmes and water conservation. The following can be included in Beaufort West Municipality’s WDM Strategy with regard to a WDM programme for the schools.

- Meter water use at all the schools and ensure that schools are recorded in the treasury system under a unique customer code to enable future analysis of this consumer category.
- Urinals: Tip tray flush mechanisms on urinals are widely recognised as a major source of water wastage in schools. Therefore, automatically flushing urinals should be replaced with manually operated push button systems.
- Toilet pans: Particularly as the number of toilets available in many schools is limited, pans should be inspected and broken pans and cracked pans should be replaced.
- Toilet cisterns: All the existing toilet cisterns flush volume should be recorded in a detailed study and those with a capacity of more than 13 litres per flush should be removed and replaced with modern cisterns having a 6 litre flush volume, or with 6 / 4.5 dual flush mechanisms.
- Taps: All existing conventional taps and non-SABS push taps should be replaced by SABS-approved push button taps that close automatically as soon as the pupil releases the button.
- Inspection of taps for leaks: Where leaking is noted at the head the taps should be serviced through replacement of the tap head assembly or replacement or tightening of the graphite seal.
- Pipework: Underground piping on the property should be repaired where leaks are detected.
- Municipal water meters: All the municipal meters should be inspected and those found to be faulty or inoperative should be repaired or replaced.
- Schools could be encouraged to reuse wastewater for irrigation of sports fields and / or to use borehole water for this purpose instead of potable water from the Municipal supply system.

Water saving by schools often forms the basis of WDM programmes elsewhere, because it also involves learners who experience implementation of WDM measures first hand. Schools should be encouraged to make WDM programmes part of a long term project, where learners should be actively involved. The schools WDM programme should receive high priority.

5.1.3.2 Consumers Targeted by Public Information Programmes

Beaufort West Municipality realises the importance of good communication with the public and involving community members on a regular basis. Community members are made aware of safe handling of water, hygienic sanitation practices and how to conserve and not misuse water. Good communication ensures consumer trust and confidence.

Total transparency is therefore one of the main objectives when public notifications are distributed by Beaufort West Municipality. High on the list of priorities in these communications, mostly through newsletters, is how to conserve water and reduce any wastage.

5.1.4 Conjunctive Use of Surface- and Groundwater

Water can be conserved by integrating the management of surface – and groundwater. This can be contained, by minimising groundwater abstraction during periods of excess surface water (i.e. resting the aquifers), or by artificially recharging aquifers whenever possible. Storing water in aquifers could, for example, minimise evaporation from dams, or provide a means to re-use treated wastewater.

Table 5.1.4.1: Conjunctive use of surface and groundwater	
Source	Number of Settlements
Ground Water	Merweville, Murraysburg
Surface Water	-
Conjunctive Use	Beaufort West, Nelspoort
Artificial Recharge	-
Rain Water Harvesting	-

5.1.5 Working for Water

One of the key environmental impacts on surface water resources is the invasion of the natural vegetation on river banks by alien vegetation which transpires excessive water volumes. The DWS has initiated the Working for Water Programme to eradicate alien vegetation from rivers and streams and thereby conserve water resources for the in-stream environmental reserve and other priority use. The programme also aims to free clogged river channels to reduce the effect of floods. **There are currently no Working for Water projects implemented by Beaufort West Municipality.**

5.1.6 Water Resource Management Projects

Most of the current WC/WDM initiatives are implemented by Beaufort West Municipality through their operational budget, for example the repair of pipe bursts, replacement of water meters, etc. The only funding support available to Municipalities for WC/WDM initiatives from National and Provincial Government is through the WSIG. The funding is however very limited for the Western Cape and therefore Beaufort West Municipality funds most of their WDM initiatives through their own operational and capital budgets.

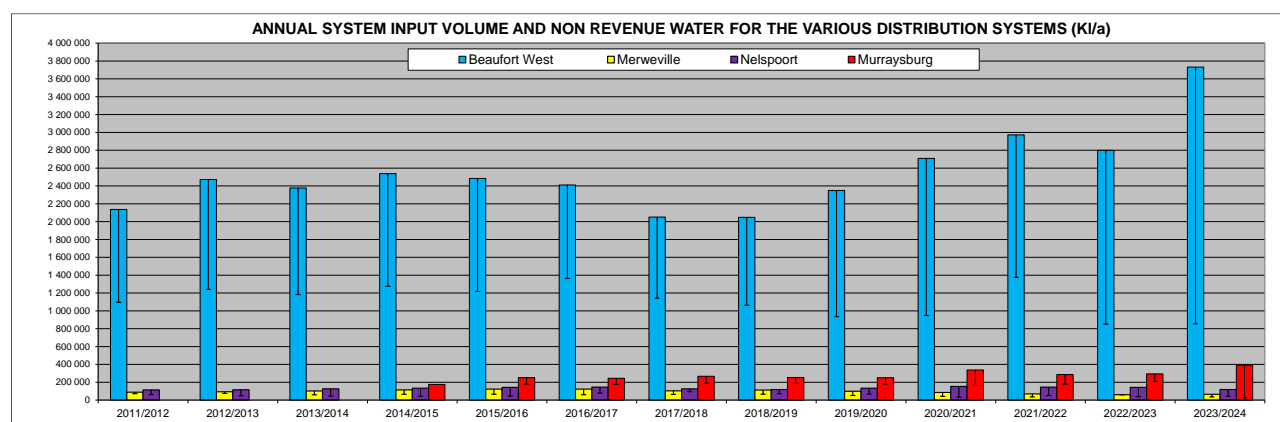
The table below gives an overview of the Water Resource Management projects included in the 2024/2025 approved Capital Budget.

Table 5.1.6.1: Water resource management projects (WC/WDM)			
Project name	2024/2025	2025/2026	2026/2027
Repair vandalised switchgear for critical boreholes	R1 217 392	-	-
New telemetric system	R956 522	-	-

5.2 WATER BALANCE

By undertaking a water balance, WSAs can calculate the amount of water that is being lost to their systems. The NRW provides an indicator of how efficient the water supply system is being run and provides information to the WSA on how to improve the system. NRW is a direct loss to the WSA.

The graph below gives a summary of the System Input Volume (Bulk Potable Supply) and the NRW for the water distribution systems in Beaufort West Municipality's Management Area.



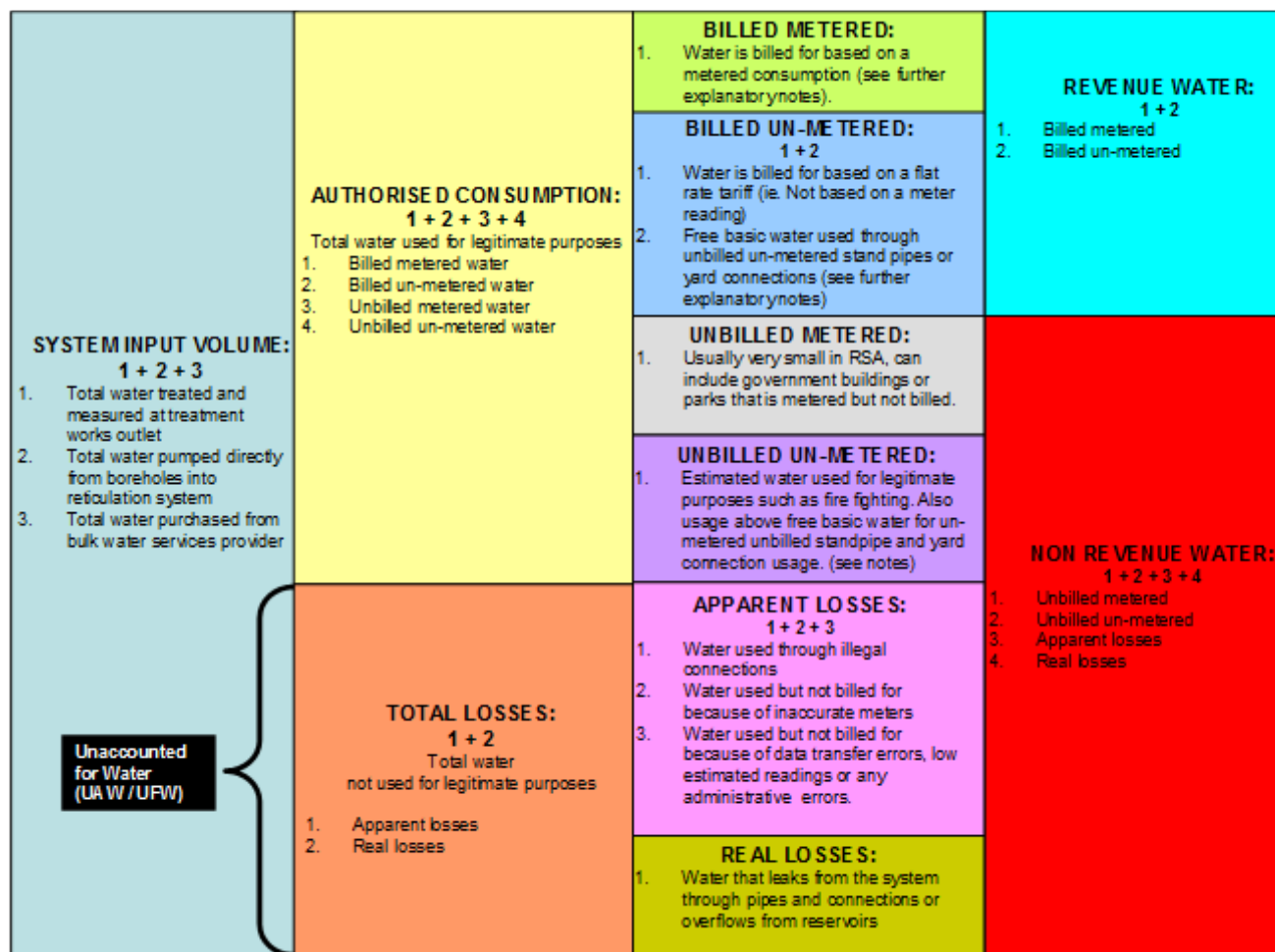
It is not possible to accurately calculate the NRW and Water Losses for the various water distribution systems in Beaufort West Municipality, because the Financial System does not include accurate figures for the billed metered consumption volumes. The Billed Metered Consumption volumes, as received from the Finance Department, do not include the following volumes:

- The volume of water purchased by any consumer through the “Cashflow” Prepaid system is not included in the financial system. The Municipality is busy with the phasing out of this prepaid system.
- The financial system does not register the volume of water for accounts estimated for a specific month. The water usage of 1 257 billed metered consumers (Monthly average over 12 months) were estimated for the 2023/2024 financial year. The number of billed metered consumers was 3 632 (Monthly average over 12 months) for the 2023/2024 financial year. An average of 34.6% of the billed metered consumer's demands were therefore estimated per month for the last financial year and the estimated volume of water usage for these consumers are not included in the billed metered consumption volumes.

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The various sections that make up the water balance are presented on the diagram below and are also described in the text below.



TOTAL INFLUENT OF WATER TO WATER TREATMENT PLANTS

The total influent to water treatment plants (5) are the sum of the following:

- The volume of surface water purchased from others (1),
- Plus the volume of surface water abstracted (2),
- Plus the volume of groundwater abstracted (3),
- Plus the volume of water recycled from waste water treatment plants (14),
- Minus the volume of raw water supplied/sold (4).

The total volume of water received at the water treatment plants are generally referred to as the raw water input into the system.

SYSTEM INPUT VOLUME

The system input volume (SIV) is the total volume of potable water entering the distribution system for consumption by consumers. It is the sum of the following:

- Total volume of treated water from the water treatment plants (6). The difference between the input and output of the water treatments plants are referred to as treatment losses,
- Minus the volume of treated water supplied/sold to others (6A),
- Plus the volume of treated water purchased (7),
- Plus the volume of untreated water that enters the system (7A), usually from boreholes with water of sufficient quality to allow potable use.

REVENUE WATER

The SIV can be grouped into revenue and non-revenue water, indicating as the name suggests the volume of water generating income for Beaufort West Municipality vs the volume of water bought, but not generating income from its usage or loss. All revenue water is considered to be authorised consumption and consists of the following:

- Billed metered consumption (8.1),
- Billed unmetered consumption (8.2). The billed unmetered portion can be further grouped into
 - o the volume of water supplied at a flat rate (8.2.1), where no meter is used but the consumer is billed and
 - o free basic water supplied (8.2.2). Free basic water can be claimed form equitable share and is therefore considered authorised and revenue generating.

NON-REVENUE WATER

Non-revenue water consists of an authorised consumption portion that the municipality is aware of supplying, but it is not currently metered and therefore no account can be sent and a portion of losses, either apparent or real. The components are as follows:

- Unbilled metered consumption (8.3),
- Unbilled unmetered consumption (8.4), this, together with 8.3 forms part of the authorised portion,
- Apparent losses (8.5) that can be further grouped into
 - o Illegal connections (8.5.1),
 - o Inaccurate meters (8.5.2),
 - o Data handling errors (8.5.3),
- Real losses; these are all loss of water from the distribution system upstream of consumer connections.

TOTAL INFLUENT RECEIVED AT WASTE WATER TREATMENT WORKS

Water discharged from the distribution system and received at the waste water treatment works also form part of the water cycle and can be included in the water balance. Once the water is treated it can be grouped as follows:

- Total volume of treated water discharged from the waste water treatment works (11), this can be further grouped into:
 - o Volume returned to the environment (13),
 - o Recycled water supplied to the water treatment works (14),
- Other uses (12). This portion represents the volume that is either re-used for irrigation purposes or re-used on the waste water treatment plant.

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The peak month factors are used in order to size bulk water infrastructure such as purification works, pumps and main supply pipes to reservoirs. An estimated peak day factor of 1.25 was also included in the models to estimate the peak day flow. The historical peak month factors were calculated for the various schemes, and are included in the table below. The factors are the maximum peak month factors for the period on record. The particular months varies notably from one system to the next, but are mainly in the summer as could be expected. The month when this particular peak month factor value was recorded is also included in brackets in the table below.

Table 5.2.1: Peak month factors for the various water distribution schemes						
Scheme	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Average (19/20 – 23/24)
Beaufort West	1.06 (Jul & Dec)	1.13 (Mar)	1.14 (Jan)	1.21 (Apr)	1.19 (Dec)	1.08 (Dec)
Merweville	1.20 (Mar)	1.24 (Oct)	1.39 (Jan)	1.25 (Jan)	1.39 (Jan)	1.19 (Jan)
Nelspoort	1.20 (Jan)	1.21 (Dec)	1.16 (Oct)	1.13 (Oct & Dec)	1.19 (Jan)	1.13 (Jan)
Murraysburg	1.33 (Nov)	1.76 (Jun)	1.14 (Dec)	1.53 (Sept)	1.68 (Mar)	1.21 (Jan)

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5.2.1 Water Balance for Beaufort West

The table below provides a six year historical record of the IWA water balance data for the Beaufort West water distribution system.

Table 5.2.1.1: Water Balance for Beaufort West (Ml/a)						
Water Balance Component	Record : Prior (Ml/a)					2023/2024
	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Surface Water Purchased (1)	0.000	0.000	0.000	0.000	0.000	0.000
Surface Water Abstracted (2)	207.860	929.008	854.360	1 172.589	1 167.190	1 434.824
Groundwater Abstracted (3)	1 557.185	1 344.066	1 748.628	1 785.100	1 984.488	2 008.733
Effluent Recycled (14)	418.633	426.644	471.693	352.498	335.911	427.125
Less Raw Water Supplied (4)	14.264	12.746	14.687	7.771	11.686	11.648
Total bulk water supply Ml/d	2 169.414	2 686.972	3 059.994	3 302.416	3 475.903	3 859.034
Total Influent at WTW (5)	202.040	884.230	763.091	1 086.161	1 113.613	1 429.121
Total Treated Water at WTW (6)	144.720	683.370	642.390	1 022.100	1 047.280	1 345.820
Purchased Treated Water (7)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater not Treated (7a)	1 903.866	1 716.304	2 066.987	1 950.069	1 751.181	2 386.570
Less Potable water to other neighbours (6A)	0.000	0.000	0.000	0.000	0.000	0.000
System Input Volume	2 048.586	2 349.674	2 709.377	2 972.169	2 798.461	3 732.390
Authorised Consumption: Billed Metered (8.1)	1 064.061	935.689	947.978	1 375.140	851.413	854.237
<i>Residential communal water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential controlled water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential uncontrolled water supply</i>	865.029	764.866	809.136	1 026.627	703.412	717.929
<i>Industrial Supply Wet</i>	174.691	158.297	128.563	312.411	142.018	132.717
<i>Industrial Supply Dry</i>						
<i>Commercial supply</i>						
<i>Other supply</i>	24.341	12.526	10.279	36.102	5.983	3.591
Authorised Consumption: Billed Unmetered (8.2)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered: Flat Rate (8.2.1)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered Free Basic Water (8.2.2)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Metered (8.3)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Unmetered (8.4)	4.097	4.699	5.419	5.944	5.597	7.465
Total Urban Supply	1 068.158	940.388	953.397	1 381.084	857.010	861.702
Total Rural supply	0.000	0.000	0.000	0.000	0.000	0.000
Total Authorised Consumption (Urban + Rural)	1 068.158	940.388	953.397	1 381.084	857.010	861.702
Apparent Losses (8.5)	147.064	211.393	263.397	238.663	291.218	430.603
Apparent Losses: Illegal Connections (8.5.1)	29.413	42.279	52.679	47.733	58.244	86.121
Apparent Losses: Inaccurate Meters (8.5.2)	68.630	98.650	122.919	111.376	135.902	200.948
Apparent Losses: Data Errors (8.5.3)	49.021	70.464	87.799	79.554	97.073	143.534
Real Losses (8.6)	833.364	1 197.893	1 492.583	1 352.422	1 650.233	2 440.085
Total Losses	980.428	1 409.286	1 755.980	1 591.085	1 941.451	2 870.688
Total received at WWTW (9)	819.434	939.870	1 083.751	1 188.868	1 119.384	1 492.956
Total discharged (11)	658.350	751.557	866.610	950.666	1 016.020	1 236.398
Other (12)	658.350	677.713	618.629	657.485	624.348	771.346
Returned to source (13)	0.000	73.844	247.981	293.672	391.672	362.019

Note: Apparent Losses: Used 3% for illegal connections (Between Low and Very Low), 7% for inaccurate meters (Meter age 5-10 yrs) and 5% for data errors (Average).

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5.2.2 Water Balance for Merweville

The table below provides a six year historical record of the IWA water balance data for the Merweville water distribution system.

Table 5.2.2.1: Water Balance for Merweville (MI/a)						
Water Balance Component	Record : Prior (MI/a)					2023/2024
	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Surface Water Purchased (1)	0.000	0.000	0.000	0.000	0.000	0.000
Surface Water Abstracted (2)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater Abstracted (3)	116.873	105.148	91.000	88.229	74.867	66.660
Effluent Recycled (14)	0.000	0.000	0.000	0.000	0.000	0.000
Less Raw Water Supplied (4)	0.000	0.000	0.000	0.000	0.000	0.000
Total bulk water supply MI/d	116.873	105.148	91.000	88.229	74.867	66.660
Total Influent at WTW (5)	116.873	105.148	91.000	88.229	74.867	66.660
Total Treated Water at WTW (6)	112.263	99.891	86.450	69.626	60.629	64.961
Purchased Treated Water (7)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater not Treated (7a)	0.000	0.000	0.000	0.000	0.000	0.000
Less Potable water to other neighbours (6A)	0.000	0.000	0.000	0.000	0.000	0.000
System Input Volume	112.263	99.891	86.450	69.626	60.629	64.961
Authorised Consumption: Billed Metered (8.1)	66.265	50.844	42.600	34.903	58.117	34.784
<i>Residential communal water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential controlled water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential uncontrolled water supply</i>	66.265	50.844	42.600	34.903	58.117	34.784
<i>Industrial Supply Wet</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Industrial Supply Dry</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Commercial supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Other supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Billed Unmetered (8.2)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered: Flat Rate (8.2.1)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered Free Basic Water (8.2.2)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Metered (8.3)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Unmetered (8.4)	0.225	0.200	0.173	0.139	0.121	0.130
Total Urban Supply	66.490	51.044	42.773	35.042	58.238	34.914
Total Rural supply	0.000	0.000	0.000	0.000	0.000	0.000
Total Authorised Consumption (Urban + Rural)	66.490	51.044	42.773	35.042	58.238	34.914
Apparent Losses (8.5)	6.866	7.327	6.551	5.188	0.359	4.507
Apparent Losses: Illegal Connections (8.5.1)	1.373	1.466	1.310	1.038	0.072	0.902
Apparent Losses: Inaccurate Meters (8.5.2)	3.204	3.419	3.057	2.421	0.167	2.103
Apparent Losses: Data Errors (8.5.3)	2.289	2.442	2.184	1.729	0.120	1.502
Real Losses (8.6)	38.907	41.520	37.126	29.396	2.032	25.540
Total Losses	45.773	48.847	43.677	34.584	2.391	30.047
Total received at WWTW (9)	44.905	39.956	34.580	27.850	24.252	25.984
Total discharged (11)	0.000	0.000	0.000	0.000	0.000	0.000
Other (12)	0.000	0.000	0.000	0.000	0.000	0.000
Returned to source (13)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Apparent Losses: Used 3% for illegal connections (Between Low and Very Low), 7% for inaccurate meters (Meter age 5-10 yrs) and 5% for data errors (Average).

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5.2.3 Water Balance for Nelspoort

The table below provides a six year historical record of the IWA water balance data for the Nelspoort water distribution system.

Table 5.2.3.1: Water Balance for Nelspoort (Ml/a)						
Water Balance Component	Record : Prior (Ml/a)					2023/2024
	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Surface Water Purchased (1)	0.000	0.000	0.000	0.000	0.000	0.000
Surface Water Abstracted (2)	75.898	79.687	86.397	62.875	121.567	69.974
Groundwater Abstracted (3)	82.308	86.282	115.916	136.300	98.418	103.132
Effluent Recycled (14)	0.000	0.000	0.000	0.000	0.000	0.000
Less Raw Water Supplied (4)	0.000	0.000	0.000	0.000	0.000	0.000
Total bulk water supply Ml/d	158.206	165.969	202.313	199.175	219.985	173.106
Total Influent at WTW (5)	158.206	165.969	202.313	199.175	219.985	173.106
Total Treated Water at WTW (6)	118.090	133.420	153.440	145.620	143.236	119.190
Purchased Treated Water (7)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater not Treated (7a)	0.000	0.000	0.000	0.000	0.000	0.000
Less Potable water to other neighbours (6A)	0.000	0.000	0.000	0.000	0.000	0.000
System Input Volume	118.090	133.420	153.440	145.620	143.236	119.190
Authorised Consumption: Billed Metered (8.1)	71.042	68.394	34.021	51.399	37.742	43.989
<i>Residential communal water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential controlled water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential uncontrolled water supply</i>	71.042	68.394	34.021	51.399	37.742	43.989
<i>Industrial Supply Wet</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Industrial Supply Dry</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Commercial supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Other supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Billed Unmetered (8.2)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered: Flat Rate (8.2.1)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered Free Basic Water (8.2.2)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Metered (8.3)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Unmetered (8.4)	0.236	0.267	0.307	0.291	0.286	0.238
Total Urban Supply	71.278	68.661	34.328	51.690	38.028	44.227
Total Rural supply	0.000	0.000	0.000	0.000	0.000	0.000
Total Authorised Consumption (Urban + Rural)	71.278	68.661	34.328	51.690	38.028	44.227
Apparent Losses (8.5)	7.022	9.714	17.867	14.089	15.781	11.244
Apparent Losses: Illegal Connections (8.5.1)	1.404	1.943	3.573	2.818	3.156	2.249
Apparent Losses: Inaccurate Meters (8.5.2)	3.277	4.533	8.338	6.575	7.365	5.247
Apparent Losses: Data Errors (8.5.3)	2.341	3.238	5.956	4.696	5.260	3.748
Real Losses (8.6)	39.790	55.045	101.245	79.840	89.426	63.718
Total Losses	46.812	64.759	119.112	93.929	105.207	74.962
Total received at WWTW (9)	64.950	73.381	84.392	80.091	78.780	65.555
Total discharged (11)	0.000	0.000	0.000	0.000	0.000	0.000
Other (12)	0.000	0.000	0.000	0.000	0.000	0.000
Returned to source (13)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Apparent Losses: Used 3% for illegal connections (Between Low and Very Low), 7% for inaccurate meters (Meter age 5-10 yrs) and 5% for data errors (Average).

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5.2.4 Water Balance for Murraysburg

The table below provides a six year historical record of the IWA water balance data for the Murraysburg water distribution system.

Table 5.2.4.1: Water Balance for Murraysburg (Ml/a)						
Water Balance Component	Record : Prior (Ml/a)					2023/2024
	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Surface Water Purchased (1)	0.000	0.000	0.000	0.000	0.000	0.000
Surface Water Abstracted (2)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater Abstracted (3)	281.498	278.755	375.013	344.848	325.375	461.992
Effluent Recycled (14)	0.000	0.000	0.000	0.000	0.000	0.000
Less Raw Water Supplied (4)	0.000	0.000	0.000	0.000	0.000	0.000
Total bulk water supply Ml/d	281.498	278.755	375.013	344.848	325.375	461.992
Total Influent at WTW (5)	281.498	278.755	375.013	344.848	325.375	461.992
Total Treated Water at WTW (6)	253.348	250.880	337.512	286.588	294.290	391.143
Purchased Treated Water (7)	0.000	0.000	0.000	0.000	0.000	0.000
Groundwater not Treated (7a)	0.000	0.000	0.000	0.000	0.000	0.000
Less Potable water to other neighbours (6A)	0.000	0.000	0.000	0.000	0.000	0.000
System Input Volume	253.348	250.880	337.512	286.588	294.290	391.143
Authorised Consumption: Billed Metered (8.1)	188.722	178.339	163.666	178.491	209.384	25.691
<i>Residential communal water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential controlled water supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Residential uncontrolled water supply</i>	188.722	178.339	163.666	178.491	209.384	25.691
<i>Industrial Supply Wet</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Industrial Supply Dry</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Commercial supply</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Other supply and Farms</i>	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Billed Unmetered (8.2)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered: Flat Rate (8.2.1)	0.000	0.000	0.000	0.000	0.000	0.000
Billed Unmetered Free Basic Water (8.2.2)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Metered (8.3)	0.000	0.000	0.000	0.000	0.000	0.000
Authorised Consumption: Unbilled Unmetered (8.4)	0.507	0.502	0.675	0.573	0.589	0.782
Total Urban Supply	189.229	178.841	164.341	179.064	209.973	26.473
Total Rural supply	0.000	0.000	0.000	0.000	0.000	0.000
Total Authorised Consumption (Urban + Rural)	189.229	178.841	164.341	179.064	209.973	26.473
Apparent Losses (8.5)	9.618	10.806	25.976	16.129	12.648	54.700
Apparent Losses: Illegal Connections (8.5.1)	1.924	2.161	5.195	3.226	2.530	10.940
Apparent Losses: Inaccurate Meters (8.5.2)	4.488	5.043	12.122	7.527	5.902	25.527
Apparent Losses: Data Errors (8.5.3)	3.206	3.602	8.659	5.376	4.216	18.233
Real Losses (8.6)	54.502	61.233	147.195	91.395	71.670	309.969
Total Losses	64.120	72.039	173.171	107.524	84.318	364.669
Total received at WWTW (9)	120.512	127.206	142.351	168.798	162.688	195.572
Total discharged (11)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Other (12)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Returned to source (13)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Apparent Losses: Used 3% for illegal connections (Between Low and Very Low), 7% for inaccurate meters (Meter age 5-10 yrs) and 5% for data errors (Average).

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5.2.5 Total influent received at treatment works

For planning purposes, it is a reasonable assumption that the seasonal distribution of the influent can be based on the corresponding distribution of the water demand. Similarly, where treated effluent is not used for irrigation, it is reasonable to assume that the majority of the influent is returned to the Water Resource System, with the exception of local losses for which a percentage allowance can be made. Account must also be taken of those WWTWs where the process relies on evaporation ponds, in which case the return to the Water Resource System is effectively zero.

The status of the flow meters at the various WWTWs is indicated in Table 5.2.9.2. The table below gives an overview of the annual volume of effluent received at the various WWTWs. The hydraulic design capacities of the various WWTWs and the monthly flows at the various plants are included in Annexure A.

Table 5.2.5.1: Quantity of effluent received at the various WWTWs							
WWTW	% of System Input Volume	Record : Prior (Ml/a)					23/24
		18/19	19/20	20/21	21/22	22/23	
Beaufort West	40%	819.434	939.870	1 083.751	1 188.868	1 119.384	1 492.956
Merweville	40%	44.905	39.956	34.580	27.850	24.252	25.984
Nelspoort	55%	64.950	73.381	84.392	80.091	78.780	65.555
Murraysburg	50%	120.512	127.206	142.351	168.798	162.688	195.572
Total		1 049.801	1 180.413	1 345.074	1 465.607	1 385.104	1 780.067

The current status of flow metering at the various WWTWs and the availability of the flow data are indicated in the table below.

Table 5.2.5.2: Flow metering at WWTWs									
WWTW	Influent			Final Effluent			Treated Effluent Re-used		
	Metered	Meter Operational	Data provided	Metered	Meter Operational	Data provided	Metered	Meter Operational	Data provided
Beaufort West	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Merweville	No	-	-	No	-	-	N/A	N/A	N/A
Nelspoort	Yes	No	No	N/A	N/A	N/A	N/A	N/A	N/A
Murraysburg	Yes	No	Yes	N/A	N/A	N/A	Yes	Yes	No



Beaufort West WWTW: Incoming Flow meter



Beaufort West WWTW: Final Flow meter

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Murraysburg Sewer PS (Supply to WWTW)



Murraysburg WWTW: Final effluent irrigation meter

5.2.6 Total returns to the water resource system

All effluent discharged into the Municipal sewer system is treated at the existing WWTWs. The current volume of treated effluent re-use from the various WWTWs and the current effluent re-use practices are as indicated in the table below.

Table 5.2.6.1: Volume of effluent re-use and current re-use practices at the various WWTWs							
WWTW	Re-use of treated effluent (MI/a)						Current effluent re-use practices
	18/19	19/20	20/21	21/22	22/23	23/24	
Beaufort West	658.350	677.713	618.629	657.485	624.348	771.346	Reclamation Plant
Merweville	0.000	0.000	0.000	0.000	0.000	0.000	None
Nelspoort	0.000	0.000	0.000	0.000	0.000	0.000	None
Murraysburg	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Irrigation of field
Total	658.350	677.713	618.629	657.485	624.348	771.346	

There is a need to report on the volume or proportion of treated effluent that is returned from each WWTW to the Water Resource System. These return flows can be significant and can add to the water resources of a catchment and need to be accounted for. In other instances, the effluent is not returned and is diverted to oxidation ponds or is re-used on parks, sports fields, etc. The total returns to the water resource system and the treated effluent re-used for irrigation purposes are summarised in the table below.

Table 5.2.6.2: Total returns to the water resource system and treated effluent re-used for irrigation purposes						
WWTW	Type of WWTW	Resource Name (River, Dam, Other)	Current returns (23/24)		Current re-use (23/24)	
			Total Returns (MI/a)	Portion (%) of total influent returned	Total Re-use (MI/a)	Portion (%) of total influent reused
Beaufort West	Activated Sludge	Reclamation Plant	423.019	28.3%	771.346	51.7%
Merweville	Oxidation Ponds	-	0.000	0%	0.000	0%
Nelspoort	Oxidation Ponds	-	0.000	0%	0.000	0%
Murraysburg	Oxidation Ponds	-	0.000	0%	Unknown	Unknown

Note: The total return volumes in the above table were estimated.

Re-use of water is becoming more acceptable and feasible because of increasing water shortages, improved purification technology and decreasing treatment costs. Improvements in membrane technologies and their affordability have made a significant contribution in recent years. At present, up to 14% of water use is reused, mostly through wastewater return flows to rivers from which it is abstracted downstream for indirect re-use. Re-use of return flows could be significantly increased, particularly in coastal cities where wastewater ordinarily drains into the sea.

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The direct re-use of treated wastewater can pose a risk to public health and safety; must be managed carefully and be subject to water quality management and control. Advanced treatment and proper monitoring of all processes and quality of potable water produced is essential. Public perceptions and opinions vary on the topic of water re-use, specifically as it relates to direct potable water re-use. Public perceptions are strongly informed by the general awareness of the poor operation, maintenance and performance of municipal wastewater treatment plants at present. This poses a significant challenge to building public acceptance of direct water re-use in the current situation. The performance of municipal wastewater and effluent treatment plants nationwide will have to be improved to meet high standards, resulting in consistently good quality discharges to the environment before direct water re-use can be placed on the national water supply agenda.

5.3 WATER LOSSES

The Infrastructure Leakage Index (ILI) included in the tables below, is the most recent and preferred performance indicator for comparing leakage from one system to another. It is a non-dimensional index representing the ratio of the current real leakage and the “Unavoidable Annual Real Losses”. A high ILI value indicates a poor performance with large potential for improvement while a small ILI value indicates a well-managed system with less scope for improvement.

The parameters used to calculate the ILIs for the various distribution systems are included in the Models in Annexure D. Attaining and ILI = 1 is a theoretical limit which is the minimum water loss in an operational water reticulation system. A value of less than 1 should not occur since this implies that the actual leakage is less than the theoretical minimum level of leakage.

Table 5.3.1: Information included in the Leakage Benchmarking Sheets				
Water Losses Models		Leakage Benchmarking Sheets		
Bulk and water sales data	Summary Sheet	System name and contact details		
Water balance for town		Performance indicators of water loss		
Non-Revenue water (%/month)		Key operating parameters which influence UARL		
		Key components of annual system input volume		
Monthly Peak Factors (Pmf)	Data Entry Sheet	General		
Annual NRW (% / year)		System data		
		Unavoidable annual real losses (UARL)		
Water usage per sector (KI / month)		Annual water balance data	Data period	
			System input volume	
			Components of authorised consumption	
			Components of water losses	
		Selected operational performance indicators	Current annual real losses per connection at current pressures	
			Infrastructure Leakage Index	
			Non-Revenue water as a % by volume of system input	
		Selected financial performance indicators	Local valuation of real and apparent losses	
			Annual cost of running system	
			Non-Revenue water as % by value of cost of running system	
		Relationship between real losses expressed as % of system input	Real losses curve definition	
			Components of water balance in litres / service connection / day (Actual Results)	
			Current real losses as % of system input volume	
			Potential real losses as % of system input volume	
			Real losses as a % of system input volume versus consumption in litres / service connection for different values of Real Losses in Litres / service connection / day	

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

Table 5.3.2: 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	
Beaufort West	Treatment Losses	Volume	57.320	146.759	95.812	55.839	153.545	83.301
		Percentage	28.4%	17.7%	13.0%	5.2%	12.8%	5.8%
	Bulk Distribution Losses	Volume	63.508	190.539	254.805	274.408	556.818	43.343
		Percentage	3.0%	7.5%	8.6%	8.5%	16.6%	1.1%
	NRW	Volume	984.525	1 413.985	1 761.399	1 597.029	1 947.048	2 878.153
		Percentage	48.1%	60.2%	65.0%	53.7%	69.6%	77.1%
	Water Losses	Volume	980.428	1 409.286	1 755.980	1 591.085	1 941.451	2 870.688
		Percentage	47.9%	60.0%	64.8%	53.5%	69.4%	76.9%
	ILI							12.35
Merweville	Bulk Distribution Losses	Volume	4.610	Negative	Negative	18.603	14.238	1.699
		Percentage	3.9%	Negative	Negative	21.1%	19.0%	2.6%
	NRW	Volume	45.998	49.047	43.850	34.723	2.512	30.177
		Percentage	41.0%	49.1%	50.7%	49.9%	4.1%	46.5%
	Water Losses	Volume	45.773	48.847	43.677	34.584	2.391	30.047
		Percentage	40.8%	48.9%	50.5%	49.7%	3.9%	46.3%
		ILI						
Nelspoort	Treatment Losses	Volume	40.116	32.549	48.873	53.555	76.749	53.916
		Percentage	25.4%	19.6%	24.2%	26.9%	34.9%	31.1%
	NRW	Volume	47.048	65.026	119.419	94.221	105.494	75.201
		Percentage	39.8%	48.7%	77.8%	64.7%	73.7%	63.1%
	Water Losses	Volume	46.812	64.759	119.112	93.930	105.208	74.963
		Percentage	39.6%	48.5%	77.6%	64.5%	73.5%	62.9%
		ILI						
Murraysburg	Bulk Distribution Losses	Volume	28.150	27.876	37.501	58.260	31.085	70.849
		Percentage	10.0%	10.0%	10.0%	16.9%	9.6%	15.3%
	NRW	Volume	64.626	72.541	173.846	108.097	84.906	365.452
		Percentage	25.5%	28.9%	51.5%	37.7%	28.9%	93.4%
	Water Losses	Volume	64.120	72.039	173.171	107.523	84.317	364.669
		Percentage	25.3%	28.7%	51.3%	37.5%	28.7%	93.2%
		ILI						
TOTAL	NRW	Volume	1 142.197	1 600.599	2 098.514	1 834.070	2 139.960	3 348.983
		Percentage	45.1%	56.5%	63.9%	52.8%	64.9%	77.7%
	Water Losses	Volume	1 137.133	1 594.931	2 091.940	1 827.122	2 133.367	3 340.367
		Percentage	44.9%	56.3%	63.7%	52.6%	64.7%	77.5%

Notes: 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

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

Table 5.3.3: System input volume, average billed metered consumption and NRW in litre per connection per day for the various water distribution systems for 2023/2024				
Water Balance Component	Beaufort West	Merweville	Nelspoort	Murraysburg
System Input Volume	972	329	798	640
Average Billed Metered Cons.	222	176	295	42
Non-Revenue Water	749	153	504	598

Beaufort West is the town with the highest system input volume and NRW per connection per day. Nelspoort is the town with the highest billed metered consumption per connection per day.

6 WATER RESOURCES

6.1 SOURCES AND VOLUMES

This section is closely related to the water balance, but where the balance deals with total amounts, this section deals with the conditions associated with use, both in terms of quantity and quality. The total water required as identified in the water balance based on the service level targets needs to be compared to permit abstraction and return rights as stipulated in the permits. There is therefore some overlap in reporting requirements.

This part of the WSDP is driven by the National Water Act (Act 36 of 1998) and therefore will require dialogue with the Catchments Management Agency (CMA) (or DWS's Regional Office until the CMA is established) and reference to the Catchments Management Strategy/ies (CMS) when these are in place. It is very important that water demand and wastewater flows within the Catchments be viewed against what the resources can sustainably supply and what the likely environmental impacts will be.

Permits govern abstraction and return rights within a Catchment. The additional flows that might arise from the service level targets may well result in requirements over and above what is stated in the permit. The WSA needs to understand what these are and the implications for permits.

It is important to note that all water used within the WSA area needs to be included, including those resources not managed by the authority (such as boreholes and those operated by other water services providers).

The reporting format in this section does not require a separation into urban and rural areas. With the annual water demand and wastewater flows known, the capacity of sources to meet this demand needs to be assessed. In the case where boreholes are operated independently and water used for human consumption, the WSA should report on these as well.

Reporting requirements in this section refer to water supplied through the municipal system. This includes borehole water supplied for human consumption. Water abstracted from sources needs to be reported in terms of all providers extracting water. There are three main sources of water:

- Abstraction from surface sources within the WSA area of jurisdiction (dams, springs, large rainwater collectors such as natural rock surfaces or streams);
- Abstraction from groundwater sources within the WSA area of jurisdiction (boreholes or dug wells);
- Purchase from external sources (e.g. a Water Board).

Beaufort West:

Current bulk water supply to Beaufort West is from the Gamka Dam, two fountains and groundwater from a number of well fields, namely Gamka Vallei South, Steenrotsfontein, Hansrivier, Small Hansrivier, Lemoenfontein, Gamka Vallei North, Brandwacht, Springfontein, Town and Walkersdam. The well fields consist of over forty five production boreholes, but a number of these boreholes are currently not operational or were vandalised.

Beaufort West Municipality experienced serious problems with drought conditions during 2009-2011 and again in 2016-2017 impacting on the security of water supply to its consumers. The drought period has seen the water levels in the major surface water source of Beaufort West, the Gamka Dam, reduced to such low levels that the uninterrupted supply of drinking water to the town was not a certainty. The borehole scheme serves to augment the surface water, but could not supply sufficient quantities of water on its own. The lack of water in the Gamka Dam over the last few years, brought on by severe drought conditions in the catchment area of the Gamka Dam, has placed a lot of pressure on the groundwater sources which are inadequate to supply in Beaufort West's water requirements in the absence of surface water supply from the Gamka Dam. A number of the production boreholes is currently (2024) not operational or were vandalised, which resulted in a 47% reduction in safe yield of the groundwater sources for Beaufort West.

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The photos below gives an indication of the current non-operational and vandalised boreholes in Beaufort West.



Steenrotsfontein SR4
(Everything vandalised)



Steenrotsfontein SR10
(Scada system vandalised)



Hansrivier HR10
(Everything vandalised)



Hansrivier HR13 (Everything vandalised)



Hansrivier HR15 (Everything vandalised)



Hansrivier HR16 (Everything vandalised)



Hansrivier HR18 (Everything vandalised)



Small Hansrivier KH3 (Previously vandalised)



Small Hansrivier KH5 (Everything vandalised)



GoG No.1 (Non-operational)



GoG No.3 (Non-operational)



Brandwacht No.2 (Motor burned)

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Brandwacht No.3 (Non-operational)



Brandwacht No.6 (Motor burned)



Steenoonde (Everything vandalised)



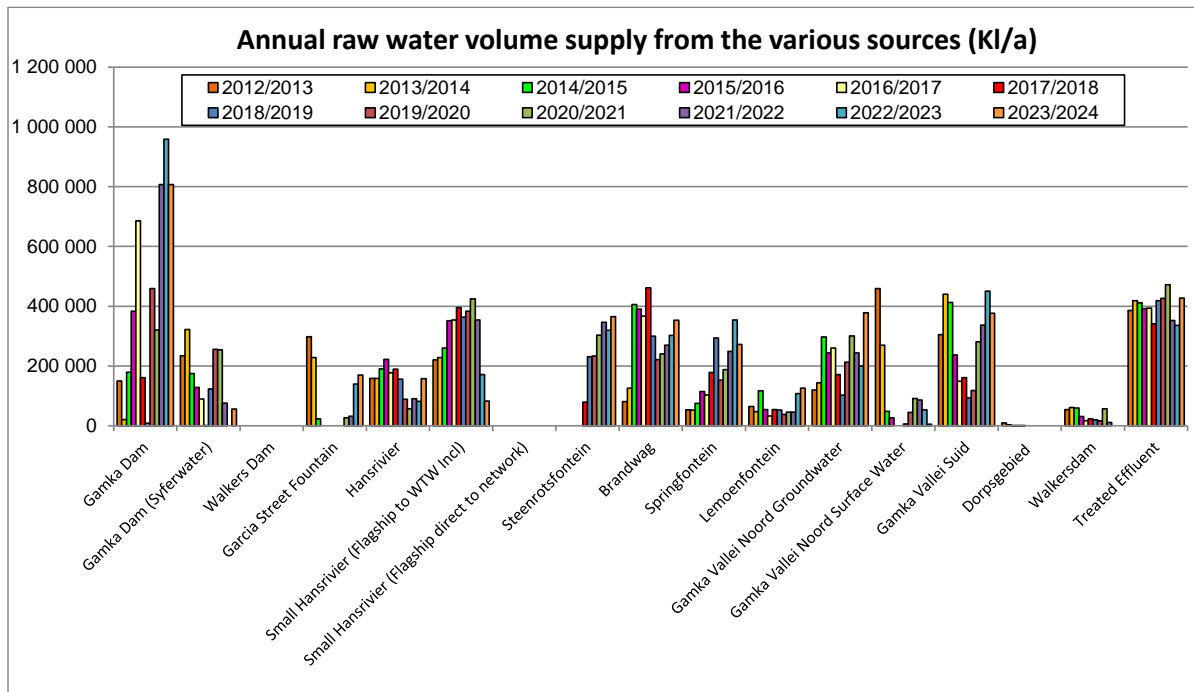
Skietbaan (Non-operational)



Walkersdam (Everything vandalised)

A water reclamation project, where secondary treated water from the Beaufort West WWTW is further treated (in a new reverse osmosis based treatment plant) to a high quality and mixed with the treated water from the WTW, was commissioned on the 15th of January 2011 to further supplement the existing raw water supply. The current hydraulic capacity of the reclamation plant is 1.949 MI/d, but the plant is dependent on the volume of final treated effluent available from the WWTW.

The following graph presents the annual raw water supply to Beaufort West from the various sources over the last twelve financial years.



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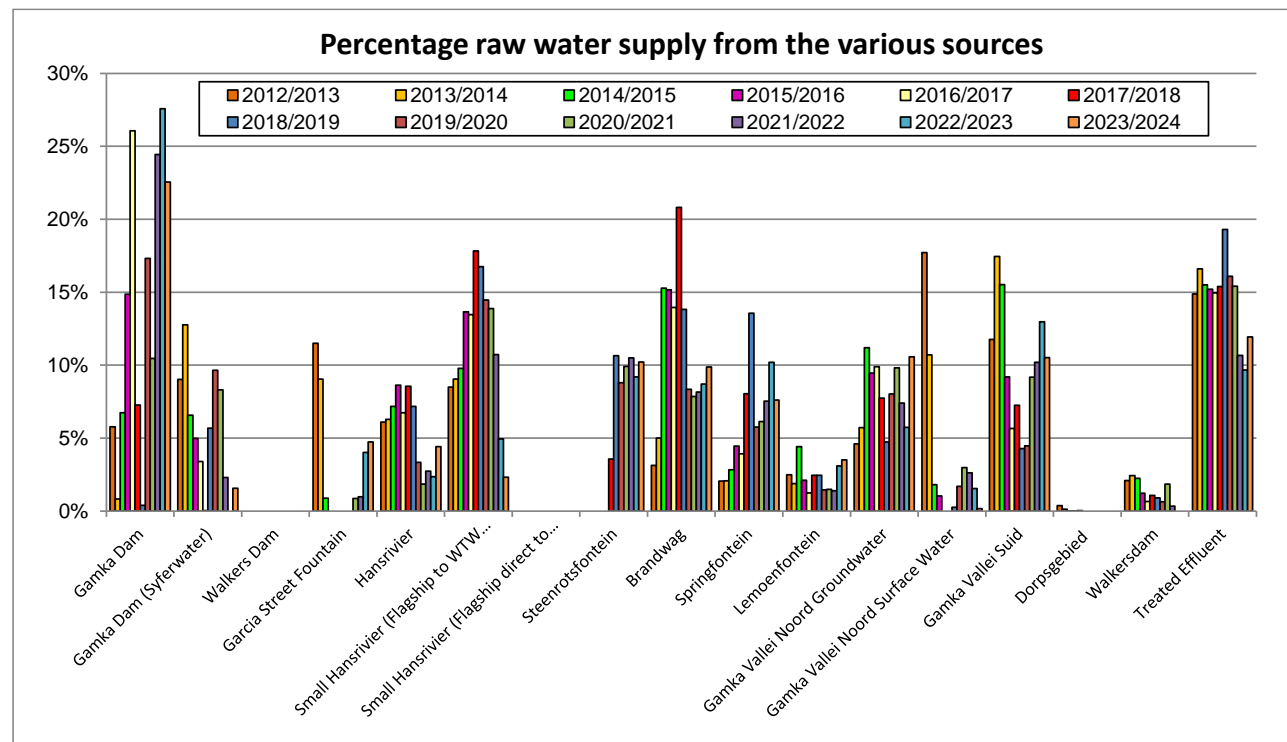
The allocations and the safe yields of the various sources supplying Beaufort West with raw water are summarised in the table below. The impact of the non-operational and vandalized boreholes on the total safe yield can also be noticed (35% Reduction in safe yield of all resources supplying Beaufort West).

Source	Registered or Licence Volume (Ml/a)	Registration No. / Licence No.	Safe Yield (Ml/a) (All operational)	Safe Yield (Ml/a) (Status Quo)
Gamka Dam	500.000	22060065	373.000	373.000
Reclamation Plant	711.385	-	711.385	711.385
Brandwacht	347.862	22060617	568.699	526.651
Springfontein	39.178	22060519	485.654	327.974
Lemoenfontein	156.660	22059656	157.680	157.680
Gamka Vallei North	263.658	22060458	553.930	427.786
Gamka Vallei South & Town *	684.639	22060555	445.081	295.285
Walkersdam Borehole	72.675	22060537	72.533	0.000
Hansrivier	798.912	16/J21A/A/2225	734.789	104.069
Small Hansrivier			364.241	63.072
Steenrotsfontein	294.336	16/J21A/A/2849	484.708	239.674
Totals	3 869.305		4 951.700	3 226.576

Notes: See table 6.2.2.1 for the safe yields of the individual boreholes.

* Include Garcia Street Fountain

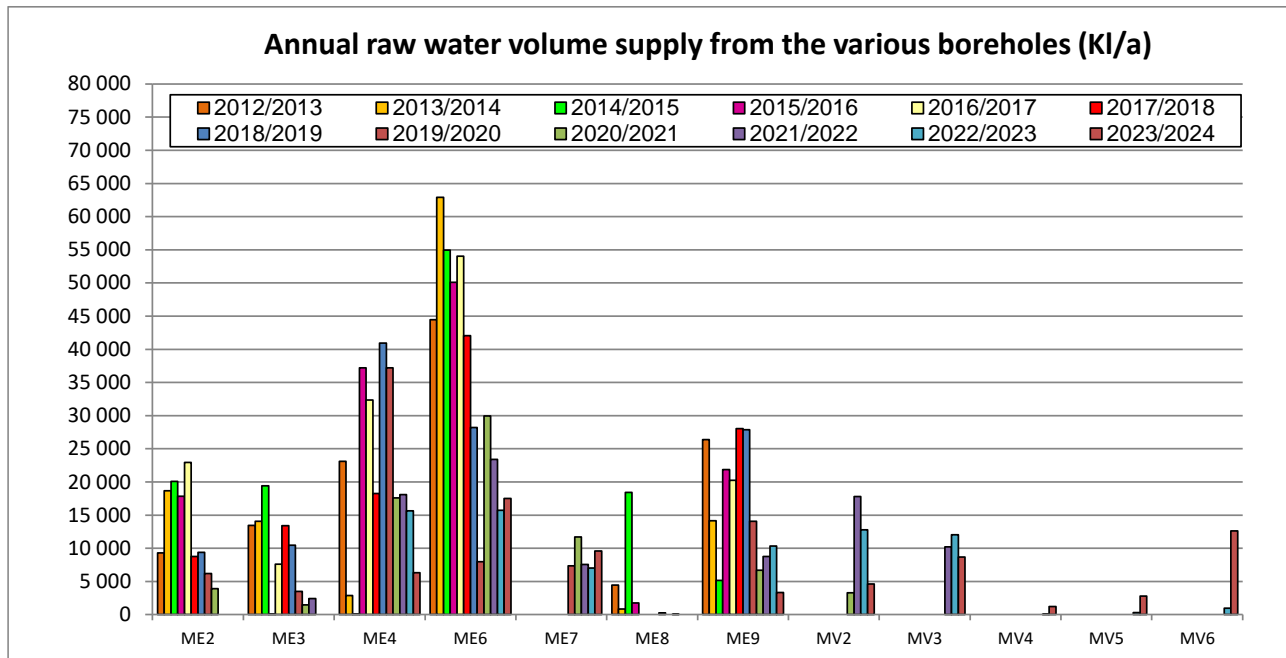
The percentages raw water supplied to Beaufort West from the various resources for the last twelve financial years are summarised in the graph below.



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TOPIC 6: WATER RESOURCES

Merweville: Bulk water supply to Merweville is currently from nine production boreholes. The graph below gives an overview of the supply from the individual boreholes for the last twelve financial years.



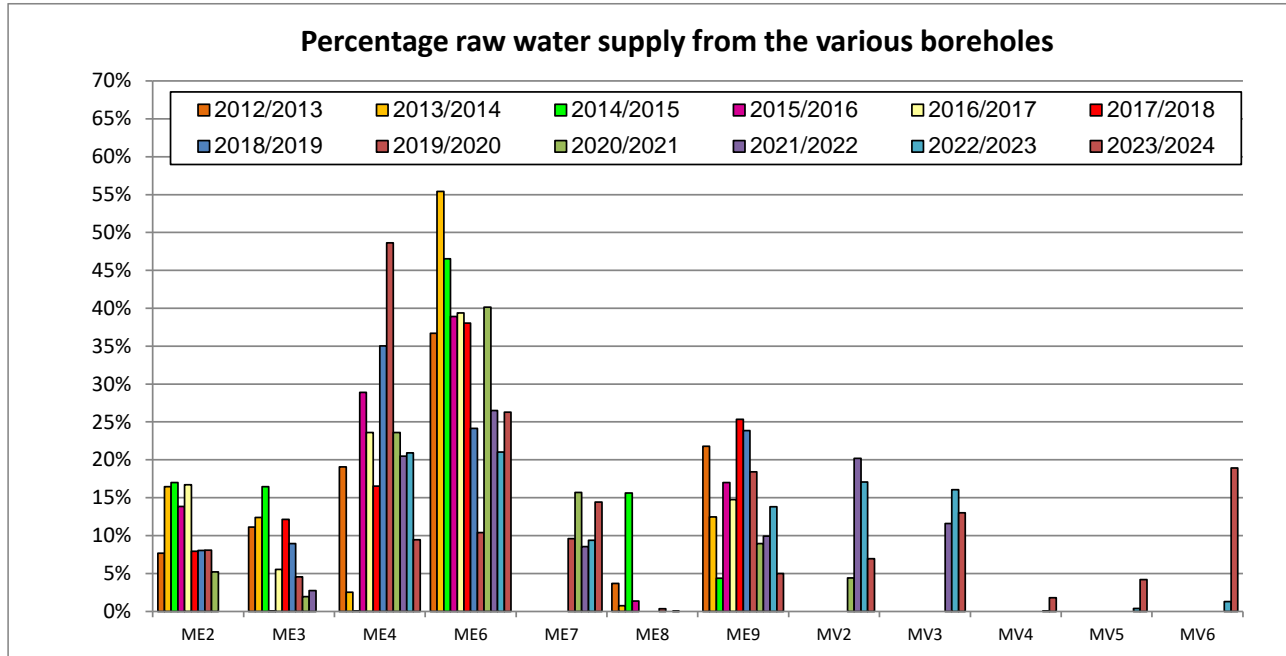
The WULA volumes and the safe yields of the boreholes supplying Merweville with raw water are summarised in the table below.

Borehole No.	2022 WULA Volume (Ml/a)	Safe Yield (Ml/a) (All operational)	Safe Yield (Ml/a) (Status Quo)	Comment
ME2	-	-	-	Borehole not in use anymore
ME3	-	-	-	Borehole not in use anymore
ME4	12.614	12.614	12.614	Production borehole, part of WULA
ME6	22.075	22.075	22.075	Production borehole, part of WULA
ME7	9.461	9.461	9.461	Production borehole, part of WULA
ME8	-	-	-	Borehole not in use anymore
ME9	7.884	7.884	7.884	Production borehole, part of WULA
MV2	19.868	19.868	19.868	Production borehole, part of WULA
MV3	18.922	18.922	18.922	Production borehole, part of WULA
MV4	12.614	12.614	12.614	Production borehole, part of WULA
MV5	28.382	28.382	28.382	Production borehole, part of WULA
MV6	25.229	25.229	25.229	Production borehole, part of WULA
Total	157.049	157.049	157.049	

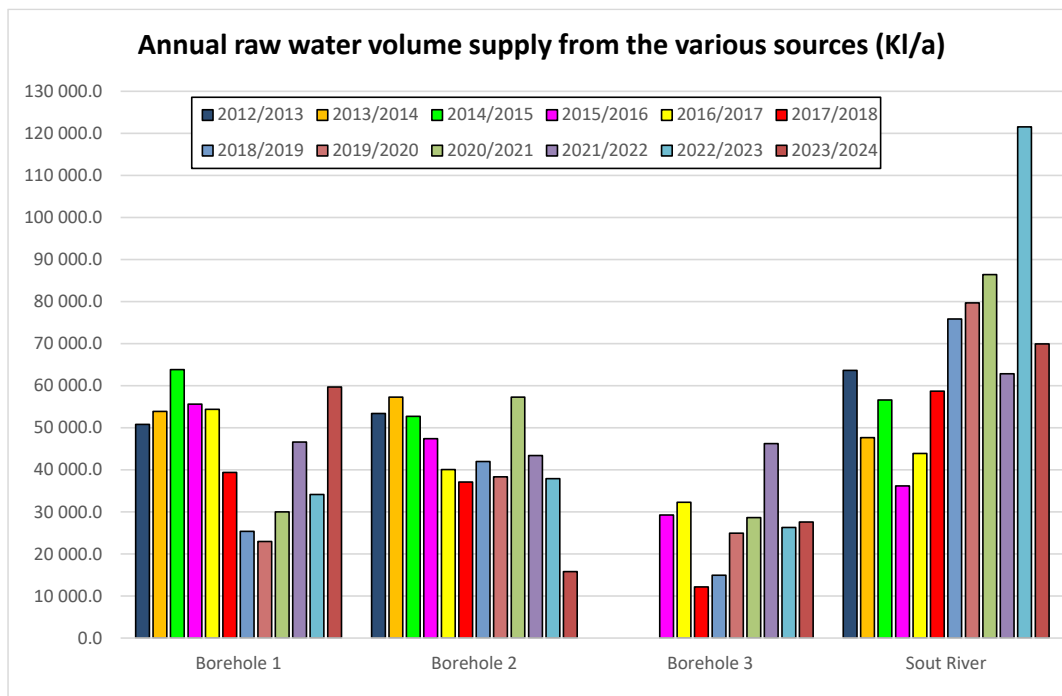
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The percentages raw water supplied to Merweville from the various resources for the last twelve financial years are summarised in the graph below.



Nelspoort: Bulk water supply to Nelspoort is from groundwater from three production boreholes and surface water from the Sout River. The graph below gives an overview of the supply from the various sources for the last twelve financial years.



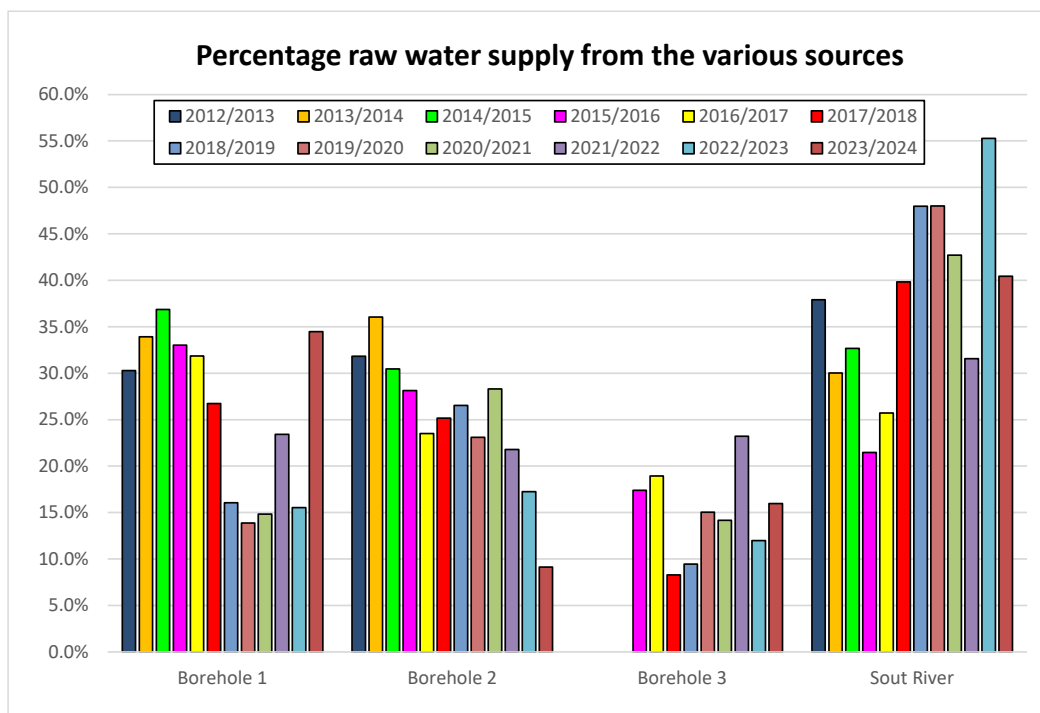
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The registered volumes and the safe yields of the sources supplying Nelspoort with raw water are summarised in the table below.

Source	Registration (Ml/a)	Registration No.	Safe Yield (Ml/a) (All operational)	Safe Yield (Ml/a) (Status Quo)
Sout River	98.926	22023971	98.926	98.926
Borehole No.1	Not registered	Not registered	53.611	53.611
Borehole No. 2	Not registered	Not registered	100.915	100.915
Borehole No. 3	Not registered	Not registered	124.042	124.042
Total	98.926		377.494	377.494

The percentages raw water supplied to Nelspoort from the various resources for the last twelve financial years are summarised in the graph below.

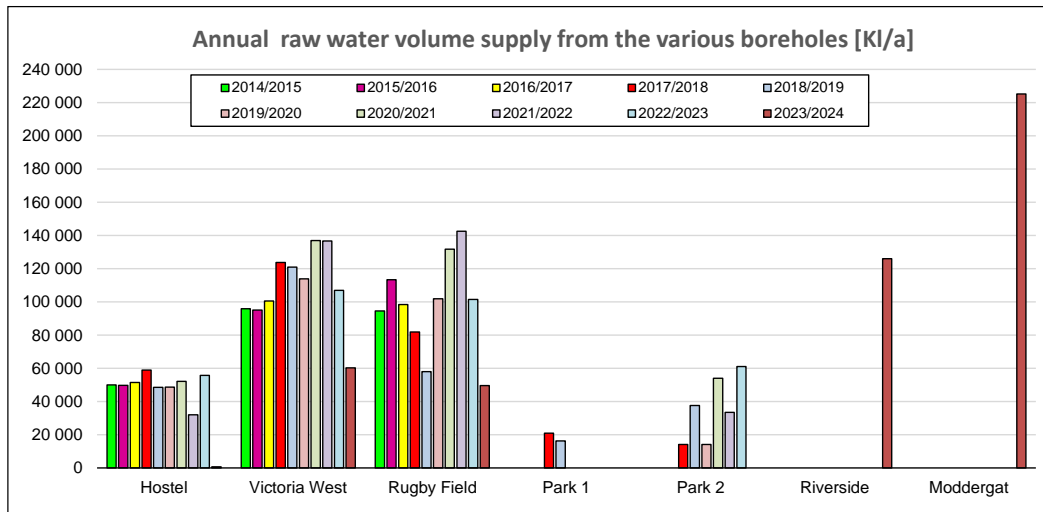


The drought conditions also impacted on the drinking water supply to Nelspoort, with the surface water abstracted from the weir drying up in the summer months, and the town relying on borehole water to sustain the water feed to the WTW.

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Murraysburg: Bulk water supply to Murraysburg is from four production boreholes. The graph below gives an overview of the supply from the various sources for the last ten financial years.



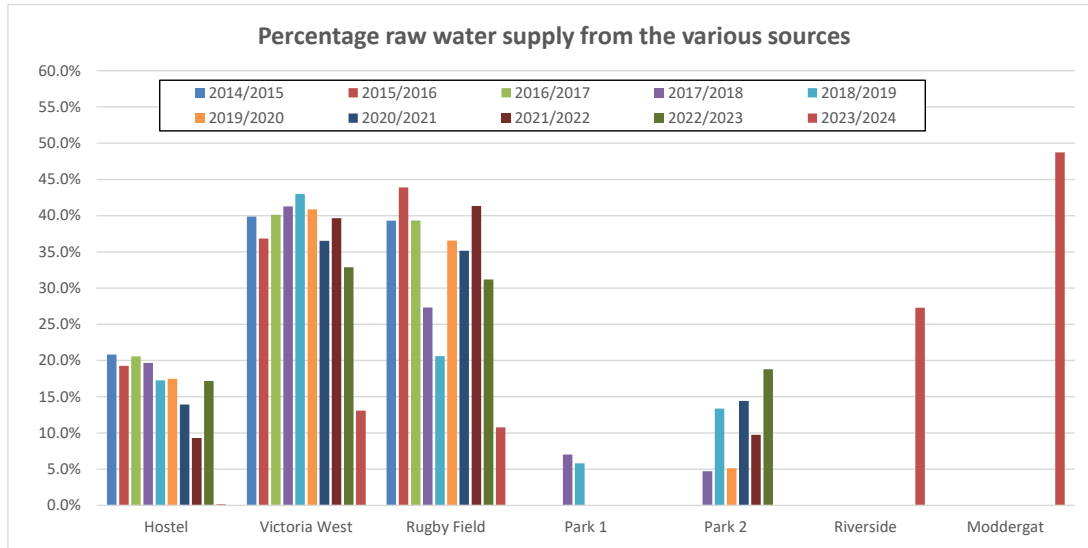
The WULA volumes and the safe yields of the boreholes supplying Murraysburg with raw water are summarised in the table below.

Table 6.1.4: WULA volumes and safe yields of the various boreholes supplying Murraysburg				
Borehole No.	2023 WULA Volume (Ml/a)	Safe Yield (Ml/a) (All operational)	Safe Yield (Ml/a) (Status Quo)	Comment
Hostel	-	-	-	Borehole not in use anymore
Park No.1	-	-	-	Borehole not in use anymore
Park No.2	-	-	-	Borehole not in use anymore
Victoria West	179.755	179.755	179.755	Production borehole, part of WULA
Rugby Field	157.680	157.680	157.680	Production borehole, part of WULA
Riverside	134.028	134.028	134.028	Production borehole, part of WULA
Moddergat	210.240	210.240	210.240	Production borehole, part of WULA
Steenwerke BH No.1	26.280	26.280	-	Future production borehole, part of WULA
Steenwerke BH No.2	3.942	3.942	-	Future production borehole, part of WULA
Steenwerke BH No.3	7.884	7.884	-	Future production borehole, part of WULA
Total	719.809	719.809	681.703	

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TOPIC 6: WATER RESOURCES

The percentages raw water supplied to Murraysburg from the various resources for the last ten financial years are summarised in the graph below.



The table below gives an overview of the current water resources, the current volumes abstracted and the authorised volumes.

Table 6.1.5: Current water resources and volumes							
Source Type	Scheme	Number of Sources	Current 23/24 System Input Volumes or Returns (Mm ³ /a)	Licensed Abstraction / Returns (Mm ³ /a)	Community water supply		Assessment Score
					Rural	Urban	
Groundwater	Beaufort West	27 (Operational)	2.112	2.658	0%	100%	60%
	Merweville	9	0.067	WULA was submitted	0%	100%	80%
	Nelspoort	3	0.103	Unknown	0%	100%	80%
	Murraysburg	4	0.462	WULA was submitted	0%	100%	80%
Surface Water	Beaufort West	4	1.038	0.500	0%	100%	60%
	Nelspoort	1	0.070	0.099	0%	100%	80%
Reclamation Plant	Beaufort West	1	0.427	0.711 (To be confirmed)	0%	100%	80%
External Sources	Not Applicable						
Water returned to source	Beaufort West	1	0.362	1.871	-	-	80%
	Murraysburg	1	Unknown	Unknown	-	-	60%

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

Table 6.1.6: Additional water resources and volumes				
Source Type	Schemes	Number of Sources	Potential Volume (Mm ³ /a)	Licensed Abstraction (Mm ³ /a)
Groundwater	Beaufort West *	19	1.812	Unknown
	Merweville	-	-	-
	Nelspoort	-	-	-
	Murraysburg	3	0.038	In Process
Surface Water	Beaufort West	-	-	-
	Nelspoort	-	-	-
External Sources	Not Applicable			

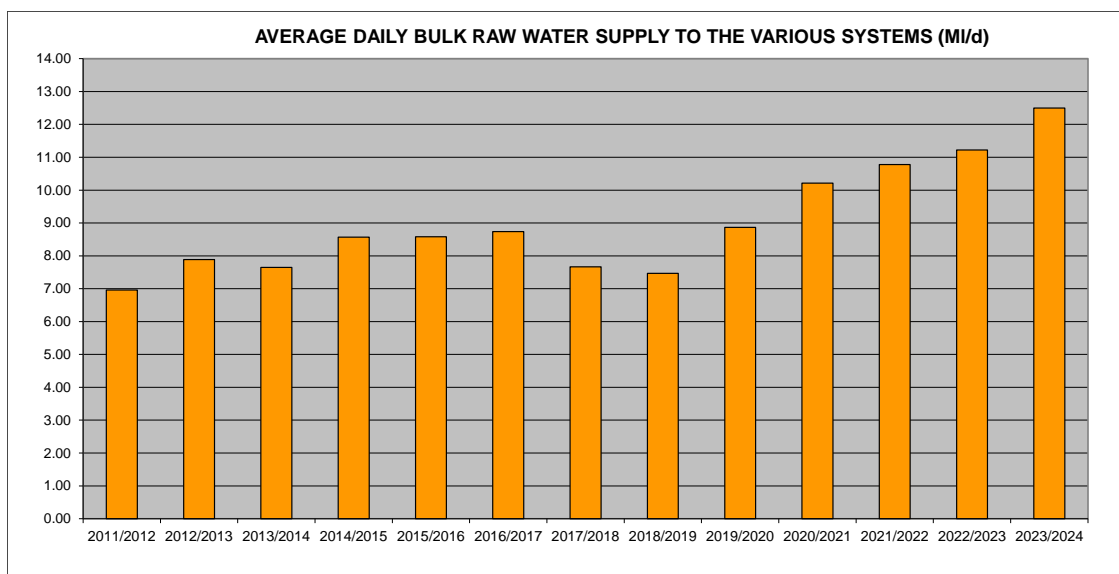
Note: * Current non-operational and vandalised boreholes.

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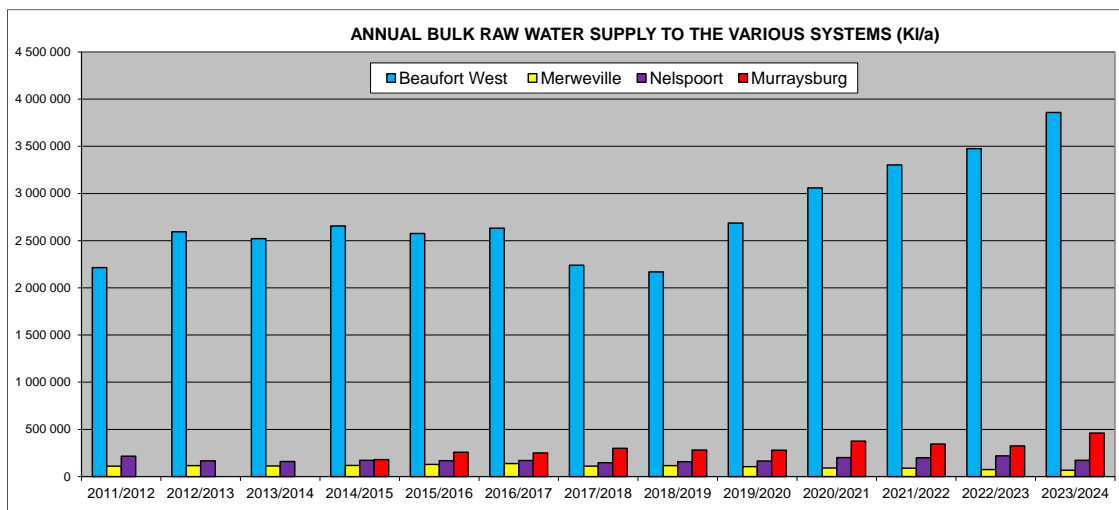
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The available yields from the existing sources in Merweville and Nelspoort are adequate to meet the future water requirements of these two towns. The safe yields from the existing Murraysburg boreholes are also adequate to meet the future water requirements of the town, but an additional three production boreholes were already identified for potential augmentation of the existing groundwater sources if it would become necessary in the future. These boreholes were also part of the WULA submitted to the DWS. **The existing non-operational and vandalised boreholes in Beaufort West need to be put back into operation as soon as possible. The town is at an extreme high risk of inadequate supply, due to the current reduced yield available from the remaining operational boreholes.**

The average annual growth percentage in total raw water volume for all the towns in Beaufort West Municipality over the period 2014/2015 to 2023/2024 was 4.28%/a. Detail IWA Water Balances are available for each of the water distribution systems (towns) in Beaufort West Municipality's Management Area. The graph below gives an overview of the average daily bulk raw water volume for all four systems combined. The impact of the droughts experienced over the last number of years can be noted on the graphs.



The graph below gives an overview of the annual bulk raw water supply volume for the four towns in Beaufort West Municipality.



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6.2 MONITORING

Abstraction from all water resources are metered and readings are recorded by Beaufort West Municipality for all four their systems. IWA Water Balances figures are also reported to the DWS on a quarterly basis for all four systems.

6.2.1 Percentage of Water Abstracted Monitored: Surface Water

The table below gives an overview of the safe yields of the individual surface water sources and the historical abstraction volumes from these sources for the last six financial years.

Table 6.2.1.1: Quantity of water abstracted: Surface Water								
Scheme	Source type	Safe Yields (Ml/a)	Record : Prior (Ml/a)					2023/2024
			2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Beaufort West	Gamka Dam (Incl. Syferwater)	373.000	131.968	714.844	574.223	882.992	958.658	863.017
	Walkersdam	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Waterval fountain	110.849	5.820	44.778	91.269	86.428	53.577	5.703
	Garcia Street fountain	58.765	0.000	0.000	26.633	32.276	139.694	169.341
	Reclamation Plant	711.385	418.633	426.644	471.693	352.498	335.911	427.125
Nelspoort	Sout River	98.926	75.898	79.687	86.397	62.875	121.567	69.974
Total		1 352.925	632.319	1 265.953	1 250.215	1 417.069	1 609.407	1 535.160

The abstraction from all the surface water sources are monitored monthly by Beaufort West Municipality and is a valuable source of information in terms of the IWA water balances for the various distribution systems.

6.2.2 Percentage of Water Abstracted Monitored: Groundwater

The table below gives an overview of the safe yields of the individual boreholes and the historical abstraction volumes from these boreholes for the last six financial years.

Table 6.2.2.1: Quantity of water abstracted: Groundwater							
Borehole / Well Number	Safe Yields (Ml/a)	Record : Prior (Ml/a)					2023/2024
		2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Beaufort West							
Brandwacht 1	47.304	86.949	18.988	51.269	40.351	49.434	98.248
Brandwacht 2	10.512	33.24	25.125	13.082	18.189	0.000	0.000
Brandwacht 3	31.536	0.000	0.000	0.000	0.000	0.000	0.000
Brandwacht 4	59.918	44.903	50.163	24.406	24.649	41.797	69.779
Brandwacht 5	63.072	41.883	27.034	35.043	29.125	34.343	48.633
Brandwacht 6	-	0.003	0.000	0.000	0.000	0.000	0.000
Brandwacht 8	12.614	38.239	26.681	24.350	12.891	16.709	0.025
Brandwacht 9	63.072	22.176	30.848	8.432	18.746	9.759	0.000
Brandwacht 11	47.304	3.052	0.011	0.148	0.000	0.000	0.000
Tweeling (Kuilspoort)	78.840	29.576	42.594	39.564	38.996	68.813	67.106
Rhenosterkop	154.526	0.000	0.000	44.207	86.661	81.885	69.663
Sub Total Brandwacht	568.699	300.021	221.444	240.501	269.608	302.740	353.454

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Table 6.2.2.1: Quantity of water abstracted: Groundwater							
Borehole / Well Number	Safe Yields (Ml/a)	Record : Prior (Ml/a)					2023/2024
		2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Springfontein	37.843	10.876	0.000	0.000	23.803	93.419	38.423
Skietbaan	53.611	5.827	0.000	0.000	0.000	0.000	0.000
Council of Geo Science	290.131	241.442	131.875	187.836	225.221	260.885	233.513
Steenoonde	104.069	35.987	20.735	0.000	0.000	0.000	0.000
Sub Total Springfontein	485.654	294.132	152.610	187.836	249.024	354.304	271.936
Lemoenfontein North	157.680	51.554	36.492	43.805	45.648	107.428	125.538
Lemoenfontein West (Only farmer)	-	1.505	1.855	1.574	0.352	0.000	0.000
Sub Total Lemoenfontein	157.680	53.059	38.347	45.379	46.000	107.428	125.538
Waterval borehole (Pump)	110.849	3.557	86.769	50.393	0.000	0.000	113.389
Parkeraad	110.849	0.000	0.000	0.000	0.000	0.000	0.000
Bulkraal minus Parkeraad	135.605	28.992	45.761	112.661	81.493	97.283	130.073
Volstruisgat	94.608	0.000	0.000	0.000	0.000	0.000	0.000
GoG1	63.072	0.000	0.000	0.000	0.000	0.000	0.000
GoG2	31.536	0.001	0.000	35.687	56.745	14.103	0.000
GoG3	31.536	0.202	0.000	0.000	0.000	0.000	0.000
GoG4	55.188	33.033	41.020	58.984	105.926	88.370	106.862
GoG5	31.536	36.836	39.004	42.675	0.000	0.000	27.986
Sub Total Gamka Vallei North	664.779	102.621	212.554	300.400	244.164	199.756	378.310
Sandgat	31.536	1.314	0.144	74.216	96.273	85.773	0.000
Golfbaan	126.144	0.000	0.000	0.000	0.000	0.000	0.000
Noord Einde North	78.840	83.928	87.502	94.065	104.073	189.210	130.706
Noord Einde South	63.072	7.920	30.793	112.571	136.312	175.767	245.407
Spoornet	31.536	0.000	0.000	0.000	0.000	0.000	0.000
Uitspan, Versterstr, Town Rugby Field, Nieuveld and Birdstr	55.188	0.000	0.000	0.000	0.000	0.000	0.000
Sub Total Gamka Vallei South	386.316	93.162	118.439	280.852	336.658	450.750	376.113
Hansrivier HR10	268.056	0.000	0.000	0.000	0.000	0.000	0.000
Hansrivier HR13	204.984	0.000	0.000	0.000	0.000	0.000	0.000
Hansrivier HR15	63.072	64.900	32.772	0.000	0.000	0.000	0.000
Hansrivier HR16	63.072	12.051	0.888	0.000	0.000	0.000	0.000
Hansrivier HR18	31.536	22.838	15.446	36.839	21.817	0.000	0.000
Hoenderplaas	104.069	55.781	39.397	19.764	68.481	81.765	158.101
Sub Total Hansrivier	734.789	155.57	88.503	56.603	90.298	81.765	158.101
Small Hansrivier KH3	182.909	174.346	157.054	180.181	107.183	0.000	0.000
Small Hansrivier KH5	118.260	114.670	121.866	117.621	104.843	58.702	10.249
Flagship	63.072	74.496	104.490	126.765	142.325	113.030	72.799
Sub Total Small Hansrivier	364.241	363.512	383.410	424.567	354.351	171.732	83.048
SR 4	113.530	8.926	23.845	19.059	0.000	0.000	0.000
SR 5	113.530	15.105	23.792	37.070	102.205	75.926	119.350
SR 9	50.458	60.872	47.318	47.216	65.619	86.105	77.819
SR 10	131.505	101.852	94.711	136.607	106.305	94.660	114.594
QA 2	75.686	44.388	43.611	63.550	72.564	62.897	53.670
Sub Total Steenrots	484.708	231.143	233.277	303.502	346.693	319.588	365.433

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Table 6.2.2.1: Quantity of water abstracted: Groundwater

Borehole / Well Number	Safe Yields (Ml/a)	Record : Prior (Ml/a)					2023/2024
		2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
Walkers Dam	72.533	19.773	16.861	56.536	11.426	0.000	0.000
Sub Total Walkers Dam	72.533	19.773	16.861	56.536	11.426	0.000	0.000
Total Beaufort West	3 919.399	1 612.993	1 465.445	1 896.176	1 948.222	1 988.063	2 111.933
Merweville							
ME2	-	9.393	6.188	3.892	0.000	0.000	0.000
ME3	-	10.451	3.484	1.454	2.425	0.000	0.000
ME4	12.614	40.925	37.200	17.603	18.084	15.654	6.300
ME6	22.075	28.222	7.954	29.940	23.398	15.747	17.528
ME7	9.461	0.000	7.338	11.717	7.541	7.017	9.608
ME8	-	0.000	0.268	0.000	0.001	0.000	0.000
ME9	7.884	27.882	14.078	6.682	8.741	10.333	3.329
MV2	19.868	0.000	0.000	3.295	17.817	12.783	4.633
MV3	18.922	0.000	0.000	0.000	10.223	12.027	8.669
MV4	12.614	0.000	0.000	0.000	0.000	0.046	1.194
MV5	28.382	0.000	0.000	0.000	0.000	0.293	2.793
MV6	25.229	0.000	0.000	0.000	0.000	0.967	12.606
Total Merweville (Excl. ME8)	157.049	116.873	76.242	74.583	88.229	74.867	66.660
Nelspoort							
No.1	53.611	25.382	23.000	30.014	46.645	34.162	59.694
No.2	100.915	41.991	38.338	57.267	43.405	37.916	15.810
No.3	124.042	14.935	24.944	28.635	46.250	26.340	27.628
Total Nelspoort	278.568	82.308	86.282	115.916	136.300	98.418	103.132
Murraysburg							
Rugby	157.680	57.987	101.880	131.774	142.531	101.499	49.703
Hostel	-	48.582	48.697	52.237	32.069	55.831	0.722
Park Bh1	-	16.310	0.000	0.000	0.000	0.000	0.000
Park Bh2	-	37.621	14.224	54.069	33.561	61.125	0.000
Victoria West	179.755	120.998	113.954	136.933	136.687	106.920	60.353
Riverside	134.028	0.000	0.000	0.000	0.000	0.000	126.047
Moddergat	210.240	0.000	0.000	0.000	0.000	0.000	225.167
Total Murraysburg	681.703	281.498	278.755	375.013	344.848	325.375	461.992

Note: Annual abstraction volume over recommended safe yield

The abstraction from all the boreholes are monitored monthly by Beaufort West Municipality and is a valuable source of information in terms of the IWA water balances for the various distribution systems. It also enables Beaufort West Municipality to operate their groundwater management system efficiently and to prevent any over abstraction of boreholes.

6.2.3 Percentage of Water Abstracted Monitored: External Sources (Bulk Purchase)

Table 6.2.3.1: Quantity of water abstracted: External Sources (Bulk Purchase)

Table 6.2.10.1: Quantity of water abstracted - External Sources (Bulk Purchase)							
Scheme	Licence Volume (Ml/a)	Record : Prior (Ml/a)					2023/2024
		2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	
No water is supplied to Beaufort West Municipality by any external Bulk Water Services Provider							

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6.2.4 Surface Water Levels

Table 6.2.4.1: Surface water levels monitored	
Scheme	Monitoring Intervals
Beaufort West	Weekly
Nelspoort	Weekly

Note: Monitoring Intervals: 1 – Daily, 2 – Weekly, 3 – Monthly, 4 – Annually, 5 - Never

6.2.5 Groundwater Levels

In order to establish the optimum abstraction rates from the production boreholes and to ensure the aquifer is not over-pumped, it is essential that groundwater levels and abstraction be monitored on a regular basis. In addition to the production boreholes, nearby un-used boreholes should also be monitored, as these provide a better indication than the production boreholes on the status of the aquifer.

Table 6.2.5.1: Groundwater levels monitored	
Distribution System	Monitoring Intervals
Beaufort West	Once a month manually
Merweville	Continuous (Data Loggers were installed)
Nelspoort	Once a month manually
Murraysburg	Continuous (Data Loggers were installed)

Note: Monitoring Intervals: 1 – Daily, 2 – Weekly, 3 – Monthly, 4 – Annually, 5 - Never

6.2.6 Water Quality for Formal Schemes

The Compulsory National Standards (Regulations under Section 9 of the Water Services Act) on quality of potable water state that a WSA must include a suitable programme for sampling the quality of potable water provided to consumers within its WSDP. The intention of this regulation is to ensure that WSAs provide potable water that is safe for human consumption, suitable for drinking, for preparation of food, for personal hygiene and not harmful to water supply installations and domestic appliances. Beaufort West Municipality's Operational and Compliance Water Quality Sampling Programmes and the parameters monitored are included in Table 8.1.7.2 of Topic 8. The Operational and Compliance Wastewater Quality Sampling Programmes and the parameters monitored are included in Tables 8.1.9.2 and 8.1.9.3 of Topic 8.

Water Safety Plans still need to be drafted for the water resources and the distribution systems and W₂RAPs for the WWTWs and the sewer drainage networks.

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. This includes source protection, treatment through several different stages and prevention of contamination during distribution to each individual household.

The W₂RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater are identified and rated (quantified). The W₂RAPs need to be used by Beaufort West Municipality to manage the identified risks according to its potential impacts on the receiving environment / community / resources.

Beaufort West Municipality actively implements their Operational and Compliance Water and Effluent Quality Sampling Programmes in order to promptly identify water and effluent quality failures and to react accordingly.

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Table 6.2.6.1: Water quality monitored for formal schemes

Scheme	Monitoring Intervals
Beaufort West	Daily and Monthly
Merweville	Monthly
Nelspoort	Monthly
Murraysburg	Monthly

Note: Monitoring Intervals: 1 – Daily, 2 – Weekly, 3 – Monthly, 4 – Annually, 5 – Never

6.2.7 Water Quality for Rudimentary Schemes

Table 6.2.7.1: Water quality monitored for rudimentary schemes

Scheme	Monitoring Intervals
Rural: Farms supplied with water from own sources	Central Karoo District Municipality on request

Note: Monitoring Intervals: 1 – Daily, 2 – Weekly, 3 – Monthly, 4 – Annually, 5 - Never

6.2.8 Borehole Abstraction

The boreholes are metered and the abstraction volumes are adequately monitored and recorded on a monthly basis.

Table 6.2.8.1: Borehole abstraction monitored

Scheme	Current Production Boreholes / Well Numbers	Monitoring Intervals
Beaufort West	All Production Boreholes	Monthly
Merweville	All Production Boreholes	Continuous
Nelspoort	All Production Boreholes	Monthly
Murraysburg	All Production Boreholes	Continuous

Note: Monitoring Intervals: 1 – Daily, 2 – Weekly, 3 – Monthly, 4 – Annually, 5 - Never

6.3 WATER QUALITY

Quality of water returned to the resource is increasingly becoming an issue in South Africa. Water quality is regulated according to permits, licenses and standards and it is very important that these be put in place if not already effective.

The water returned to the resource may be from either point source e.g. WWTWs, the quality of which will be measurable, or diffuse sources e.g. grey water from informal settlements the quality of which will be less easy to measure.

Different types of pollution need to be dealt with in this section, both from “point” (e.g. an industry) and “diffuse” (e.g. an informal settlement or agricultural holding) sources.

Point sources: refer to discharges from identifiable users at a point (generally a pipe discharging to a stream). Often this is associated with industries but also includes WWTWs that may discharge water- containing waste back to a resource. For industries not discharging directly to a resource but to the sewer, the WSA needs to monitor the types of chemicals being disposed of and that these are disposed of to the WWTWs within the parameters laid down in bylaws. In this way, the effluent can be treated effectively with no adverse effects on the WWTWs’ operation. If these sources are polluting directly to a resource because of, for example, poor storm water management, steps need to be taken to ensure that these flows are directed through treatment works.

It is therefore important for the WSA to monitor the types of effluent being disposed of into the sewers as well as the discharges from the WWTWs itself.

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Diffuse sources of pollution refer to a number of cases where polluted water is returned to the resource (both surface and groundwater) without being treated. This mainly occurs when:

- There are no, or poorly managed storm water systems which results in run-off and pollution of water sources.
- There are poorly operated and maintained sanitation facilities e.g. blocked sewers, pump failures etc. leading to sewage leaks and pollution of water resources.
- There is runoff from informal settlements (e.g. where standpipes are poorly designed with no drainage system).
- There are inadequate sewage works.
- Sludge from pit latrines is not disposed of adequately. To avoid this, the use of double pits could be explored.
- There is run-off from solid waste sites (e.g. where no leachate collection system exists).
- There is run-off from agricultural areas e.g. feedlots, cultivated lands. The most urgent task to be undertaken is for the WSA to find out where there are problems and prioritise those areas that represent the greatest threat to water quality. The WSA needs to address the above (i.e. both point and diffuse sources of pollution).

Table 6.3.1. Water Quality		
Water Quality Component	In Place? Yes/No	Status Quo (%)
Is there a Water Safety Plan in Place?	No	0%
Reporting on quality of water taken from source: Urban and Rural	Yes	40%
Quality of water returned to the resource: Urban	Yes	40%
Quality of water returned to the resource: Rural	Not Applicable	Not Applicable
Is there a pollution contingency measures plan in place?	Yes	60%
Quality of water taken from source: Urban - % monitored by WSA self?	Yes	40%
Quality of water taken from source: Rural - % monitored by WSA self?	Not Applicable	Not Applicable
Quality of water returned to the source: Urban - % monitored by WSA self?	Yes	40%
Quality of water returned to the source: Rural - % monitored by WSA self?	Not Applicable	Not Applicable
Are these results available in electronic format?	Yes	80%
% Time within SANS241 standards per year	Yes	80%

Note: Percentage in the above table: None – 0%, Limited – 20%, Partial – 40%, Good – 60% and Excellent – 80%.

WATER SAFETY PLAN AND INCIDENT RESPONSE MANAGEMENT

DWS's 2022 Blue Drop requirements for drinking water quality management were as follows (Indicators for evaluation of blue drop status):

Table 6.3.2: 2022 Blue Drop Certification Standards and Requirements			
KPA Number	Key Performance Area (Weighting)	Requirements	Sub Requirements
1a	Capacity Management (15%)	Registration of Water Treatment Plant	The water treatment facility is registered as per the requirements of Regulation 2834 or as per Blue Drop Standard (Draft Regulation 813). Evidence: 1) Classification Certificate for WTW
1b		Registration of Process Controllers & Supervisor	Process Controllers and Supervisors are classified as per Reg. 2834 or draft Reg. 813 (Blue Drop Standard). This requirements will apply for all shifts or a specific water supply system. Evidence: 1) Copies of Registration Certificates of Process Controllers and Supervisors. 2) Copies of the classification certificates of all Process Controllers / Operators and Supervisors / Superintendents must be uploaded on the IRIS. 3) Compliance with Reg. 2834 coupled with shift details; WSI must

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Table 6.3.2: 2022 Blue Drop Certification Standards and Requirements

KPA Number	Key Performance Area (Weighting)	Requirements	Sub Requirements
			indicate shift patterns or measures in place when a shift does not comply with Regulatory Process Control requirements. 4) WSI must indicate Process Controllers and / or Supervisors that are "shared" across different plants / sites.
1c		Maintenance Capacity	The water system must be served by a competent maintenance team (internal or outsourced), executing the maintenance work according to an acceptable maintenance plan / schedule. Evidence: 1) The plant and pump stations (both mechanical and electrical). Internal or evidence of outsourced. 2) Term Contract (Outsourced) or Organisational Structure (Internal). 3) Proof of team competency (Qualification & Experience & Trade Test). 4) Provide a site specific operation and maintenance schedule. 5) Logbook with maintenance entries as per maintenance plan.
1d		Engineering Management Capacity	The WSI must ensure that a competent engineering specialist oversee water treatment and supply operations, maintenance and general asset management. Evidence: 1) Number of Engineering staff available in the WSI taking responsibility for Maintenance Planning and General Asset Management.
1e		Scientific Capacity	The WSI must ensure that a suitably qualified professional scientist oversee the implementation of the Operational and Compliance monitoring programme (sampling and analyses). Evidence: 1) Number of Scientific Staff appointed for the management of drinking water quality management, incl. implementation of the water safety planning process and monitoring programme, sampling and analyses.
2a		Water Safety Planning	The WSI must has a Water Safety Plan in place which complies to the World Health Organisation's guide for water safety planning, in terms of competencies, comprehensive DWQ risk assessment, control measures, monitoring programmes, etc., providing for a risk management approach to drinking water quality monitoring for the water supply system. A WSI could have an overarching water safety plan, but it shall have reference to all requirements for each water supply system. Evidence: The WSI must provide a water safety plan, adhering to WHO standards: 1) Team Assembled. 2) System detailed in the Plan. 3) Plan reviewed in past 3 years. 4) Detailing system-specific Hazard / Risk Assessment 5) Adequate Control measures identified (Planned for- or implemented). Proof that the Water Safety Plan has been approved by Council).
2b	Drinking Water Quality Risk Management (20%)	Operational Monitoring	Each WTW will have an operational monitoring programme in place which informs the operational treatment efficacy (as per the required frequency) of the treatment facility as per SANS 241. Evidence: Details of Operational Monitoring 1) Proof of Operational Monitoring sites, determinands and frequency. 2) Samples must include i) inflow (raw), ii) pre-filtration, iii) post-filtration, iv) final, v) network. 3) Determinands monitored must at least incl. pH, Turbidity, Free Chlorine (Final). 4) As per Authorization measure abstraction rates (Ml/d).
2c		Compliance Monitoring	Each WTW will have a compliance monitoring programme in place (implemented), informed by the Water Safety Planning process, and SANS 241 requirements, as per the required frequency, determinands and sampling points. Evidence: Details of Compliance Monitoring Programme: 1) Compliance monitoring sampling sites informed by Water Safety Planning Process. 2) Determinands monitored for informed risk assessment process.
2d		Laboratory Credibility	All compliance monitoring samples must be analysed at a credible laboratory (either accredited according to SANAS requirements or participating in a Proficiency Testing scheme with acceptable Z-scores) for the required determinands, with an acceptable turnaround time. Evidence: WSI must prove that all compliance samples are analysed at a credible laboratory 1) Certificate of Accreditation for applicable methods or Z-scores results in a recognised Proficiency Testing Scheme. 2) Or proof of intra- and inter-laboratory proficiency (quality assurance as prescribed in Standard Methods).

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Table 6.3.2: 2022 Blue Drop Certification Standards and Requirements

KPA Number	Key Performance Area (Weighting)	Requirements	Sub Requirements
2e		Incident Management Protocol	As part of the DWQ Risk Management preparedness the WSI should have an Incident Management Protocol in place and an Incident Register detailing incident, causes, rectification and timeframes. The Treatment works will have a WTW Logbook to record all treatment process related incidents. Evidence: WSI must have an Incident Management Protocol to guide reaction should there be a failure in DWQ; Detailing Communication Processes and Treatment Process protocols 1) A DWQ Incident Register detailing i) Incidents. ii) Causative factors. iii) Rectification. iv) Timeframes. 2) A WTW Logbook detailing all treatment process related incidents.
3a	Financial Management (10%)	Water Supply Operations	The WSI must determine the actual operations and maintenance cost of water treatment and supply (reticulation) per water supply scheme and express this in R/m3. (This determination should include energy use for treatment and pumping) Evidence: 1) Municipality / WSI must provide evidence of a proper O&M cost determination for the entire water supply system (treatment works, network, pumpstations) This must at least include the Energy Consumption, Compensation of Employees, Chemical Cost and Maintenance Cost drivers. 2) Provide an operational cost determination per m³ treated.
3b		Water Treatment and Supply O&M Budget	The WSI must have an annual O&M budget per water supply system, for water treatment and supply / reticulation. Evidence: The WSI must provide proof of the water treatment system Operations & Maintenance Budget per annum (for the audit period) -Including the water treatment works, bulk distribution and reticulation.
3c		Water Treatment and Supply O&M Expenditure	WSI must provide evidence of the water treatment and supply O&M expenditure per annum (to be measured in relation to the original budget). Evidence: WSI to provide proof of the water treatment system O&M expenditure per annum.
3d		Supply Chain Management of services and Treatment Products	There must be appropriate supply chain management process in place to ensure continuous availability of treatment chemicals (and related consumables), maintenance and spares. Evidence: WSI must provide proof of approved contracts for outsourced Technical Services (i.e. maintenance, spares, calibration) and supply of chemical and treatment consumables (where applicable).
3e		Capital Budget and Expenditure	The WSI must provide current (and planned) capital budget and expenditure for refurbishment and/or upgrades of the specific water treatment and supply system. Evidence: In terms of refurbishment or upgrades, the WSI must provide the capital budget for treatment and supply system and expenditure to date.
4a	Technical Management (20%)	Water Treatment Works Design and Supply Capacity Management	The WSI must be authorised for a Section 21(a) water use, measure operations (volumes treated per day) accordingly and record for planning and audit purposes. It is also required to have a record of the available supply/pumping capacity to convey water to reservoir(s). Evidence: 1) Documented design capacity of the water treatment facility. 2) Documented daily water treatment volumes (over 12 months of assessed period) in Ml/d. 3) WSI is required to provide a motivation / proof of accuracy of meter readings (calibration or verification).
4b		Process Audit	A water treatment facility must be subjected to an annual condition assessment and/or a Process Audit (conducted by a duly qualified professional person) to inform functionality of the infrastructure. Risk findings must be incorporated in the Water Safety Planning process. Evidence: 1) Condition Assessment report (conducted by a qualified engineering/technical/scientific internal resource). Evidence required of audit findings and recommendations on treatment facility status (Jul '21 to Sept '23). 2) Process Audit report (conducted by a duly qualified independent professional person) to include the (design) capability of the plant to meet compliance standards, as well as actual performance of unit processes (Period: Jul '15 to Sept '23). 3) Evidence/plan of implementation of 1) or 2) audit recommendations during year(s) following Audit Report.

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Table 6.3.2: 2022 Blue Drop Certification Standards and Requirements

KPA Number	Key Performance Area (Weighting)	Requirements	Sub Requirements
4c		Water Reticulation Inspection	The WSI shall ensure that the water supply system is subjected to at least an annual inspection to determine asset condition of pump-stations, reservoirs, and the network in general. The results of this inspection must inform the water safety planning process, especially the reservoirs. Evidence: 1) Site inspection and report on water reticulation network (incl. pump station/s and reservoirs). 2) Provide evidence in form of capacity and condition assessment/audit description, findings, and recommendations of system. 3) Report to include a water flow balance that provides an indication of Unaccounted for Water.
4d		Water Treatment and Supply Asset Management	Water Infrastructure must be included in the WSI Asset Register (as per AGSA requirements). Evidence: 1) Updated Water Treatment and Supply Infrastructure / Asset Register 2) Asset Register must detail relevant equipment and infrastructure, asset description, location, condition, RUL and replacement value. 3) Proof that Asset Register is used to inform Maintenance Plan.
5a	Drinking Water Quality Compliance (35%)	Monitoring Data Submission to DWS	A WSI must ensure that all Compliance Monitoring data is submitted on a monthly basis to the Department of Water and Sanitation on the required Regulatory System (IRIS) (12 months). Compliance monitoring must be adhering to the water safety planning informed monitoring programme. Evidence: 1) The WSI should ensure that all DWQ data (compliance incl. risk-based) is submitted to the DWS 2) Data submitted for 12 months of the audit period. 3) All sampling results submitted as per the WSP monitoring programme. 4) Submitted on the IRIS.
5b		Microbiological Compliance	The Microbiological Quality of water supply must comply with the South African National Standard (SANS241: 2015). Evidence: The Microbiological Quality of water supply must comply with the South African National Standard (SANS241) as per the Excellent Requirements set by the Blue Drop Programme.
5c		Chemical Compliance	The Chemical Quality of water supply must comply with the South African National Standard (SANS241: 2015), for both Acute and Chronic health determinands. Evidence: 1) The Chemical Quality of water supply must comply with the South African National Standard (SANS241) as per the Excellent Requirements set by the Blue Drop Programme. a) Chemical Acute Health Excellent Compliance (97% for < 100 000 and 99% for > 100 000) and Good Compliance (95% for < 100 000 and 97% for > 100 000). b) Chemical Chronic Health Excellent Compliance (95% for < 100 000 and 97% for > 100 000) and Good Compliance (93% for < 100 000 and 95% for > 100 000).
5d		Risk-defined Compliance	All Determinands identified in the Risk Assessment Process must be included in the risk defined monitoring programme and must be measured for compliance with SANS 241 limits. Evidence: The Compliance of all Determinands identified during the Risk Assessment Process to be included in the risk-defined monitoring programme, must comply with the requirements set in the SANS 241 (Excellent Compliance 95% for < 100 000 and 97% for > 100 000 and Good Compliance 93% for < 100 000 and 95% for > 100 000)
5e		Water Treatment Efficiency Index	The compliance of operational determinands as monitored at the final water sampling point must comply with SANS 241 Requirements. Evidence: The compliance of operational determinands as monitored at the Final Water sampling point must comply with the SANS 241 Requirements. (Excellent Compliance 93% for < 100 000 and 95% for > 100 000 and Good Compliance 90% for < 100 000 and 93% for > 100 000)
6a	Bonus (Max 10%)	Process Controller Training	Process controllers and supervisory staff must be subjected to relevant training over the past 24 months as from the date of audit. Cross-pollination and in-house training will be acknowledged as non-accredited capacity building. Evidence: 1) Proof of Process Controller and Supervisor staff being subjected to relevant training past 24 months. 2) Evidence must include training dates, subject, attendees, trainer – certificates of training will be an advantage. 2) Technical or Process Control related, incl. OHS training. 3) Training can be accredited or

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Table 6.3.2: 2022 Blue Drop Certification Standards and Requirements			
KPA Number	Key Performance Area (Weighting)	Requirements	Sub Requirements
			'credible' training. 4) Cross-pollination and in-house training will be acknowledged as non-accredited capacity building.
6b		Performance Agreement	Institutional arrangement between the WSA and the Water Services Provider, then it is essential that the legislatively required contract (Section 19 of the Water Services Act) stipulate the Service Level Agreements between the two entities. Evidence: 1) A copy of the workplan and Performance Agreements of DWQ Management between the WSA and WSP as per Section 78 arrangements, aligned to Water Treatment Operations Requirements and SANS 241 compliance targets. 2) A copy of the Performance Agreement between the responsible manager (official) which stipulates Drinking Water Quality Management responsibilities and performance expectations related to supply and quality (SANS 241).
6c		Publication of Drinking Water Results	The WSI takes responsibility to inform the public of quality of drinking water supplied. Evidence 1) Evidence on the various means of drinking water quality information made public to constituencies supplied with drinking water from this specific water supply system. 2) Newspaper publication, Municipal billing, Community Radio, Annual Report, Posters & Pamphlets, Population and promotion of "My Water" or Electronic Webpage. 3) Water Services Institutions must provide evidence of adequate marketing of Blue Drop registered water supply systems.
6d		Water Demand Management	WSI has a water balance of its water supply system in terms of Section 11 Regulation 509 developed under Section 9 of the Water Services Act. Evidence: Water Conservation and Water Demand Management Plan which provides a strategy and work plan that identify, quantify, monitor and manage leakages and water losses of any kind. The bonus will be maximised should a Water Balance be provided (IWA standard or better).
7a		Data Variances and Discrepancies	A penalty will be applied if hardcopy records present differences to what was uploaded onto IRIS or reported to the public. Evidence: A Disqualifying Penalty will apply should the Department find proof during / post assessment that the WSI is guilty of an offence as per Section 82 of the Water Services Act, by only submitting partial or false information in order to present a false impression of DWQ performance and/or compliance.
7b	Penalties (Max 10%)	Less than 11 Months of Compliance Data	If less than 11 months' data is available to assess compliance. Evidence: A WSI will be penalised if less than 11 months compliance data is uploaded on IRIS.
7c		Non-Notification of Drinking Water Failure	Should the WSI fail to present evidence of an Adverse Water Quality Alert Notice (incl. Boil Water Notice) issued for significant (sustained) failures exceeding 48hours. Evidence: If any Directive/ non-compliance letter was issued a year prior or during the BD Assessment Period by the Department or Delegated Authority to the WSI for the specific WTW or water supply system, then the WSI should present proof of attempts made to adhere to Directive/ non-compliance letter Requirements.
8	Disqualifier (s)	That a WSI will be disqualified from being eligible for Blue Drop status or positive scoring if: 1) There is evidence of falsifying any information related to the Drinking Water Quality Management. 2) A system fails to meet compliance levels in Microbiological and Chemical quality compliance. 3) Less than 9 months of water quality data is available.	

Water Safety Plans still need to be drafted for the various WTWs and water distribution systems. A qualified, dedicated team needs to be established by Beaufort West Municipality to compile the Water Safety Plans. The operational personnel needs to be included in the Water Safety Plan Team from the start of the process, because of their detailed knowledge about potential water quality problems in the supply systems and the WTWs. They are also the best familiarised with their systems and know exactly what the existing operational monitoring controls are and the potential water quality hazards and hazardous events and the risks associated with these hazards. They will also contribute to the success of the plan through facilitating its ownership and implementation.

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A detailed risk assessment needs to be done. This step of the Water Safety Plan establishes the risk that the water quality standard will not be met as well as the consequences if the standard is not complied with. A list of potential hazards and hazardous events needs to be compiled and worked through with the Water Safety Plan Team.

The impact of each of the hazards or hazardous events needs to be characterised by assessing the severity of the likely health outcome and the probability of occurrence. This step of the Water Safety Plan establishes the risk that the water quality standard will not be met as well as the consequences if the standard is not complied with.

An Improvement / Upgrade Plan needs to be compiled for all the existing significant risks, where the existing controls are not effective or absent. Each identified improvement needs to be linked to one of the Water Safety Plan Team members to take responsibility for implementation together with an appropriate time frame for implementation of these controls.

Many actions are important in ensuring drinking water safety but do not directly affect drinking water quality and are therefore not control measures. These are referred to as supporting programmes and are activities that ensure the operating environment, equipment used and the people themselves do not become an additional source of potential hazards to the drinking water supply. The existing Supporting programmes of Beaufort West Municipality need to be included in the Water Safety Plans.

An Incident Management Protocol (IMP) needs to guide Beaufort West Municipality's response to resolution and communication of drinking water quality failures (as defined according to the latest version of SANS 241). The objective of Beaufort West Municipality's IMP needs to be to ensure that the failures are dealt with and are managed in an efficient and effective manner, using a consultative and transparent approach. The Water Services Act (No.108 of 1997) states that Water Services Institutions must take reasonable steps in an emergency situation to address incidents and to minimise the health risks.

The goal of Water and Safety Management Procedures is to highlight the procedures / protocols implemented and adhered to by Beaufort West Municipality and need to form part of Beaufort West Municipality's Incident Management Protocol.

The Water Safety Plan Team of Beaufort West Municipality needs to meet regularly to review all aspects of the Water Safety Plan to ensure that they are still accurate. In addition to the regular three year review, the Water Safety Plans also need to be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major water quality incident.

W₂RAP AND FAILURE RESPONSE MANAGEMENT

DWS's 2021 Green Drop requirements for waste water collection and treatment include the following (Indicators for evaluation of Green drop status).

Table 6.3.3: DWS's 2021 Green Drop requirements for waste water treatment and collection			
No	Key Performance Area	Requirements	Sub-Requirements
A	Capacity Management	A.1: Registration of Wastewater Treatment Plant	a) The wastewater treatment facility is registered as per the Requirements of Regulation 2834/813 (Draft Regulation 813 consider for bonus).
		A.2: Registration of Process Controllers and Supervisor	a) Copies of Registration Certificates of Process Controllers and Supervisor(s). b) Copies of the classification certificates of all process controllers/operators and supervisors/superintendents must be uploaded on the IRIS. c) Compliance with Regulation 2834 (must comply at least 50% in each of the shifts); WSI must indicate shift patterns or measures in place when a shift does not comply with Regulatory Process Control Requirements.

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Table 6.3.3: DWS's 2021 Green Drop requirements for waste water treatment and collection

No	Key Performance Area	Requirements	Sub-Requirements
			d) WSI must indicate process controllers and/or supervisors that are 'shared' across different plants/sites.
		A.3: Maintenance Capacity	a) Evidence of Maintenance Team used for general maintenance work at the plant and pumpstations (both mechanical and electrical) - (Internal or evidence of Outsourced Term Contract). b) Information on in-house staff (or organogram) or external contractor/s. c) Provide additional proof of competency of team (e.g. Qualification and Experience and Tradetest). d) Provide a site specific operation and maintenance schedule (routine / scheduled). e) Contract or Logbook with maintenance entries to serve as evidence of the above aspects.
		A.4: Engineering Management Capacity	Number of Engineering Staff available in the Municipality taking responsibility for Maintenance Planning and General Asset Management): a) 1 x Engineering Technician; b) 1 x Engineering Technologist; c) 1 x Engineer, or d) More than one of the above.
		A.5: Scientific Capacity: Sampling and Laboratory Information Management (Advanced Systems only)	Number of Scientific Staff appointed for the management of wastewater treatment management, incl. sampling and analyses: a) 1 x Candidate Scientist; b) 1 x Professional Scientist, or c) More than one of the above.
B	Environmental Management	B.1: Wastewater Risk Management	a) A Risk Register available on all risks posed by the wastewater collection and treatment processes to the immediate environment (not older than 3 years). b) A Wastewater Risk Abatement Plan; is the more advanced standard, but will only be accepted if not older than 3 years, and approved by Management. - A practical and site specific Wastewater Risk Abatement Plan (W ₂ RAP) is in place which identify and prioritise risks, with measures to mitigate inefficiencies/inadequacies that result in non-compliance - Implementation evidence and proof of management commitment. c) Implementation evidence and proof of management commitment. Providing evidence of risk mitigation (identified during the audit period).
		B.2: Operational Monitoring	Details of Operational Monitoring: a) Proof of Operational Monitoring sites, determinands and frequency; b) Samples must include: i) inflow, ii) outflow, iii) process flows, d) sludge; c) Determinands monitored; d) as per Authorisation / as per best practice per technology type; e) Frequency: as per Authorisation /as per best practice.
		B.3: Compliance Monitoring (Effluent)	Details of Compliance Monitoring (For ALL Effluent Discharges). a) Sampling Sites as per Authorisation; b) Determinands as per Authorisation (This would include determinands not categorised as Microbiological, Chemical or Physical, e.g. SAR, biomonitoring) ; c) Sampling frequency occurs as per Authorisation Requirements Note1: For zero-effluent treatment systems - still need to monitor for impact on catchment / environment (for both lined and unlined systems). Where oxidation ponds are producing effluent for irrigational purposes then General Limits apply. Note 2: A monitoring programme alone will not be sufficient to obtain full score; Analyses results should proof implementation of the monitoring programme.
		B.4: Sludge Classification and Monitoring (Advanced Systems Only)	a) Proof of Sludge Classification b) Provide Sludge Treatment Monitoring Programme c) Provide Sludge Monitoring Results d) Sludge Handling and Management Plan

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Table 6.3.3: DWS's 2021 Green Drop requirements for waste water treatment and collection			
No	Key Performance Area	Requirements	Sub-Requirements
		B.5: Laboratory Credibility	a) Name lab(s) for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external) b) Certificate of Accreditation for applicable methods c) Or Z-scores results following participation a recognised Proficiency Testing Scheme ($-2 \geq z\text{-score} \geq 2$ are unacceptable) d) Or Proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods) e) Proof Turn Around time allows for proper process control (less than 5days)
C	Financial Management	C.1: Wastewater Operations Cost Determination	a) Municipality / WSI must provide evidence of a proper operations cost determination for the entire wastewater system (incl. Pump stations). This must at least incl.: i) Energy Consumption; ii) Compensation of Employees; iii) Chemical cost; iv) Maintenance cost, etc. b) Provide an operational cost determination per m ³ treated. Note: budget / cost excluding interest and redemption on capital
		C.2: Energy Demand	WSI is able to provide DWS with proof of Energy Efficiency Management: a) Energy Demand figures: Current and 3-year Projections (Energy Efficiency Management), based upon Specific Power Consumption (SPC, kWh/m ³), and b) Energy unit cost (R/kWh) and energy consumption figures for the specific WWTW (R/m ³)
		C.3: Operations and Maintenance Budget	WSI to provide proof of the wastewater system O&M Budget per annum
		C.4: Operations and Maintenance Expenditure	WSI to provide proof of the wastewater system O&M Expenditure per annum Note: budget / cost excluding interest and redemption on capital (Comparing Expenditure / m ³ vs Cost Determination / m ³)
		C.5: Supply Chain Management of Services and Treatment Products (Advanced Systems only)	WSI must provide proof of approved contracts for Outsourced services (i.e. Maintenance) and Treatment Chemical Supplies
D	Technical Management	D.1: Wastewater Treatment Works Design Capacity Management	a) Documented design capacity (hydraulic and organic) of the wastewater treatment facility i) Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant and b) Documented daily receiving flows over the 12months of assessed period (ideally \leq than design capacity) i) Evidence of daily flows and subsequent calculated averages. Measurement method to be explained ii) Evidence of peak wet weather flow to plant during rain events (record rain event and flow to plant) iii) Evidence of minimum night flow (minimum monitoring: monthly) iv) Water services institution is required to provide motivation/proof of accuracy of meter readings c) Monitoring of outflow volumes (available records).
		D.2: Process Audit	a) Condition Assessment report (conducted by a technically/scientifically qualified municipal official); evidence required of audit findings and recommendations on treatment facility status (Previous Audit year up until Oct '21) OR The Process Audit (conducted by a duly qualified independent professional person) to include the (design) capability of the plant to meet compliance standards, as well as actual performance of plant (Period: July 2015 to October 2021). b) Evidence/plan of implementation of findings during year(s) following Audit Report required.

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Table 6.3.3: DWS's 2021 Green Drop requirements for waste water treatment and collection			
No	Key Performance Area	Requirements	Sub-Requirements
		D.3: Sewer Main Inspection	Site inspection of sewer reticulation network and pump-station/s. Provide evidence in form of capacity and conditional assessment/audit and recommendations of system. Report to include flow balance that provides evidence which % of total sewage is received at treatment plant. Note: both the process audit/Conditional Assessment and sewer network report could serve as baseline to the W ₂ RAP (may run concurrently with "system description and risk identification/rating") NB! Must report on Functionality of Pump stations in the Sewer Collector System.
		D.4: Wastewater Asset Register	Updated sanitation / wastewater Infrastructure Asset Register a) Proof of Asset Register, evidence to be submitted. Asset register to include movable equipment and immovable infrastructure / assets with matching detail. The asset register must detail: i) relevant equipment and infrastructure ii) indicate asset description iii) location iv) condition (remaining useful life) v) replacement value b) Proof Asset Register is used to inform Maintenance Plan.
		D.5: Bylaws and Enforcement (Local Regulation) (Advanced Systems only)	Proof of the a) Bylaws and b) Enforcement providing for the regulation of the municipal sewer system, incl. the following elements: i) industrial (trade) influent (volumes & quality) discharged into municipal system, ii) package plants, iii) decentralized systems, iv) vacuum tank discharges, v) Spillages into the environment, and vi) Storm-water connections to sewer system. For DPW and Private Plants: Copy of municipal bylaws and evidence of compliance to relevant sections.
E	Effluent and Sludge Quality Compliance	E.1: Monitoring data submission to DWS	a) 12 months of Compliance Monitoring data submitted to DWS on the IRIS b) Frequency: Monthly Submission (or as per Authorisation) c) WSA must ensure that 12 months' sets of results are submitted and recorded on the IRIS prior to the assessment. Note: All compliance results' data required. If proven that the system is not generating effluent, and oxidation pond content is strictly used as per Authorisation Conditions, then 12 months' data records not necessary but according to Authorisation requirements.
		E.2: Water Use Authorisation	Copy of authorisation, detailing Effluent Quality Standards. NOTE: List Standards to comply with. (GA or License Conditions)
		E.3: Effluent Quality Compliance	a) 90% Microbiological Compliance (e.g. E Coli; Faecal Coliforms) b) 90% Chemical Compliance (e.g. COD, Ammonia, Nitrogen, Nitrate, Nitrite, Chlorine, Ortho-Phosphates, Fluoride, Arsenic, Cadmium, Copper, Manganese, Iron, Selenium, Zinc, Boron, etc.) c) 90% Physical Compliance (e.g. pH, Suspended Solids, Electrical Conductivity, Soap, Oil or Grease, etc)
		E.4: Sludge Quality Compliance (Advanced Systems Only)	a) Sludge treatment not managed / monitored (Monitoring records must be produced); b) In case of ponds systems, provide schedule for desludging of system.
F	Green Drop Bonuses	F.1: Process Control Training	Proof of Process Controller staff being subjected to relevant training the past 24 months (Technical or Process Control related incl. OHS)
		F.2: Storm Water Management	Proof of a Storm-water management plan detailing how storm-water (or other extraneous flow e.g. groundwater) entry is quantified, managed and monitored to prevent entry to sewer systems. Plan should also include measures to prevent sewage from entering storm water systems. Evidence of implementation required.

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Table 6.3.3: DWS's 2021 Green Drop requirements for waste water treatment and collection			
No	Key Performance Area	Requirements	Sub-Requirements
		F.3 Water Demand Management	Water Demand Management Plan which provides a strategy and/or work plan that identify, quantify, monitor and manage leakages and water losses of any kind that (may) create an artificial water demand due to higher hydraulic loading of wastewater collection and treatment infrastructure. The bonus will be maximised should a wastewater flow balance be provided. No Drop Assessment.
		F.4 Capital Projects planned for upgrades or refurbishment of wastewater treatment and collector system	Proof of approved business plans for utilizing MIG, WSIG or Municipal Capital Budget for upgrades of refurbishment. Detail for investment required.
		F.5 Sludge Reuse	Provide proof of plant-specific initiatives that contribute to wastewater resource and climate resilience objectives: energy efficiency, energy generation, beneficial use of sludge nutrients, etc. A full score will be awarded if the reduced footprint can be demonstrated (projected CO2 equivalents improved by the initiatives).
		F.6 Additional Impact Monitoring	Incl. Groundwater and Up-stream / Down Stream monitoring
G	Green Drop Penalties	G.1: Wastewater Treatment Works operating beyond hydraulic design capacity.	a) Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant and b) Documented daily receiving flows over the 12 months of assessed period (ideally \leq than design capacity). Based on information provided in D.1.
		G.2: Any sewer collector pump station dysfunctional causing long term spillage.	Based on information provided in D.3.
H	Disqualifier	H.1: Withholding information	Disqualifying Penalty will apply should the Department find proof during / post assessment that the WSI is guilty of an offence as per Section 82 of the Water Services Act, by only submitting partial information in order to present a false impression of WWQ Performance and/or compliance.
		H.2: Directive Status	If any Directive was issued over the GD Assessment Period by the Department or Delegated Authority to the WSI for this specific WWTW and/or system, then the WSI should present proof of attempts made to adhere to Directive Requirements.

W₂RAPs still need to be drafted for all the WWTWs and sewer drainage networks in Beaufort West Municipality. The W₂RAPs can include the following sections:

- Wastewater Quality Compliance
 - Wastewater Risk Abatement Plan
- Wastewater Quality Failures Response Management
 - Wastewater Incident Management Protocol
 - Evidence of Implementation of Protocol
- Wastewater Quality Monitoring
 - Operational Monitoring
 - Compliance Monitoring
 - Historical Energy Demands and Future Projected Demands
- Recommendations and Way Forward

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A detailed risk assessment needs to be done as part of the W₂RAP process. A list of potential hazards and hazardous events needs to be compiled and worked through with the W₂RAP Team. The impact of each of the hazards or hazardous events needs to be characterised by assessing the severity of the likely health outcome and the probability of occurrence.

An Improvement / Upgrade Plan needs to be compiled for all the existing significant risks, where the existing controls are not effective or absent. Each identified improvement needs to be linked to one of the W₂RAP Team members to take responsibility for implementation together with an appropriate time frame for implementation of these controls.

Beaufort West Municipality needs to implement Management Procedures and Incident Response and Emergency Protocols, in which certain reactive procedures are followed when an incident occurs (normally when a malfunction of the treatment processes occur due to power failures, faulty equipment, adverse weather conditions or human error). The Management Procedures and Incident Response and Emergency Protocols need to form part of Beaufort West Municipality's W₂RAPs.

The Incident Management Protocol for plant infrastructure, networks and pump stations can include the following categories:

- Incidents (Network blockages, network breakages, electricity failure, mechanical equipment failure, civil infrastructure failure, human injury / fatality)
- Incident is reported
- Assess incident
- Determine alert level
- Determine decision maker
- Respond to incident
- Remedial actions
- Record / Investigate / Review Incident

Incident Management Protocols for the final effluent compliance at the WWTWs can include the following alert levels:

- Alert Level 1: Incident occurs only once
- Alert Level 2: Incident occurs recurrently
- Alert Level 3: Incident occurs continuously

A set of Compliance Alert Levels, corresponding to the requirements of the various Licences and General Authorisations, is in place. General Authorisations are in place for all the WWTWs.

There are two levels of incident management, firstly when final effluent is discharged that does not meet the requirements of the Water Act, and secondly when an event takes place causing a major pollution event for which emergency response is required. For serious incidents or emergency situations, additional actions and notifications are required, including notification of DWS and the media / public.

The W₂RAP team of Beaufort West Municipality needs to meet regularly to review the implementation and all the aspects of the W₂RAP and to determine whether the field assessments need updates or modifications and whether the Incident Response Management Protocol is still adequate, once compiled.

6.3.1 Reporting on Quality of Water Taken From Source: Urban and Rural

There has to date been no repeated occurrence of water quality issues requiring public notification. The public notifications over the previous number of years were with regard to the drought situation and the water restrictions that were implemented. Should such a problem arise in the future, then Beaufort West Municipality will inform the users at risk via pamphlets, radio announcements, local newspapers and through direct communication with schools.

A Disaster Management Plan for the Central Karoo Region is also in place, which confirms the arrangements for managing disaster risk and for preparing for- and responding to disasters within the Central Karoo District as required by the Disaster Management Act.

Percentage compliance to Drinking Water Acceptable Limits:

Beaufort West Municipality monitors the water quality in the distribution networks of all the towns within their Municipal Management Area. The Drinking Water Quality Sampling Programme is actively implemented in order to promptly identify water quality failures and to react accordingly. 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.

Up to present it was not necessary to take any steps to inform the consumers of any health risk regarding the potable water supplied by Beaufort West Municipality. Safety Management Procedures are however in place, to inform the Municipality's consumers about any potential health risks regarding the water quality, should it become necessary.

The Microbiological and Chemical compliance percentages for the various distribution systems, as included in the various Blue Drop and Blue Drop Progress Reports, were as follows.

Table 6.3.1.1: Percentage Microbiological and Chemical Water quality compliance per system as included in the various Blue Drop and Blue Drop Progress Reports								
Scheme	2013 Blue Drop Progress Report		2014 Blue Drop Report		2022 Blue Drop Progress Report		2023 Blue Drop Report	
	Micro-biological	Chemical	Micro-biological	Chemical	Micro-biological	Chemical	Micro-biological	Chemical
Beaufort West	98.70%	> 99.99%	99.9%	99.5%	99.5%	99.4%	99.99%	99.59%
Merweville	> 99.99%	> 99.99%	99.9%	93.3%	95.2%	100.0%	99.99%	99.99%
Nelspoort	> 99.99%	> 99.99%	99.9%	46.7%	91.3%	98.0%	99.99%	99.99%
Murraysburg	-	-	99.9%	53.3%	89.5%	99.4%	95.83%	0.00%

Beaufort West Municipality's compliance sample results for the period July 2023 to June 2024 are included in Annexure E. The percentage water quality compliance for the various schemes are included in Table 8.1.7.5 of the Future Demand and Functionality Requirements Report.

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Number of Monitoring Points for Drinking Water Sufficient:

The current Operational and Compliance Water Quality Sampling Programmes of Beaufort West Municipality are not adequate (See Table 8.1.7.2). The current number of monthly microbiological samples taken for each of the systems is adequate and no additional microbiological samples need to be taken by Beaufort West Municipality as indicated in Table 8.1.7.3 under Topic 8 of the Future Demand and Functionality Requirements Report. The additional monitoring required by Beaufort West Municipality for determinands identified during the Blue Drop risk assessment exceeding the SANS241:2015 limits for the 2023/2024 financial year, as can be noted from Table 8.1.7.5 under Topic 8 of the Future Demand and Functionality Requirements Report, were as follows (Frequency of analysis for determinands identified during the risk assessment exceeding the numerical limits in SANS241-1).

- Nelspoort: Aesthetic (Quarterly) and Operational Efficiency (Monthly) were unacceptable.
- Murraysburg: Acute Health Chemical (Monthly), Acute Health Microbiological (Monthly) and Aesthetic (Quarterly) were unacceptable.

6.3.2 Quality of Water Returned to the Resource: Urban

Beaufort West Municipality monitors the quality of the final treated effluent returned to the Water Resource System at their Beaufort West and Murraysburg WWTWs (Only Faecal Coliforms) and the sample results for the 2023/2024 financial year are included in Annexure E.

Percentage compliance to Effluent Release Acceptable Limits:

The effluent quality compliance sample results are loaded onto DWS's IRIS via the internet. The effluent quality compliance sampling results per parameter per WWTW for the period July 2023 to June 2024 are included in Annexure E. There is no discharge of final effluent at the Merweville and Nelspoort WWTWs (Evaporation) and no sampling were therefore done at these oxidation ponds.

The overall Microbiological compliance percentages of the final effluent samples taken during the last financial year at the Beaufort West and Murraysburg WWTWs are summarised in the table below.

Table 6.3.2.1: Percentage Microbiological (Faecal Coliforms) compliance of the compliance samples taken at the Beaufort West and Murraysburg WWTWs for the last financial year	
WWTW	2023/2024
Beaufort West	80.0%
Murraysburg	100.0%
Overall Compliance %	89.5%

No Chemical (Ammonia, Nitrates & Nitrites, COD Ortho-Phosphates) and Physical (pH, EC, TSS) compliance samples were taken at the Beaufort West and Murraysburg WWTWs. The percentage wastewater quality compliance for the various WWTWs, as included in DWS's 2022 Green Drop Report and 2023 Green Drop Progress Report, were as follows.

Table 6.3.2.2: Microbiological, Chemical, Physical and Overall compliance percentages, as included in DWS's 2022 Green Drop Report and 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
Beaufort West	92.0%	84.0%	56.0%	40.0%	92.1%	54.3%
Merweville	NMR	NMR	NMR	0.0%	NMR	0.0%
Nelspoort	NMR	NMR	NMR	0.0%	0.0%	0.0%
Murraysburg	No monitoring	No monitoring	No monitoring	0.0%	0.0%	0.0%

Number of Monitoring Points for Effluent Release Sufficient:

Beaufort West Municipality's existing Operational and Compliance Sampling Programmes are included in Tables 8.1.9.2 and 8.1.9.3. The current Operational and Compliance Monitoring Programmes for the WWTWs are not adequate. Results of the samples taken, as part of the implementation of the Compliance Monitoring Programme, are loaded onto DWS's IRIS.

6.3.3 Quality of Water Returned to the Resource: Rural

Beaufort West Municipality monitors no water returned to the Water Resource system in the rural areas. The Municipal Health Services of the Central Karoo District Municipality report monthly to the Department of Health on water quality. The EHPs of the Central Karoo District Municipality take water quality samples in the rural areas of the Central Karoo Region on request.

6.3.4 Pollution Contingency Measures Plan

It is important to indicate those resources which could potentially become polluted. The specific resource should be indicated, based on detail available to the municipality, for example the number of the borehole/s or the name of the river.

WWTWs and pump stations are the most notable causes for concern. These elements have to be managed properly to prevent untreated wastewater from becoming a health risk or a pollution risk to the environment. Beaufort West Municipality could conduct a future study, or appoint a specialist environmental consultant to do so, to determine the status quo of existing wastewater infrastructure and the related risk that it presents to the environment and human health. These risks can also form part of the W₂RAPs.

Some of the sewer pump stations are provided with emergency storage capacity to prevent spillages during power and pump failures. Mobile generators or adequate sewer tankers need to be available for the sewer pump stations during load shedding periods, to prevent any possible spillages.



Murraysburg main sewer PS emergency storage pond



Spillage at Nelspoort main sewer PS



Fenced and locked Kwa Madlenkosi Sewer PS

Wastewater treatment has to be managed properly to prevent untreated wastewater from becoming a health risk or a pollution risk to the environment. A Disaster Management Plan for the Central Karoo District Municipality is also in place to manage potential pollution risks in the Central Karoo Region.

6.3.5 Quality of Water Taken from Source: Urban – Percentage Monitored by WSA

The raw water abstraction volumes from the various sources are adequately monitored and recorded by the Municipality and is a valuable source of information for the IWA water balances for each of the systems. Bulk water meters are installed for all these sources. The potable water quality compliance sample results, as taken over the last twelve months, are included in Annexure E. Beaufort West Municipality's existing Operational and Compliance Water Quality Sampling Programmes are included in Table 8.1.7.2.

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The recommended samples to be taken, in order to ensure compliance with SANS241 requirements, are also indicated in the table.

6.3.6 Quality of Water Taken from Source: Rural – Percentage Monitored by WSA

The water quality in the rural areas is monitored by the EHPs of the Central Karoo District Municipality. Samples are taken on the farms when complaints or requests for water quality sampling are received by the EHPs. To date there is no monitoring undertaken by Beaufort West Municipality in the rural areas, other than the areas supplied with water from the current supply networks of Beaufort West Municipality.

The water quality of the drinking water at the schools in the rural areas is also regularly monitored by the EHPs of the Central Karoo District Municipality.

6.3.7 Quality of Water Returned to the Source: Urban – Percentage Monitored by WSA

Beaufort West Municipality's Wastewater Quality Sampling Programme is included under Tables 8.1.9.2. and 8.1.9.3. The final effluent quality sample results for the 2023/2023 financial year are included in Annexure E.

6.3.8 Quality of Water Returned to the Source: Rural – Percentage Monitored by WSA

The water returned to the source in the rural areas is monitored by the EHPs of the Central Karoo District Municipality.

6.3.9 Water Quality Results in Electronic Format?

All the water quality sample results are available in electronic format and the results are loaded on a monthly basis onto DWS's IRIS.

6.3.10 Percentage Time (Days) within SANS241 Standards per Year

The percentage water quality compliance with the SANS241:2015 limits for the various schemes are included in Table 8.1.7.5 of the Future Demand and Functionality Requirements Report. The water and final effluent quality results and the compliance percentages for the 2023/2024 financial year are also included in Annexure E.

6.4 OPERATION

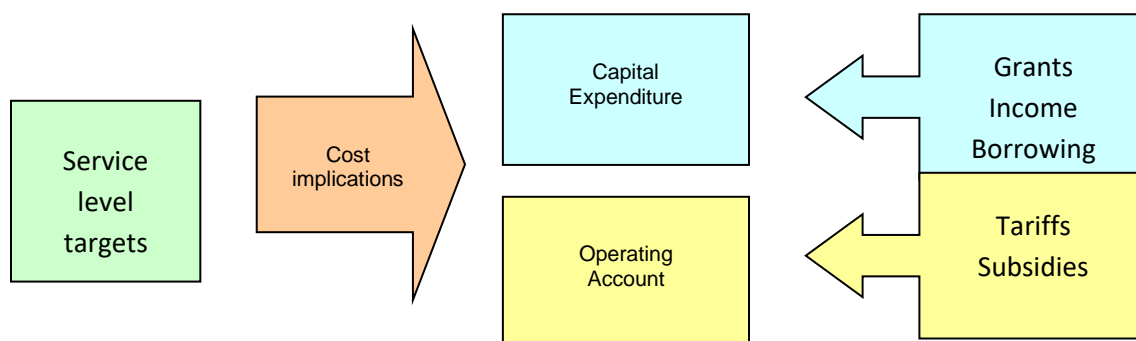
Table 6.4.1: Registration and recording of raw water abstraction

Scheme	Source	Is the abstraction registered with DWS? (Yes/No)	Is the abstraction recorded? (Yes/No)
Beaufort West	Gamka Dam, two fountains and a large number of production boreholes	Yes	Yes
Merweville	Nine production boreholes	Yes	Yes
Nelspoort	Sout River and thee production boreholes	Yes	Yes
Murraysburg	Four existing production boreholes and three future production boreholes.	Yes	Yes

7. FINANCIAL PROFILE

This part of the planning process is critical to the final WSDP. By identifying the costs associated with service level targets and the sources to meet the costs, the WSA will be able to see how financially viable their plan is.

Finance overview



As mentioned earlier, service level targets are what drive costs. On the one hand there are capital costs which refer to how much it is going to cost to install the infrastructure. The section on capital expenditure requires the costs of infrastructure to be recorded according to a number of different categories. The section on capital income requires that the sources of finance to meet capital expenditure be recorded in terms of subsidies, consumer payments, money from the WSA's current income and amounts to be borrowed.

Once the infrastructure has been built, there are on-going operating costs. If the projected operating costs associated with capital expenditure are not factored in right from the start (i.e. when service levels are being considered), there is a danger that the WSA will not be able to afford the running cost of the services. Detailed operating costs are not required as part of the tables, however information on the operational budget is requested. This information gives an indication of how "healthy" the WSA's finances are.

Income for operating costs comes from user payments (through tariffs) and subsidies (equitable share). The section on operating incomes requires information on current and future tariffs. Future tariffs are important since they provide an indication of the costs to users for the services set out in the targets.

Whilst income and expenditure will be calculated for the different settlement types, the tables require that the amounts are consolidated for the WSA area as a whole.

It also needs to be noted that costs can only be calculated once the necessary water services policies are in place, for example Free Basic Water Policy, Indigent Policy, and policies regarding the use of equitable share and other subsidies.

Currently the Water Sector suffers an unacceptable high level of financial losses, mainly for reasons that could be addressed through proper governance and management. The financial losses are evidenced by:

- Unacceptably high water leakages.
- Failure to meter water supplied and other forms of unaccounted for water.
- Poor infrastructure planning and poor investments.
- Poor operation and maintenance.
- Pollution of the resource leading to unnecessarily high water treatment costs.
- Corruption, tender fraud, maladministration and lack of governance.

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- Failure of local government ring-fence the water sector finances and the diversion of funds allocated to water to non-essential purposes.
- Inefficient institutional performance.
- Poor revenue and debt management.
- Inefficient water pricing that results in the under-recovery of costs.
- A misunderstanding of the free basic water policy and the neglect to manage the quantity of water supplied in terms of the policy and the poor maintenance of indigent registers.

The following budget related policies and bylaws are in place for Beaufort West Municipality (To provide a sound environment to manage the financial affairs of the municipality).

- | | |
|---|---|
| • Virements Policy | • Tariff Policy |
| • Policy Relating to Funding and Reserves | • Expenditure Management Policy |
| • Budget Implementation Policy | • Cost Containment Policy |
| • Policy Relating to Borrowing | • Customer Care, Credit Control, & Debt Collection Policy |
| • By-law relating to Credit Control & Debt Collection | • Indigent Related Policy |
| • Tariff Policy By-Law | • Property Rates Policy |
| • Municipal Property Rates Policy | • Bad Debt Policy |
| • Asset Management Policy | • Cash Management and Investments Policy |
| • Accounting Policy. | • Supply Chain Management Policy |

7.1 EXPENDITURE

7.1.1 Ratios and Efficacy Indicators

The table below gives an overview of the ratios and efficacy indicators for Beaufort West Municipality.

Table 7.1.1.1: Water and sanitation ratios and efficacy indicators				
Ratios and Efficacy Indicators	2019/2020	2020/2021	2021/2022	2022/2023
Water service O&M cost as a % of Total O&M Budget	These indicators are not yet part of the Municipality's MFMA Schedule A tables. The key financial indicators and ratios included in the 2023/2024 Final Budget are summarised in Table 7.1.1.2 below.			
Water service O&M cost as a % of Total Asset Value (CRC)				
Sanitation service O&M cost as a % of Total O&M Budget				
Sanitation service O&M cost as a % of Total Asset Value (CRC)				
Untreated waste water units released				
Cost to purify water				
Cost to deliver water to consumers				
Cost to treat waste water				
Cost to deliver waste water to treatment facility				
Blue Drop cost				
Blue Drop number of WTWs				
Green Drop cost				
Green Drop number of WWTWs				

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The key financial indicators and ratios as included in the 2024/2025 MTREF Budget are indicated in the table below.

Table 7.1.1.2: Financial performance indicators and benchmarks					
Financial Indicator	Basis of Calculation	Record Prior			2023/2024 Pre-Audit outcome
		2020/2021 Audited outcome	2021/2022 Audited outcome	2022/2023 Audited outcome	
Borrowing Management					
Capital Charges to Operating Expenditure ⁽⁶⁾	Interest & Principal Paid / Operating Expenditure	3.5%	3.7%	2.4%	0.8%
Capital Charges to Own Revenue	Finance charges and repayment of borrowing / Own Revenue	4.7%	4.7%	3.1%	0.7%
Borrowed funding of “own” capital expenditure	Borrowing / Capital expenditure excl. transfers and grants and contributions	0.0%	0.0%	0.0%	0.0%
Safety of Capital					
Gearing	Long Term Borrowing / Funds and Reserves	0.0%	0.0%	0.0%	1994.7%
Liquidity					
Current Ratio	Current assets / Current liabilities	5.2	0.6	0.6	1.4
Current Ratio adjusted for aged debtors	Current assets less debtors > 90 days/current liabilities	5.2	0.6	0.6	1.4
Liquidity Ratio ⁽¹⁾	Monetary Assets / Current Liabilities	4.2	0.1	0.0	0.4
Revenue Management					
Annual Debtors Collection Rate (Payment level %)	Last 12 months receipts / Last 12 months billing	0.0%	91.5%	0.0%	138.6%
Current Debtors Collection Rate (Cash receipts % of Ratepayer & Other Revenue)		91.5%	0.0%	0.0%	116.2%
Outstanding Debtors to Revenue	Total outstanding debtors to annual revenue	25.8%	44.8%	39.8%	24.7%
Longstanding Debtors Recovered	Debtors > 12 months recovered / Total debtors > 12 months old				
Creditors Management					
Creditors System Efficiency ⁽⁵⁾	% of Creditors paid within terms				
Creditors to Cash and Investments		-208.2%	-94.3%	-125.1%	37.2%
Other Indicators					
Electricity Distribution Losses	Total volume losses (kW)				
	Total cost of losses				
	% Volume (units purchased and generated less units sold/units purchased and generated)				
Water Distribution Losses	Total volume losses (Kl)				
	Total cost of losses				
	% Volume (units purchased and generated less units sold/units purchased and generated)				
Employee Costs ⁽⁷⁾	Employee costs / (Total Revenue – Capital Revenue)	48.7%	48.8%	43.7%	27.1%
Remuneration	Total remuneration / (Total Revenue – Capital Revenue)	51.1%	51.2%	45.9%	31.2%
Repairs and Maintenance ⁽⁸⁾	R&M / (Total Revenue excluding Capital Revenue)	1.1%	2.3%	3.0%	2.0%
Finance Charges and Depreciation	FC&D / (Total Revenue – Capital Revenue)	12.5%	13.9%	10.1%	6.2%

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Table 7.1.1.2: Financial performance indicators and benchmarks

Financial Indicator	Basis of Calculation	Record Prior			2023/2024 Pre-Audit outcome
		2020/2021 Audited outcome	2021/2022 Audited outcome	2022/2023 Audited outcome	
IDP Regulation Financial Viability Indicators					
Debt Coverage ⁽⁴⁾	Total Operating Revenue – Operating Grants) / Debt service payments due within financial year)	425.3	337.1	176.6	140.7
O/S Service Debtors to Revenue ⁽³⁾	Total outstanding service debtors / annual revenue received for services	49.6%	81.9%	83.6%	56.4%
Cost Coverage ⁽²⁾	(Available cash + Investments) / monthly fixed operational expenditure	(0.3)	(7.1)	(4.7)	4.7

Source: Medium Term Revenue and Expenditure Framework for Beaufort West Municipality 2024/2025: Table SA8 – Performance indicators and benchmarks

Notes:

- (1) **Liquidity Ratio:** Measures the municipality's ability to pay its bills and is calculated by dividing the monetary assets (due within one year) by the municipality's current liabilities. A higher ratio is better.
- (2) **Cost Coverage:** It explains how many months expenditure can be covered by the cash and other liquid assets available to the Municipality excluding utilisation of grants.
- (3) **Outstanding Service Debtors:** Measures how much money is still owed by the community for water, electricity, waste removal and sanitation compared to how much money has been paid for these services. It is calculated by dividing the total outstanding debtors by the total annual revenue. A lower score is better.
- (4) **Debt Coverage:** The number of times debt payments can be accommodated within Operating revenue (excluding grants). This in turn represents the ease with which debt payments can be accommodated by the municipality.
- (5) **Creditors System Efficiency:** The proportion of creditors paid within terms (i.e. 30 days). This ratio is calculated by outstanding trade creditors divided by credit purchases.
- (6) **Capital Charges to Operating Expenditure:** Is calculated by dividing the sum of capital interest and principle paid by the total operating expenditure.
- (7) **Employee Costs:** Measures what portion of the revenue was spent on paying employee costs. It is calculated by dividing the total employee cost by the difference between total revenue and capital revenue.
- (8) **Repairs and Maintenance:** This represents the proportion of the operating expenditure spent on repairs and maintenance.

7.1.2 Water Balance Cost / Revenue

The table below gives an overview of the water balance cost for Beaufort West Municipality.

Table 7.1.2.1: Operation, function, process water balance cost / revenue

Water Balance Cost / Revenue	2021/2022		2022/2023	
	R	Kl Units	R	Kl Units
System Input Volume	R31 002 000 R33 642 000	3 296 616	R45 680 000 R28 138 000	4 307 684
Billed metered consumption	R31 002 000	1 156 656	R45 680 000	958 702
Billed un-metered consumption	R0	0	R0	0
Un-billed metered consumption	R0	0	R0	0
Un-billed un-metered consumption	R67 281	6 593	R56 272	8 615
Apparent losses (15%)	R3 265 661	320 006	R3 272 911	501 054
Real losses (85%)	R18 505 372	1 813 361	R18 546 528	2 839 312
Total water losses during the process of O&M	R21 771 033	2 133 367	R21 819 440	3 340 366

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7.1.3 Operating Cost

The table below gives a summary of the total operating costs and income for water and sanitation services for the last five financial years, with the detail information in the tables that follow.

Table 7.1.3.1: Summary of Operational and Maintenance expenditure and income budgets for water and sanitation services					
Description	Record Prior (R)				2022/2023
	2018/2019	2019/2020	2020/2022	2021/2022	
Water Services					
Expenditure	R23 225 000	R29 112 000	R23 476 000	R33 642 000	R28 138 000
Income	R34 992 000	R37 300 000	R50 513 000	R31 002 000	R45 680 000
Surplus / Deficit	R11 767 000	R8 188 000	R27 037 000	R2 640 000	R17 542 000
Sanitation Services					
Expenditure	R10 656 000	R19 130 000	R5 498 000	R13 633 000	R20 680 000
Income	R20 920 000	R23 328 000	R18 863 000	R26 157 000	R28 696 000
Surplus / Deficit	R10 264 000	R4 198 000	R13 365 000	R12 524 000	R8 016 000

Source: Beaufort West Municipality's Annual Reports (Chapter 5 Financial Performance).

Water Services and Sanitation Services generated operating surpluses for the last five financial years. The surpluses are used to subsidise other services that do not generate enough own revenue to sustain themselves.

7.1.3.1 Operating Costs: Water

The table below gives a summary of the operational expenditure for water services for the last five financial years.

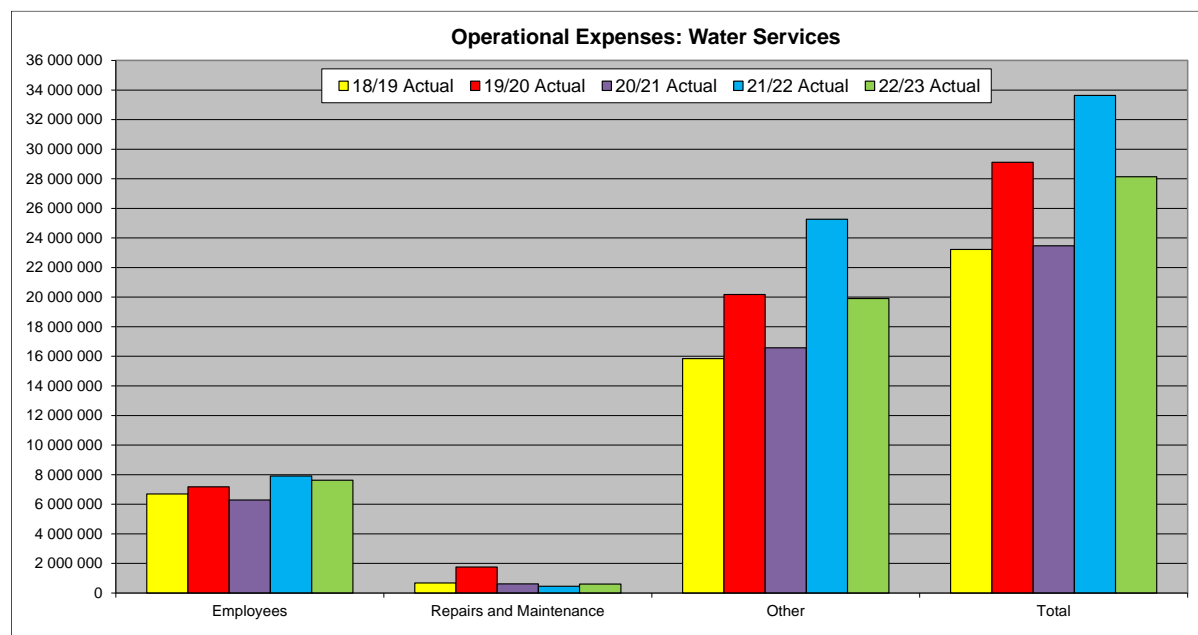
Table 7.1.3.1.1: Detail operational expenditure budgets for water services					
Description	Record Prior (R)				2022/2023
	2018/2019	2019/2020	2020/2021	2021/2022	
Employees	R6 696 000	R7 181 000	R6 289 000	R7 913 000	R7 626 000
Repairs and Maintenance	R681 000	R1 753 000	R614 000	R458 000	R601 000
Other	R15 848 000	R20 178 000	R16 573 000	R25 271 000	R19 911 000
Total Expenditure	R23 225 000	R29 112 000	R23 476 000	R33 642 000	R28 138 000

Source: Beaufort West Municipality's Annual Reports (Chapter 5 Financial Performance).

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The graph below gives an overview of the historical operational expenditure for water services for the last five financial years.



7.1.3.2 Operating Costs: Sanitation

The table below gives a summary of the operational expenditure for sanitation services for the last five financial years.

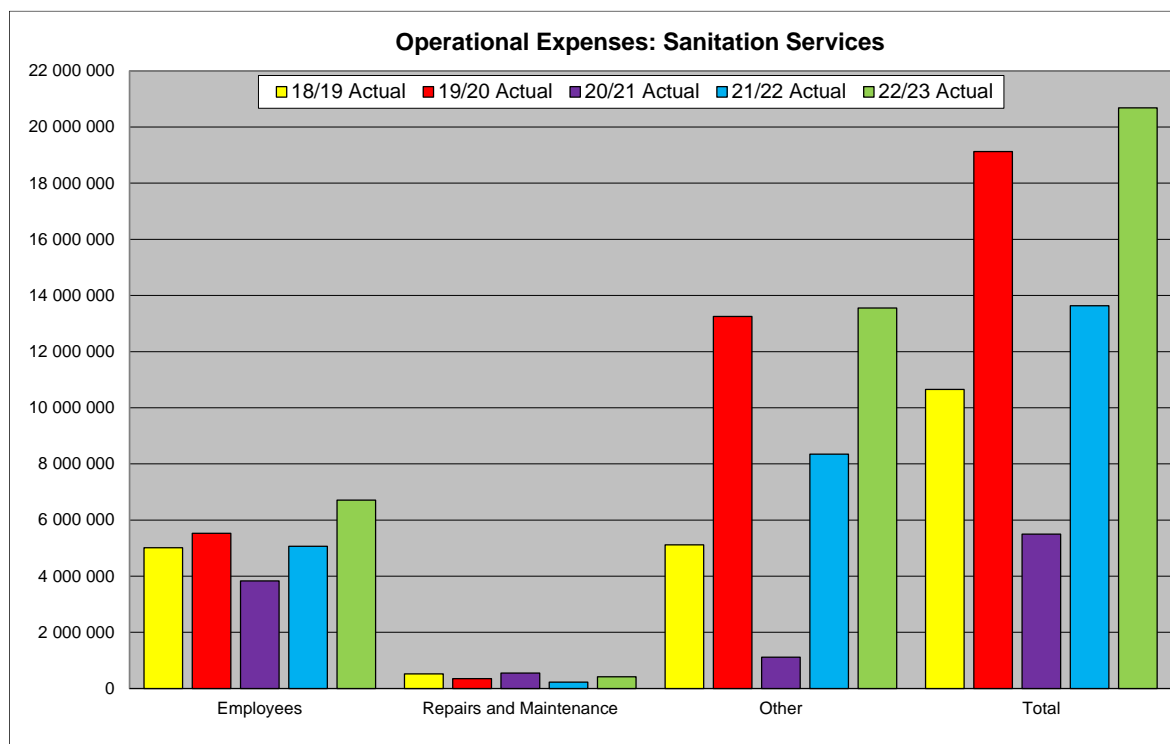
Table 7.1.3.2.1: Detail operational expenditure budgets for sanitation services					
Description	Record Prior (R)				2022/2023
	2018/2019	2019/2020	2020/2021	2021/2022	
Employees	R5 015 000	R5 527 000	R3 833 000	R5 063 000	R6 707 000
Repairs and Maintenance	R522 000	R348 000	R550 000	R226 000	R417 000
Other	R5 119 000	R13 255 000	R1 115 000	R8 344 000	R13 556 000
Total Expenditure	R10 656 000	R19 130 000	R5 498 000	R13 633 000	R20 680 000

Source: Beaufort West Municipality's Annual Reports (Chapter 5 Financial Performance).

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The graph below gives an overview of the operational expenditure for sanitation services for the last five financial years.



7.1.4 Capital Expenditure

The capital expenditure per standard classification of Beaufort West Municipality's previous financial year's capital budgets are summarised in the table below.

Table 7.1.4.1: Capital expenditure of Beaufort West Municipality's previous years' capital budgets					
Capital Expenditure Standard	Record Prior				2023/2024 Full Year Forecast
	2019/2020 Audited Outcome	2020/2021 Audited Outcome	2021/2022 Audited Outcome	2022/2023 Pre-Audited Outcome	
Executive and Council	R871 000	R1 603 000	R4 940 000	R0	R0
Finance and administration	-R556 000	R634 000	R451 000	R1 551 000	R1 707 000
Community and social services	R472 000	R0	R0	R0	R77 000
Sport and recreation	R2 455 000	R0	R0	R4 138 000	R2 422 000
Public Safety	R107 000	R0	R0	R150 000	R0
Housing	R51 000	R0	R0	R0	R0
Planning and development	R49 000	R0	R1 000	R0	R164 000
Road Transport	R2 314 000	R2 278 000	R0	R4 065 000	R5 985 000
Energy Sources	R17 821 000	R4 505 000	R6 152 000	R14 808 000	R0
Water Management	R2 770 000	R11 575 000	R4 095 000	R25 699 000	R1 074 000
Waste Water Management	R67 000	R306 000	R0	R300 000	R216 000
Waste Management	R0	R0	R0	R0	R4 586 000
Total Capital Expenditure	R26 421 000	R20 901 000	R15 639 000	R50 711 000	R16 231 000

Source: Medium Term Revenue and Expenditure Framework for Beaufort West Municipality 2023/2024: Table A5 - Capital Expenditure by Vote, Standard Classification and Funding

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7.1.4.1 Capital Expenditure: Water

Beaufort West Municipality successfully completed various water infrastructure capital projects over the last number of financial years. The table below gives an overview of Beaufort West Municipality's historical water capital expenditure over the last three financial years.

Table 7.1.4.1.1: Historical capital expenditure for water services			
Project	Record Prior (R)		2022/2023
	2020/2021	2021/2022	
Drilling, testing, equipping and connection of boreholes in Merweville	R3 737 950	R1 213 851	-
Construction of New Reservoir: Merweville	R4 377 074	-	-
Construction of Two (2) New Reservoirs: Murraysburg	R3 460 225	R2 881 139	-
The Augmentation and Upgrading of the Water Supply Network - Merweville	-	-	R11 181 826
Borehole Siting, Exploration and Development - Murraysburg	-	-	R13 547 120
Acquisition of Back-up Generators	-	-	R1 093 800
Total	R11 575 249	R4 094 990	R25 822 746

Source: Water Capital Expenditure as received from Municipality for the period 2020/2021 to 2022/2023.

7.1.4.2 Capital Expenditure: Sanitation

Beaufort West Municipality successfully completed various sewerage infrastructure capital projects over the last number of financial years. The table below gives an overview of Beaufort West Municipality's historical sewerage capital expenditure over the last three financial years.

Table 7.1.4.2.1: Historical capital expenditure for sanitation services			
Project	Record Prior (R)		2022/2023
	2020/2021	2021/2022	
Renewal of Sewerage Pump	R306 001	-	-
Total	R306 001	-	-

Source: Water Capital Expenditure as received from Municipality for the period 2020/2021 to 2022/2023.

7.2 INCOME

7.2.1 Operating Income

7.2.1.1 Operating Income: Subsidies

The main subsidy available for funding the operating costs of services is the equitable share. This is an unconditional grant from national to local government and the amount allocated is based on the levels of poverty within the particular municipal area. The WSA will have to decide how it will spend this subsidy and how much of it is to be spent on water. It is strongly recommended that part of this subsidy be used to cover the running costs of supplying a basic level of supply to poor households. This should be based on the Indigent Policy, which requires that poor households be identified and the conditions of subsidization be clearly spelt out.

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Table 7.2.1.1.1: Operating Income: Transfers and Grants					
Transfers and Grants	Record Prior (R)				2023/2024 Full Year Forecast
	2019/2020 Audited Outcome	2020/2021 Audited Outcome	2021/2022 Audited Outcome	2022/2023 Audited Outcome	
National Government					
Local Government Equitable Share	R59 781 000	R73 778 000	R69 279 000	R77 265 000	R83 574 000
Municipal Infrastructure Grant	R698 600	R695 300	R726 050	R768 000	R719 000
Local Government Financial Management Grant	R1 700 000	R1 700 000	R1 914 000	R2 085 000	R2 185 000
EPWP Integrated Grant	R1 924 000	R1 859 000	R1 285 000	R1 136 000	R1 372 000
Other transfers / grants	R287 000	R0	R0	R0	R0
Sub Total	R64 390 600	R78 032 300	R73 204 050	R81 254 000	R87 350 000
Provincial Government					
Provincial Treasury WC Financial Management Capacity Building Grant	R380 000	R300 000	R250 000	R100 000	R0
Financial Management Support Grant	R1 955 000	R1 000 000	R100 000	R0	R0
Provincial Treasury WC Municipal Financial Recovery Services Grant	R0	R0	R0	R1 993 000	R1 000 000
Department of Infrastructure Municipal Accreditation and Capacity Building Grant	R238 000	R252 000	R0	R256 000	R0
Department of Infrastructure Title Deeds Restoration Grant	R0	R0	R0	R0	R0
Department of Infrastructure Human Settlements Development Grant (Beneficiaries)	R0	R0	R0	R0	R1 135 000
Department Cultural Affairs & Sport Replacement Funding for most vulnerable B3 Municipalities	R5 856 000	R6 207 000	R6 548 000	R6 679 000	R7 158 000
Department of LG Thusong Service Centres Grant (Sustainability Operational Support Grant)	R0	R150 000	R150 000	R0	R0
Department of LG Community Development Workers Operational Support Grant	R408 000	R206 000	R226 000	R223 000	R226 000
Department of LG Western Cape Municipal Interventions Grant	R0	R0	R0	R180 000	R800 000
Department of LG Municipal Energy Resilience Grant	R0	R0	R0	R0	R600 000
Other transfers / grants	R1 800 000	R0	R1 100 000	R0	R0
Sub Total	R10 637 000	R8 115 000	R8 374 000	R9 431 000	R10 919 000
District Municipality					
Central Karoo District Municipality	R0	R0	R0	R200 000	R0
Sub Total	R0	R0	R0	R200 000	R0
Other Grants					
Chemical Industries Education & Training Authority	R0	R0	R0	R314 000	R2 124 000
Sub Total	R0	R0	R0	R314 000	R2 124 000
Total	R75 027 600	R86 147 300	R81 578 050	R91 199 000	R100 893 000

Source: Medium Term Revenue and Expenditure Framework for Beaufort West Municipality 2024/2025: Table SA18 Transfers and Grants Receipt

7.2.1.2 Operating Income: Water

The table below gives a summary of the operational income for water services for the last five financial years.

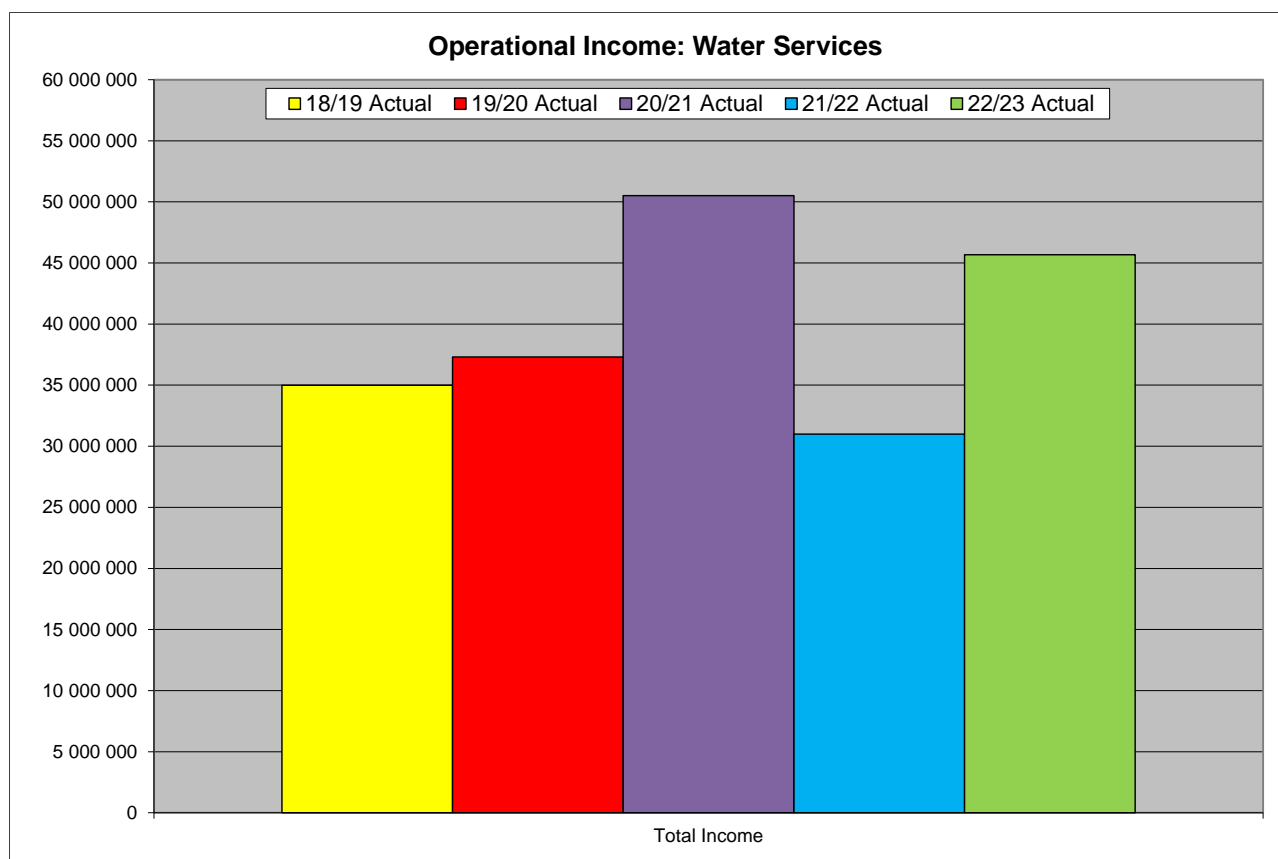
Table 7.2.1.2.1: Operating income for water services					
Description	Record Prior (R)				2022/2023
	2018/2019	2019/2020	2020/2021	2021/2022	
Total Income	R34 992 000	R37 300 000	R50 513 000	R31 002 000	R45 680 000

Source: Beaufort West Municipality's Annual Reports (Chapter 5 Financial Performance).

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The graph below gives an overview of the operational income for water services for the last five financial years.



7.2.1.3 Operating Income: Sanitation

The table below gives a summary of the operational income for sanitation services for the last five financial years.

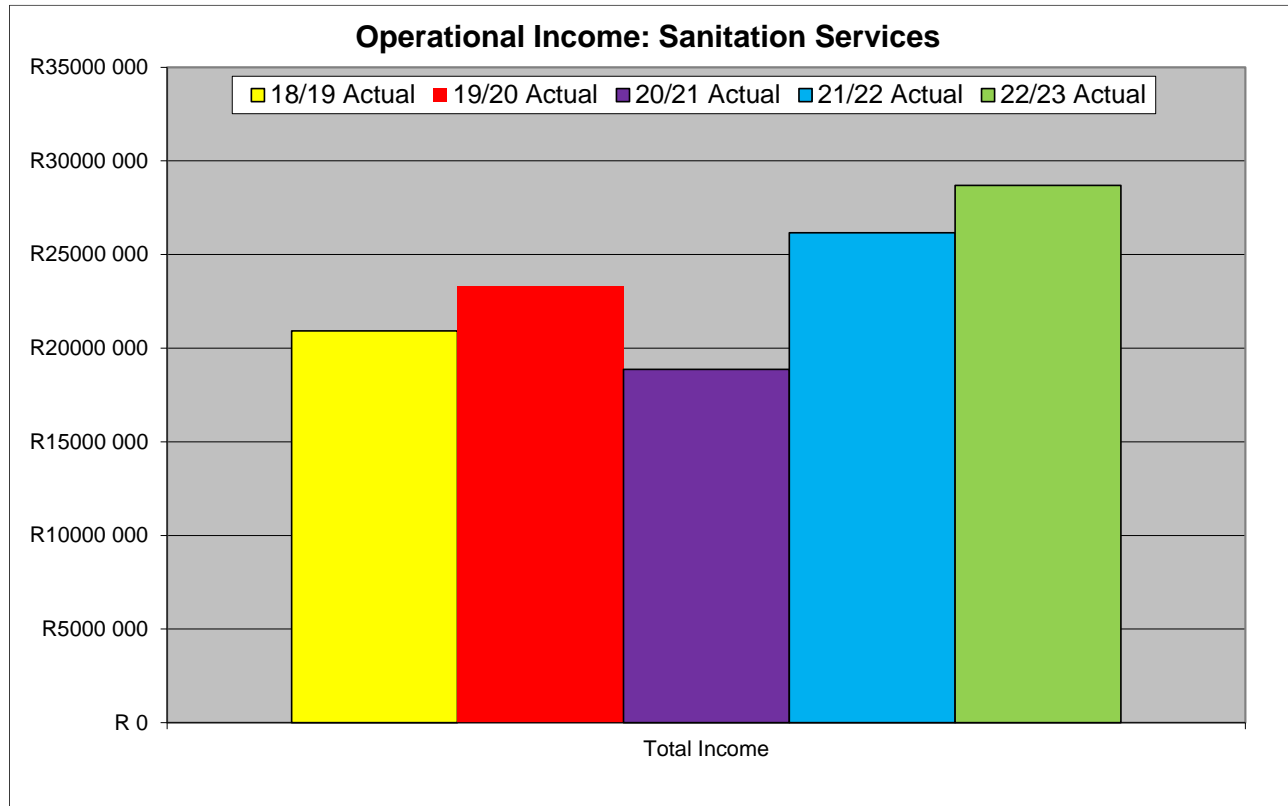
Table 7.2.1.3.1: Operating income for sanitation services					
Description	Record Prior (R)				2022/2023
	2018/2019	2019/2020	2020/2021	2021/2022	
Total Income	R20 920 000	R23 328 000	R18 863 000	R26 157 000	R28 696 000

Source: Beaufort West Municipality's Annual Reports (Chapter 5 Financial Performance).

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The graph below gives an overview of the operational income for sanitation services for the last five financial years.



7.2.2 Capital Income

Capital expenditure is funded through National Grants, External Borrowing and Internally Generated Revenue. Internally Generated Revenue can only be generated through operating budget surpluses, but this means that Beaufort West Municipality's customer base must pay for it through property rates and service charges levied.

Grants and donations through government programmes are another important funding source. Government programmes will usually give grants for bulk infrastructure service and internal infrastructure services where the investment in infrastructure is needed to provide basic services to the poor.

External borrowing is the least desirable source of finance to invest in infrastructure services, simply because borrowings need to be repaid at a cost for Beaufort West Municipality's customer base. A Municipality can become over borrowed and needs to guard against this not to burden their customer base in an unsustainable and non-viable manner.

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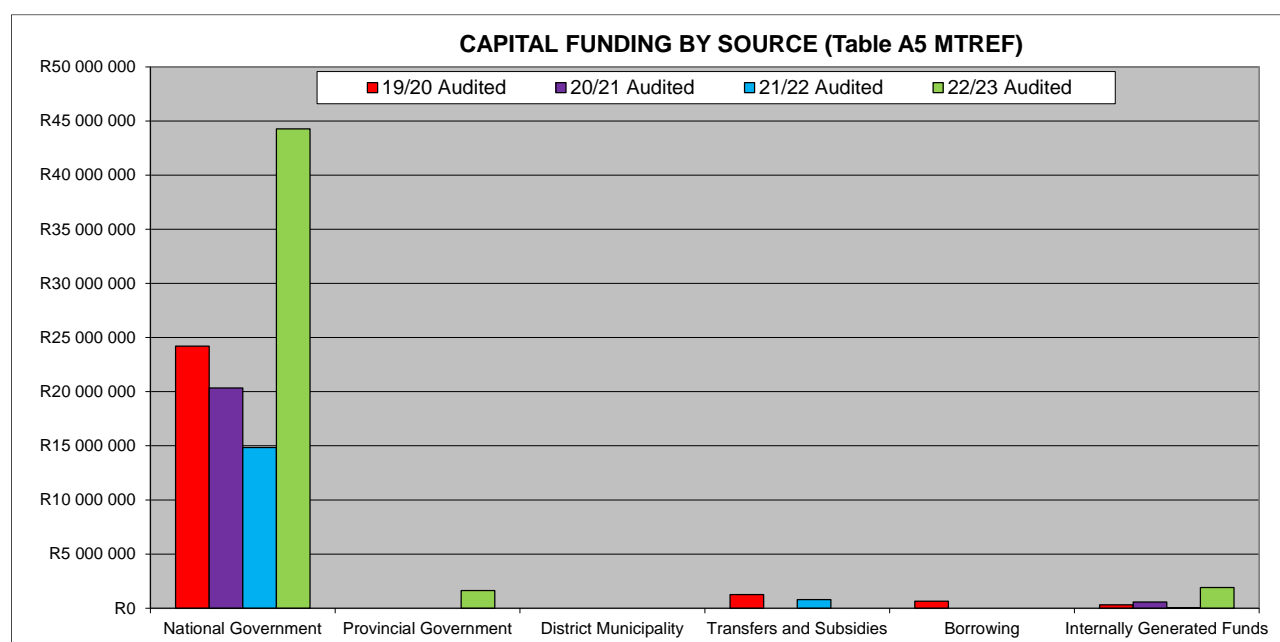
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The funding sources of Beaufort West Municipality's previous year's capital budgets are summarised in the table below.

Table 7.2.2.1: Sources of funding of Beaufort West Municipality's previous years' capital budgets					
Capital Funding	Record Prior				2023/2024 Full Year Forecast
	2019/2020	2020/2021	2021/2022	2022/2023 Audited Outcome	
National Government	R24 207 173	R20 336 056	R14 840 486	R44 270 000	R12 221 000
Provincial Government	R0	R0	R0	R1 632 000	R1 847 000
District Municipality	R0	R0	R0	R0	R0
Transfers and Subsidies	R1 258 939	R0	R793 995	R0	R0
Borrowing	R644 506	R0	R0	R0	R0
Internally generated funds	R312 596	R565 111	R5 340	R1 912 000	R1 844 000
Total Capital Funding	R26 423 214	R20 901 167	R15 639 821	R47 814 000	R15 913 000

Source: Medium Term Revenue and Expenditure Framework for Beaufort West Municipality 2024/2025: Table A5 - Capital Expenditure by Vote, Standard Classification and Funding

The graph below gives an overview of the historical capital budget funding per sources for Beaufort West Municipality for the various financial years.



7.2.2.1 Capital Income: Water

The funding sources of the historical water capital infrastructure projects of Beaufort West Municipality were not received and could therefore not be indicated. WSDP Performance- and Water Services Audit Reports were not compiled for the last number of years, which normally indicate the historical capital expenditure per project and the funding sources.

7.2.2.2 Capital Income: Sanitation

The funding sources of the historical sewerage capital infrastructure projects of Beaufort West Municipality were not received and could therefore not be indicated. WSDP Performance- and Water Services Audit Reports were not compiled for the last number of years, which normally indicate the historical capital expenditure per project and the funding sources.

7.3 TARIFF AND CHARGES

The WSA needs to have an income or tariff policy stating from where it will raise recurrent income, how tariffs are to be set for different consumer groups and levels of service, and actual tariff levels. This should include a policy to provide free water for those who cannot afford a basic level of supply.

The tariff set by the WSA must:

- support the viability and sustainability of water services to the poor;
- discourage wasteful or inefficient water use;
- take into account the incremental cost that would be incurred to increase capacity of the water supply infrastructure to meet an incremental growth in demand.

Beaufort West Municipality's current (2023/2024) water and sewage tariffs are based on the following:

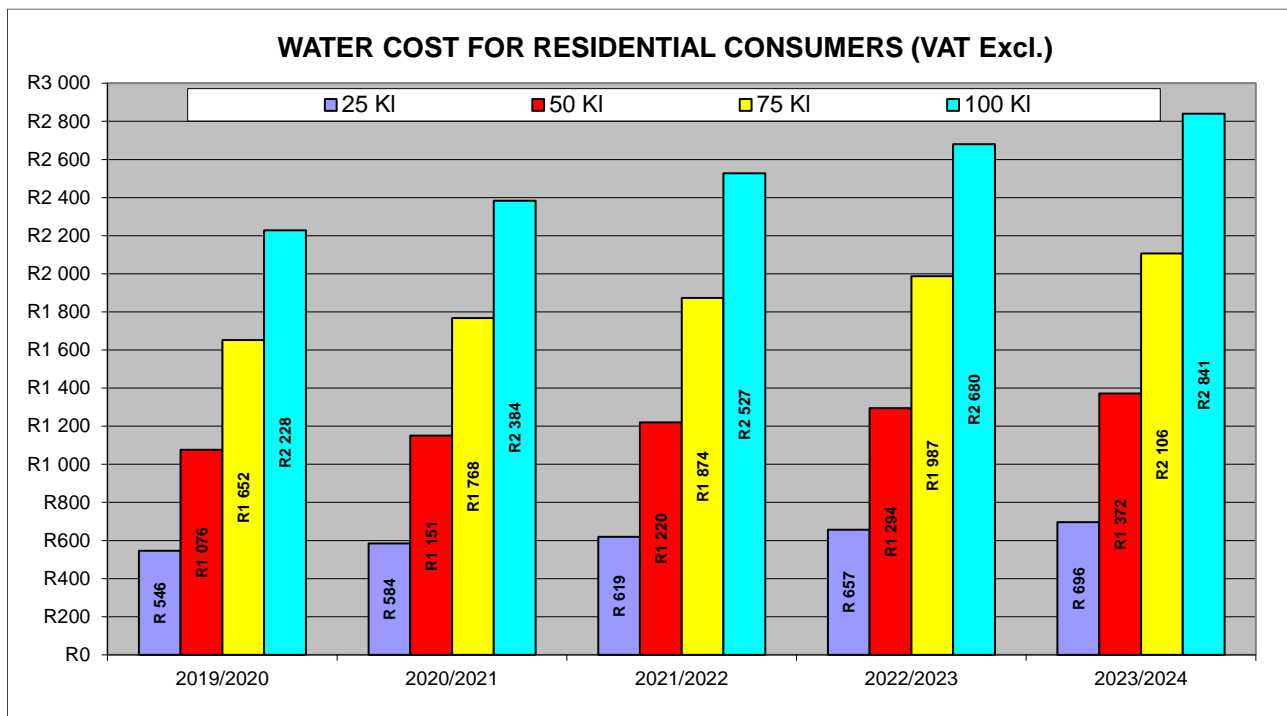
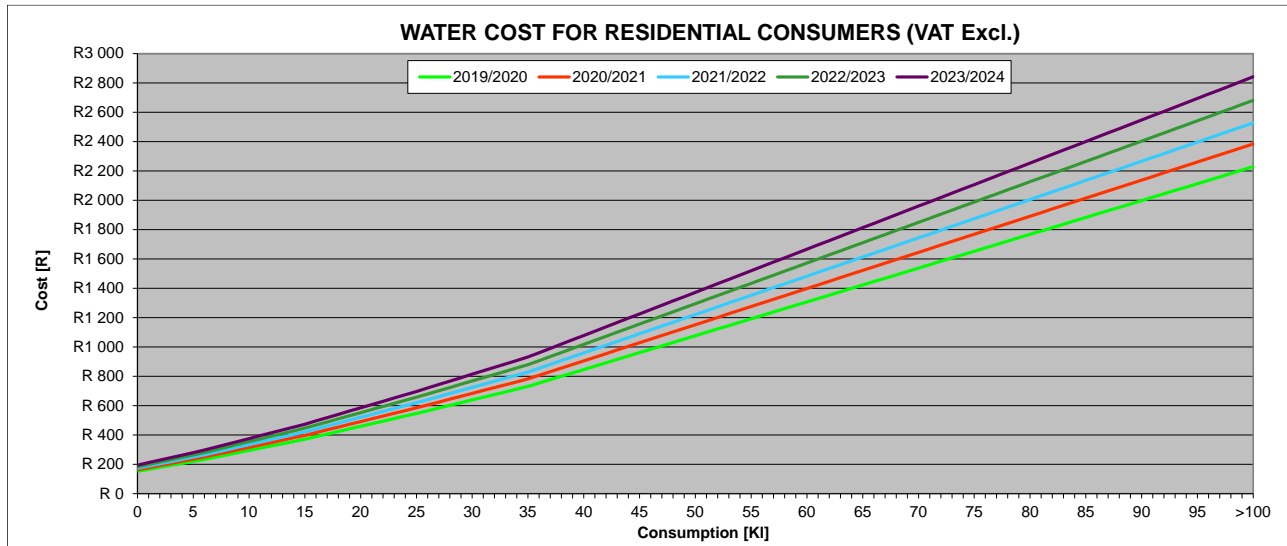
- A five block step rising residential water tariff structure with the first 6 kl/month being free for all indigent registered households (Subsidised). Residential consumers also pay a fix water network charge per month.
- Business, Commercial, Industrial, Schools, Government Institutions, Sport Clubs and the Municipality pay a fix water network charge and a fix tariff per kl water usage.
- Residential sewerage charges are fix charges for a year, irrespective of the number of toilets.
- The sewage tariffs for Businesses, Offices and other Institutions are fix charges for a year.
- Fixed sewage tariffs are also in place for the emptying of septic or conservancy tank.

Historically, water use in the highest tariff block provided a mechanism to subsidize lower-usage and indigent customers. However, after the drought, consumption in the highest block is greatly reduced. Thus, cross subsidization now hardly benefits low usage and indigent customers. The current tariff structure is largely based on volume of water consumed, meaning exogenous factors can control water revenues. Examples are climate change, industrial efficiency gains, domestic plumbing improvements, etc. that all reduce water consumed and revenues.

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The costs residential consumers had to pay for their water in Beaufort West Municipality's Management Area, for the various financial years, are presented on the graphs below.



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

Table 7.3.1: Water tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	Category	19/20	20/21	21/22	22/23	23/24
Beaufort West Sub-economic Dwellings	Availability Fees per month	R92-88	R99-38	R99-38	R105-34	R111-66
Beaufort West Other Residential and Industrial Consumers	Availability Fees per month	R152-19	R162-84	R172-61	R182-97	R193-95
Beaufort West No meter, only standing tap for the use of more than one erf	Availability Fees per month	R65-16	R69-72	R73-90	R78-33	R83-03
Beaufort West Credit Meters (No Restrictions)	Tariff 1 (0 – 6 Kl)	R13-38	R14-32	R15-18	R16-09	R17-06
	Tariff 2 (7 – 15 Kl)	R15-36	R16-44	R17-43	R18-48	R19-59
	Tariff 3 (16 – 25 Kl)	R17-53	R18-76	R19-89	R21-08	R22-34
	Tariff 4 (26 – 35 Kl)	R18-43	R19-72	R20-90	R22-18	R23-51
	Tariff 5 (>36 Kl)	R23-04	R24-65	R26-13	R27-72	R29-38
Beaufort West Business Water	Per Kl	R17-53	R18-76	R19-89	R21-08	R22-34
Beaufort West Prepaid Meter Water Consumption Rates	Tariff 1 (0 – 6 Kl)	R21-19	R22-67	R24-03	R25-47	R27-00
	Tariff 2 (7 – 15 Kl)	R22-95	R24-56	R26-03	R27-59	R29-25
	Tariff 3 (16 – 25 Kl)	R17-53	R18-76	R26-03	R27-59	R29-25
	Tariff 4 (26 – 35 Kl)	R18-44	R19-73	R26-03	R27-59	R29-25
	Tariff 5 (>36 Kl)	R23-04	R24-65	R26-03	R27-59	R29-25
Merweville Basic Charge	Fees per month	R24-61	R26-33	R27-91	R29-58	R31-35
Merweville Credit Meters (No Restrictions)	Tariff 1 (0 – 6 Kl)	R7-17	R7-67	R8-13	R8-62	R9-14
	Tariff 2 (7 – 15 Kl)	R7-89	R8-44	R8-95	R9-49	R10-06
	Tariff 3 (16 – 25 Kl)	R8-61	R9-21	R10-74	R11-39	R12-07
	Tariff 4 (26 – 35 Kl)	R10-26	R10-98	R11-64	R12-34	R13-08
	Tariff 5 (>36 Kl)	R11-05	R11-82	R12-53	R13-28	R14-08
Merweville Business Water	Per Kl	R8-61	R9-21	R9-76	R10-35	R11-00
Merweville Prepaid Meter Water Consumption Rates	Tariff 1 (0 – 6 Kl)	R11-24	R12-03	R12-75	R13-52	R14-33
	Tariff 2 (7 – 15 Kl)	R11-24	R12-03	R14-50	R15-37	R16-30
	Tariff 3 (16 – 25 Kl)	R13-49	R14-43	R17-40	R18-44	R19-55
	Tariff 4 (26 – 35 Kl)	R14-62	R15-64	R18-85	R19-98	R21-20
	Tariff 5 (>36 Kl)	R15-74	R16-84	R20-30	R21-52	R22-81
Nelspoort Basic Charge	Fees per month	R84-16	R90-05	R95-45	R101-18	R107-25
Nelspoort Credit Meters (No Restrictions)	Tariff 1 (0 – 6 Kl)	R7-48	R8-00	R8-48	R8-99	R9-53
	Tariff 2 (7 – 15 Kl)	R8-46	R9-05	R9-59	R10-17	R10-78
	Tariff 3 (16 – 25 Kl)	R9-26	R9-91	R10-51	R11-14	R11-81
	Tariff 4 (26 – 35 Kl)	R10-12	R10-83	R11-48	R12-17	R12-90
	Tariff 5 (>36 Kl)	R11-00	R11-77	R12-48	R13-23	R14-02
Hospital	Tariff 3	R8-46	R9-05	R10-51	R11-14	R11-81
Other Consumers	Fixed Rate	R93-90	R100-47	R106-50	R112-89	R119-66
Nelspoort Prepaid Meter Water Consumption Rates	Tariff 1 (0 – 6 Kl)	R11-71	R12-53	R13-28	R14-08	R14-92
	Tariff 2 (7 – 15 Kl)	R13-42	R14-36	R15-22	R16-13	R17-10
	Tariff 3 (16 – 25 Kl)	R17-53	R18-76	R19-89	R21-08	R22-34
	Tariff 4 (26 – 35 Kl)	R18-44	R19-73	R18-26	R19-36	R20-52
	Tariff 5 (>36 Kl)	R23-04	R24-65	R22-83	R24-20	R25-65
Murraysburg Basic Charge	Fees per month	R40-95	R43-82	R46-45	R49-24	R52-19

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Table 7.3.1: Water tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	Category	19/20	20/21	21/22	22/23	23/24
Murraysburg Consumption	Per Kl	R4-85	R5-19	R5-50	R5-83	R6-18
Murraysburg Prepaid meters	Per Kl	R7-90	R8-45	R8-96	R9-50	R10-07
Murraysburg: Deposit Credit Meters	Once off	R80-25	R85-87	R91-02	R96-48	R102-27
Murraysburg: Re-connections	Once off (Vat incl.)	R41-90	R44-83	R47-52	R50-37	R53-39
Murraysburg: New Water Connection	Once off	Actual cost + 10%				
Murraysburg Irrigation Water	Township per/hr or part thereof	R44-75	R47-88	R50-75	R53-80	R57-03
	Arable land per/hr overflow water	R4-60	R4-92	R5-22	R5-53	R5-86
	Bowls Club per/hr or part thereof	R39-35	R42-10	R44-63	R47-31	R50-15

The sewage tariff structures for Beaufort West Municipality for the 2023/2024 financial year and the previous four financial years are summarised in the table below (Subject to VAT).

Table 7.3.2: Sewage tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	Category	19/20	20/21	21/22	22/23	23/24
All private dwellings, economic dwellings, schools, residences, old age homes, Municipal buildings (excluding sub-economic dwellings) flats, link houses, Pathfinders, halls, churches, sports clubs and agricultural show grounds.	Per year	R1 387-40	R1 484-52	R1 573-60	R1 668-00	R1 768-08
Sub-economic housing	Per year	R383-30	R410-13	R434-70	R461-00	R517-98
Merweville	Per year	R1 170-40	R1 252-33	R1 327-50	R1 407-00	R1 580-91
Nelspoort	Per year	R587-45	R628-57	R666-30	R706-30	R792-54
Businesses, offices, and any other institution not specifically mentioned elsewhere:	Per year	R1 785-00	R1 909-95	R1 909-95	R2 146-00	R2 411-25
Built-up or undeveloped erven that is not connected to the Municipal sewerage network system.	Per year	Sanitary fee, equal to the ordinary sewerage fee				
Merweville: Built-up or undeveloped erven that is not connected to the Municipal sewerage network system	Per year	R170-00	R181-90	R192-80	204-40	R216-66
Test Fees	Per inspection	R111-00 + R90-00 for each additional inspection	R119-00 + R96-00 for each additional inspection	R126-00 + R102-00 for each additional inspection	R134-00 + R108-00 for each additional inspection	R142-04 + R114-48 for each additional inspection
Deduction of storage tanks, per load	For pumping storage tanks in Industrial Area that can connect to Sewage system.	R252-50	R270-00	R286-00	R303-00	R321-18
	For pumping of storage tanks in Industrial Area that	R450-00	R482-00	R511-00	R542-00	R574-52

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Table 7.3.2: Sewage tariffs for 2023/2024 and the previous four financial years						
Consumer/Description	Category	19/20	20/21	21/22	22/23	23/24
	can connect to Sewage system					
	For pumping storage tanks on Saturdays, Sundays, Public Holidays and after office hours	R900-00	R963-00	R1 021-00	R1 082-00	R1 146-92
Merweville: Deduction of storage tanks, per load	For pumping storage tanks on Monday to Friday	R172-00	R184-00	R195-00	R207-00	R219-42
	For pumping storage tanks on Saturdays, Sundays, Public Holidays and after office hours	R343-00	R367-00	R389-00	R412-00	R436-72
Maintenance: Repair of toilets	Toilet pan	R843-00	R902-00	R956-00	R1 013-00	R1 073-78
	Toilet sink with float valve	R343-00	R367-00	R389-00	R412-00	R436-72
	Float valve	R111-00	R119-00	R126-00	R134-00	R142-04
	Double folding seat	R123-00	R132-00	R140-00	R148-00	R156-88
Empty pump of sewerage tanks outside the proclaimed area	Truck	The rate applies per hour Plus the tariff applicable within the Township				
	Plus	Administrative costs according to the percentage as from time to time determined by Council.				
Sewerage: Size Services	A contribution to major tailoring services must be paid by the developers	R2 687-00	R2 875-00	R3 048-00	R3 231-00	R3 424-86
Murraysburg Sewerage	Basic per/month	R56-20	R60-13	R63-74	R67-56	R71-61
	Sucking: per load	R56-20	R60-13	R63-74	R67-56	R71-61
	Sucking: after hours, per load	R112-35	R120-21	R127-42	R135-07	R143-17
	Bucket system per month (one removal per week)	R45-80	R49-01	R51-95	R55-07	R58-37
	Hostel: Split heads / household (per month)	R56-20	R60-13	R63-74	R67-56	R71-61
	Schools per toilet per month	R89-30	R95-55	R101-28	R107-36	R113-80
	Sewerage Blockages (Vat Incl.)	R62-80	R67-20	R71-23	R75-50	R80-03
	New sewerage connections	Actual cost + 10% (admin)				

7.4 FREE BASIC SERVICES

The first six (6) kl of water is provided free to all indigent registered households. Beaufort West Municipality's tariffs support the viability and sustainability of water supply services to the poor through cross-subsidies (where feasible). Free basic water and sanitation services are linked to the Municipality's Indigent Support Policy and all indigent households therefore receive free basic water and sanitation services.

The free basic services are funded through the Equitable Share allocation to the Municipality in the Division of Revenue Act. Financial assistance may be granted by the municipality to a household that meets the following criteria, as included in the Indigent Policy (June 2023).

A category of needy households is recognised for purposes of receiving an indigent subsidy:

- The household income may not exceed the total of 2x All Pay Pension;
- The property may only be used for residential purposes;
- Must be a permanent resident of Beaufort West, Nelspoort of Murraysburg;

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- Must be a South African citizen; and
- The applicant may not be the registered owner of more than one property.

The table below provides an overview of the number of indigent households that received free basic water and sanitation services for the last five financial years.

Table 7.4.1: Number of indigent registered households that received free basic water and sanitation services for the last five financial years		
Year	Water	Sanitation
2018/2019	4 776	4 638
2019/2020	6 529	4 800
2020/2021	6 627	4 889
2021/2022	6 672	4 917
2022/2023	6 866	3 957

7.5 METERING, BILLING AND INCOME

Installing meters and implementing an adequate billing system is central to managing services effectively and building a relationship of understanding and trust between the provider and consumer.

All abstraction from the various water resources are metered and the readings are adequately recorded by the Engineering Department. The bulk water meters at the treatment plants and at the various reservoirs and pump stations are also adequately metered and the readings are also recorded to accurately calculate the system input volumes for each of the systems. Table 5.1.2.3.1 list all the existing bulk water meters.

The current billing system is not adequate to accurately indicate the billed metered consumption volumes, as previously indicated under Section 5.2. It is necessary that a Swift Analysis be done of the Treasury data to identify the potential unmetered erven or the erven with a water meter, but with zero consumption for each of the systems.

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8. WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES

Institutional Arrangements: In order to address the WSDP goals and service level targets the Municipality needs to ensure that:

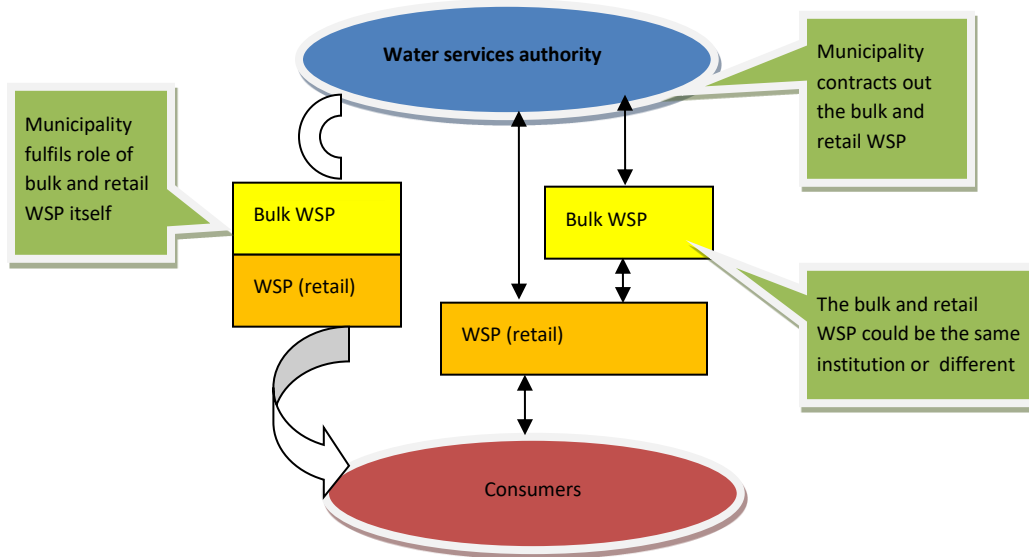
- it is able to effectively fulfil the WSA responsibilities as outlined in the Water Services Act (internal management and regulatory arrangements) and
- that efficient and effective water services provider institutional arrangements are in place (bulk WSPs, retail WSPs and support services agents).

The WSA is the Municipality that has been assigned WSA functions. The WSA is accountable and responsible for ensuring that water services are provided to consumers. However, this does not mean that it has to provide the services itself. The Municipality or other WSPs can provide the services. If the WSA decides to appoint a WSP to fulfil the water services provision function, it will enter into a municipal services partnership through signing a contract with a bulk and / or retail WSP.

Whilst the Water Service Act does not require the WSDP to contain details about the Municipality's capacity to fulfil WSA functions, various components within the WSDP are dependent upon these functions being effectively fulfilled.

Water services provider (WSP) institutional arrangements

WSP institutional arrangements refer to the bulk and retail WSP functions. The figure below illustrates the municipality fulfilling both the bulk and retail WSP functions (on the left hand side) and municipal service partnerships (MSPs) with bulk and retail WSPs (on the right hand side).



Note: There are many different options in establishing WSP institutional arrangements. For example the Municipality could contract out the bulk WSP function and fulfil the retail WSP function itself. In addition the Municipality could act as WSP for some areas and contract other WSPs for other areas. These arrangements will depend on specific context of the WSA area of jurisdiction.

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If the WSA decides to fulfil the water services provision function itself, it may fulfil the function through an integral unit or it may corporatise the function through creating a municipal company. It may also decide to outsource parts of the water services provider function, for example meter reading, billing, etc. through service contracts. In this case the WSA remains the WSP with the assistance of service contracts.

Retail water services providers

The retail WSP function includes the following:

- Daily operations and repairs
- Preventative and major maintenance
- Customer relations, health and hygiene awareness and communication
- Revenue collection and related financial management
- Reporting and providing information on the provision of services
- General administration of the water services

A WSP may be contracted to fulfil some or all of these functions. There are a number of different types of WSPs which could fulfil the WSP retail functions, including district and local municipalities, a water board (they are typically associated with bulk water supply, but in some areas also provide retail services), private companies, and community based organisations (CBOs), such as a village water committee.

Some WSPs may require access to support, for example a community based water services provider or other small water services providers. The WSA may provide the support itself, or it may contract a support services agent (SSA) to provide support such as institutional and social development (ISD) mentoring, maintenance support or sanitation promotion.

The WSP institutional arrangements will depend on a range of issues such as:

- The particular settlement type (as different institutions are suited to different contexts);
- Location and accessibility of the community to be served;
- Capacity of the municipality to provide services itself;
- Capacity of the municipality to monitor and regulate WSPs should it decide to contract WSPs;
- Suitability of other WSPs to provide the services (cost, acceptability to the community/ies concerned, etc).

Customer Services: Consumer's experience of the delivery of water services is not restricted to what level of service they receive but includes the quality of service rendered. If consumers are satisfied with the quality of service, they are more likely to prepare to pay for the services they receive.

On the water supply side, quality of service includes water quality, service continuity, complaint response time, meter coverage, billing, and access to pay points. On the sanitation side, quality of service is about the quality of infrastructure provided (basic sanitation) and support for operation and maintenance and also about response times to complaints.

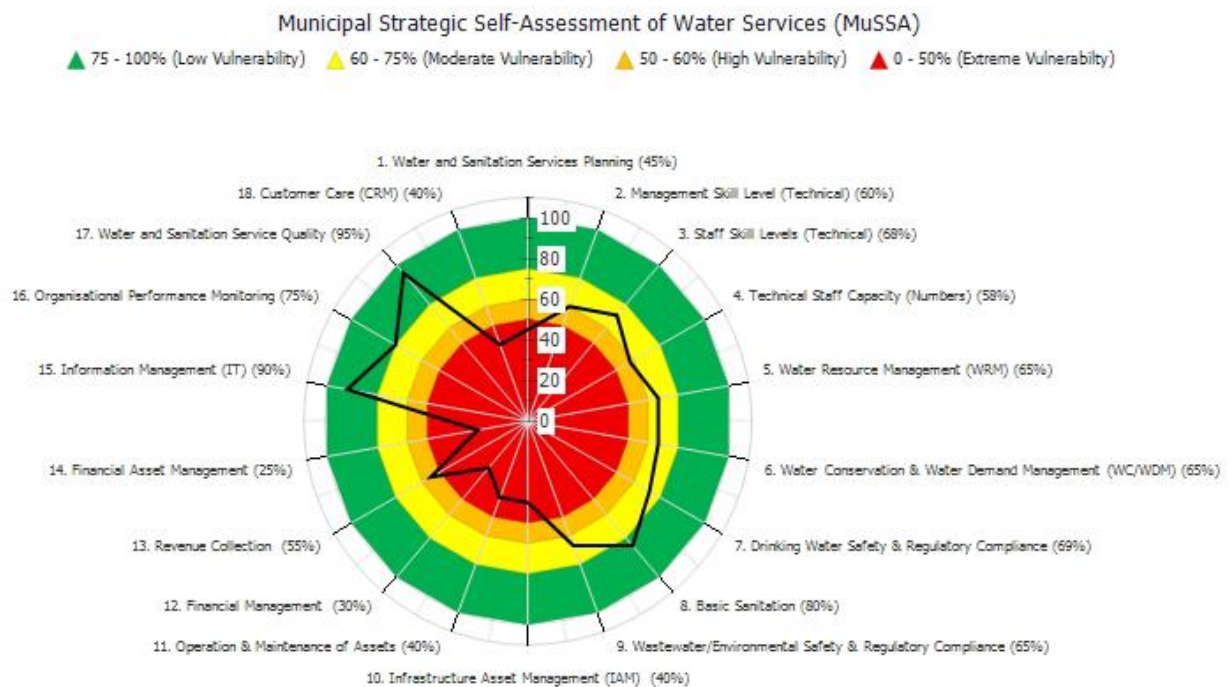
Monitoring is necessary to collect sufficient and accurate data to inform decision making, and reduce and manage risks. Therefore, the ultimate goal is to provide information needed for planning, decision making and operational water management.

Beaufort West Municipality is the WSA and Water Services Provider for the various towns in Beaufort West Municipality's Management Area.

8.1 MUNICIPAL STRATEGIC SELF-ASSESSMENT (MuSSA)

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

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



Beaufort West Municipality's Vulnerability Index for 2023 was indicated as 0.72 "High Vulnerability". The areas of concern evident from the 2023 assessment are Water and Sanitation Services Planning (45.0%), Infrastructure Asset Management (IAM) (40.0%), Operation & Maintenance of Assets (40.0%), Financial Management (30.0%), Revenue Collection (55.0%), Financial Asset Management (25.0%), Customer Care (CRM) (40.0%) and Technical Staff Capacity (Numbers) (58.0%).

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CONTEXT INFORMATION

The table below gives an overview of the context information as completed during the MuSSA of Beaufort West Municipality.

Table 8.1.1: MuSSA context information	
Questions	MuSSA
Municipality name	Beaufort West
Date of completion	19 June 2024
Municipality type	B1 – LM
Water service provider type	Internal (i.e. municipality)
Wastewater service provider type	Internal (i.e. municipality)
Water system maintenance	Combination of internal and external
Wastewater system maintenance	Combination of internal and external
Bulk water provision	Municipality (i.e. internal)
The key staff (i.e. managerial) turnover in your WSA.	Moderate: 10 - 25% (i.e. occasionally lose staff)
Your WSA has developed and implemented a scarce skills policy.	No, not developed
Your WSA actively provides required drinking water related data to the Regulator (e.g. Blue Drop participation)	Yes, strongly agree
Regular drinking-water quality monitoring and management (including boreholes) is performed for all communities / towns in the WSA.	Yes, all (i.e. close to 100% of WSA population)
WTWs operational capacity as a function of total design capacity (Combine for all WTWs within your WSA).	90% - 95%
Your WSA actively provides required wastewater related data to the Regulator (e.g. Green Drop participation)	Yes, strongly agree
Regular wastewater quality monitoring and management is performed for all wastewater systems in the WSA.	Yes, all (i.e. close to 100%)
WWTWs operational flow capacity as a function of total design capacity (Combine for all WWTWs within your WSA).	90% - 95%
WWTWs operational COD load as a function of total design load (Combine for all WWTWs within your WSA).	90% - 95%
Your WSA actively provides required WC and WDM related data to the Regulator (e.g. No Drop participation)	Yes, strongly agree
Your municipality has a water resilience policy in place, which includes optimisation of existing water resources, diversifying supply to increase water security, and optimisation of the "water mix"	Yes, strongly agree
Your municipality has a policy and procedures in place to encourage rainwater harvesting	No, disagree
Your municipality has desalination facilities for augmenting drinking-water supply	No, none (i.e. 0%)
Your municipality recovers and reuses treated wastewater either directly (e.g. for potable purposes) or indirectly (e.g. for irrigation, feed to industry, aquifer recharge)	>10% of total wastewater generated
Your municipality recovers and reuses stormwater either directly (e.g. for potable purposes) or indirectly (e.g. recharging river for ecological functioning, nature based systems) (NOTE: This does not aim to measure inflow to dams at catchment level, but rather aims to define the extent of stormwater capture/reuse in the urban context).	No, none (i.e. 0%)
Advanced water treatment technologies (e.g. membrane based) and wastewater treatment/recovery technologies (e.g. reuse) implemented at your municipality are staffed by appropriately qualified personnel	No, none (i.e. 0%)
Your WSA actively promotes improved hygiene practices through campaigns in communities (e.g. had washing education, safe and improved sanitation).	In place, with occasional non-optimal response
Indicate the proportion of the population serviced via on-site sanitation (e.g. using appropriate technologies as defined by the National Norms and Standards for Sanitation Services (Sep 2017))	> 50%
Indicate the proportion of the population not serviced (i.e. backlog, and potentially implying open defecation)	> 0% - 10%

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Table 8.1.1: MuSSA context information	
Questions	MuSSA
Indicate the proportion of drinking-water sources at risk from on-site sanitation (e.g. VIPs could pollute groundwater source)	No, no sources (0%) are at risk
Indicate the proportion of on-site sanitation systems (e.g. VIPs, septic tanks) that are appropriately sealed/enclosed and/or fully/partially lined with minimal environmental impact (e.g. no overflow/seepage)	Almost all (i.e. >95%)
Indicate the estimated proportion of wastewater not delivered for treatment (to all WWTWs) (e.g. lost through old, leaking sewer pipes)	<1%
Indicate the estimated proportion of faecal sludge/supernatant emptied from all on-site sanitation systems (e.g. septic tanks, VIPs) that is not delivered for treatment (e.g. honeysucker does not deliver to the WWTW, but rather dumps into environment)	<1%
You have classified all of your treated sludge (from WWTWs and on-site sanitation systems (e.g. VIPs, septic tanks)	Yes, all sludges classified (i.e. close to 100%)
You are disposing/reusing all of your all your sludge (from both WWTWs and on-site sanitation systems (e.g. VIPs, septic tanks)) in accordance with licence conditions/WRC guidelines	Yes, all sludges reused/disposed appropriately (i.e. close to 100%)
Your municipality is adhering to its mandated responsibility as WSA and proactively managing water and sanitation services on farms/rural areas within its area of jurisdiction (as per National Norms and Standards for Domestic Water and Sanitation Services (Sep 2017))	No, disagree
Council has functional Oversight Committees and Ward Committees, as appropriate (DM would be served via LM Ward Committees)	No, disagree
Council has effective systems of internal control and functional governance structures (internal audit unit, audit committee, risk committee, IT governance)	No, disagree
Forensic investigations are undertaken as and when necessary to ensure adherence to governance requirements (i.e. either internally initiated by the municipality or externally initiated by, for example, Public Protector, Auditor General)	Yes, strongly agree
Your municipality has policies, procedures and systems in place that negate the impact of vandalism / sabotage of municipal water and sanitation infrastructure on services delivery	No, disagree
Your municipality has ongoing and appropriate public participation, is transparent in its decision making, and is accountable to its constituency (fiscal and social).	Yes, strongly agree
Your municipality have a co-operation agreement in place (technical, financial, twinning, peer learning, etc) with an international municipality or other international institution?	No, disagree
Your municipality receives international financial aid (grants/loans)?	No, disagree
Those of your 18 MuSSA Business Aspects which reflect Extreme and / or Highly Vulnerable, are included within your WSAs Corporate Risk Register.	Yes, strongly agree
Your MuSSA was completed with appropriate inputs from senior officials within Technical Services, Finance and Human Resources (as a minimum these three departments should participate).	Agree (i.e. Technical Services HOD and either Finance OR HR participated)
Names, designation and contact details (phone, email) of all MuSSA participants.	C B Wright, Manager: Technical Services , 023 414 8140, christopher@beaufortwestmun.co.za; Finance: Randle Eland, randlee@beaufortwestmun.co.za; HR: Adriaan Duimpies, adriaand@beaufortwestmun.co.za

8.1.1 Water and Sanitation Services Planning

Table 8.1.1.1: Water and Sanitation Services Planning						
Water and Sanitation Services Planning – Low Vulnerability 100%						
Your appropriate water and sanitation services planning (e.g. WSDP) and associated master planning processes include and are aligned with appropriate Water and Sewage Master Plans, Spatial Development Framework, Water Safety Plans and Wastewater Risk Abatement Plans (W ₂ RAPs) and are aligned to your IDP and associated SDBIP targets.						
Yes, appropriate water services plans are developed and include all required plans and alignment (i.e. 100%)	Yes, appropriate water services plans are developed and include all required plans and alignment (i.e. > 95%)	Yes, appropriate water services plans are developed and include all required plans and alignment (i.e. > 75%)	Yes, appropriate water services plans are developed and include all required plans and alignment (i.e. > 50%)	Plans still in development	Plan development not yet initiated	Don't know

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Table 8.1.1.1: Water and Sanitation Services Planning						
Water and Sanitation Services Planning – Low Vulnerability 100%						
You are implementing an up-to-date and adopted municipal water and sanitation services plan (e.g. WSDP).						
Yes, municipal water and sanitation services plans up-to-date, adopted and implemented	Municipal water and sanitation services plans adopted and implemented, but out-of-date (i.e. requires revision)	Municipal water and sanitation services plans adopted but not yet implemented	Municipal water and sanitation services plans not adopted but implemented	Municipal water and sanitation services plans neither adopted nor implemented	Don't know	
Your current project list addresses existing needs / shortcomings identified through the WSDP and associated master planning process.						
Yes, all projects are identified via the planning process (i.e. 100%)	Almost all (i.e. >95% of projects)	Most projects (i.e. >75%)	Some projects (i.e. >50%)	<50% of projects	None (i.e. 0%)	Don't know
Project progress is monitored, tracked and reported to municipal top management / council and the Regulator (through the annual water and sanitation services report).						
Yes, strongly agree (both to municipal top management/council and Regulator)	Only to municipal top management/council	Only to Regulator		No, disagree	Don't know	
Projects identified through your various planning processes have been implemented in the last 3 years.						
Yes, all projects identified via planning have been implemented (i.e. 100%)	Almost all implemented (i.e. >95%)	Most implemented (i.e. >75%)	Some implemented (i.e. >50%)	<50% implemented	None implemented (i.e. 0%)	Don't know

Beaufort West Municipality's Water and Sewer Master Plan process entails the establishment of computer models for the water systems and the sewer systems in Beaufort West 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 Beaufort West Municipality's water distribution and sewer drainage systems. The following Water and Sewer Master Plans were incorporated into the WSDP.

- Water Master Plan for Beaufort West Municipality (November 2008);
- Sewer Master Plan for Beaufort West Municipality (November 2008); and
- High Level update (December 2021) of the existing Water Master Plan (Dated November 2008).

All forward planning for water and sanitation services and water and sewerage infrastructure should be guided by the Water and Sewer Master Plans.

Water Safety Plans for the WTWs and water distribution systems and W₂RAPs for the various WWTWs and sewer drainage networks are not yet in place. Detail Process Audits were done for all the WTWs and WWTWs during June 2024.

The Municipality needs to compile the WSDP Performance- and Water Services Audit Report annually, 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.

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8.1.2 Management Skill Level (Technical)

Table 8.1.2.1: Management Skill Level						
Management Skill Level (Technical) – Low Vulnerability 90%						
Your council approved technical management organisational organogram meets your business requirements, and key posts are filled (e.g. Technical Director, Water Services Manager, and Sanitation Services Manager).						
Yes, and all posts filled (i.e. close to 100%)	Yes, and almost all posts filled (i.e. >95%)	Yes, and most posts filled (i.e. >75%)	Yes, but only some posts filled (i.e. >50%)	Yes, but <50% of posts filled	No, does not meet business requirements	Don't know
You have sufficient technical management and technical support staff.						
Yes, 100% as per approved organogram	Yes, strongly agree (i.e. >95% as per approved organogram)	Mostly agree (i.e. >75% as per approved organogram)	Agree somewhat (i.e. >50% as per approved organogram)	<50% as per approved organogram	None (i.e. 0% as per approved organogram)	Don't know
Technical management and technical support staff have the correct skills / qualifications and experience as per Job Description requirements (e.g. if Job Description requires Pr Eng, Pr Tech or CPM, the staff have these qualifications).						
Yes, all (i.e. 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know
Managers and technical support staff regularly attend appropriate water and sanitation services skills development / training to support professionalisation.						
Quarterly (or more frequent) skills development/ training	Bi-annual skills development/ training	Annual skills development/ training	Less frequent skills development/ training (i.e. >1 year)	No skills development/ training	Don't know	
Key technical managers (e.g. Section 56 and other Senior Management) have signed and monitored Performance Agreements.						
Yes, all (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know

The Management personnel for water and sanitation services of Beaufort West Municipality are as follows:

- Mr C.B. Wright: Manager: Technical Services

8.1.3 Staff Skill Level (Technical)

Table 8.1.3.1: Staff Skill Level							
Staff Skill Levels (Technical) – Low Vulnerability 89%							
WTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834).							
Yes, all (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know	Not applicable
WWTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834).							
Yes, all (i.e. 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know	Not applicable
Water system plumbers, millwrights, mechanics and electricians have the required skills / qualifications and experience (including contractors / outsourced resources).							
Yes, all (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know	
Sewage system plumbers, millwrights, mechanics and electricians have the required skills/qualifications and experience (including contractors / outsourced resources).							
Yes, all (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know	
Staff regularly attend appropriate water services skills development / training (including safety) (e.g. ESETA courses).							
Quarterly (or more frequent) skills development/ training	Bi-annual skills development/ training	Annual skills development/ training	Less frequent skills development/ training (i.e. >1 year)	No skills development/ training	Don't know		

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At a technical, operations and management level, municipal staff is exposed to training opportunities, skills development and capacity building in an effort to create a more efficient overall service to the users, within budget constraints. Submissions were also made to the DWS for the classification and registration of the Process Controllers and Supervisors at the various plants according to the Regulation 3630 requirements.

A skills audit is conducted during each year which leads to training programmes in order to wipe out skills shortages and to provide employees with the necessary capacity.

WTWs: Beaufort West Municipality owns and manages the following WTWs and water distribution systems:

- Beaufort West WTW and water distribution system;
- Nelspoort WTW and water distribution system;
- Merweville water distribution system;
- Murraysburg water distribution system;

The current classification of the WTWs, according to Section 26 of the National Water Act (Act No.36 of 1998), for which Beaufort West Municipality is responsible is summarised in the table below. The required number of qualified personnel at the WTWs according to Regulation 3630 (June 2023) for water treatment personnel is shown in the table below, together with number of operational and supervisory personnel currently employed and their classifications.

Table 8.1.3.2: Required Class of Process Controllers for the WTWs and existing classification of the Process Controllers at the WTWs				
WTW and Class	Shifts at WTW	Requirements according to Regulation 3630	Process Controllers and Supervisors	Class of Process Controller
Beaufort West WTW Class C (2023-02-14, Approved)	06:00 – 18:00 18:00 – 06:00	Class III PC per shift Class V PC for Supervision (Does not have to be at the works at all times, but must be available at all times)	Patrick Msulwana	II
			Henry Ngondo	II
			Mosese Sam (2017-10-04)	IV
			Chris Jantjies (2017-10-04)	IV
	The minimum requirement for a Class C WTW is one Class III Process Controller per shift, plus one on standby. For the Beaufort West WTW, with two shifts, there should therefore be three Process Controllers with minimum Class III classifications. One additional Class III Process Controller is required for the Beaufort West WTW or one of the existing two Class II Process Controllers need to receive the required training to be classified as a Class III Process Controller. One of the Class IV Process Controllers needs to receive the required training to be classified as a Class V Supervisor.			
Beaufort West Reclamation Plant Class C (2023-02-13, Approved)	Managed by Water and Wastewater Engineering			
Nelspoort WTW Class E (2023-02-14, Approved)	07:30 – 16:15	Class I PC per shift Class V PC for Supervision (Does not have to be at the works at all times, but must be available at all times)	Patrick July	Unknown
			Mario Malligen	Unknown
	The minimum requirement for a Class E WTW is one Class I Process Controller per shift, plus one on standby. For the Nelspoort WTW, with one shift, there should therefore be two Process Controllers with minimum Class I classifications.			

Operational and Maintenance support personnel must be available at all times, but may be in-house or outsourced (Electrician, fitter and instrumentation technician). The Supervisor for Class C – E works does not have to be at the works at all the times, but must be available at all times.

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The Beaufort West Municipality regularly review their Organograms in order to ensure that the number of Process Controllers per WTW is in-line with DWS's requirements for Process Controllers per Class of plant. Submissions for the re-classification of Process Controllers, after specific training courses were completed, will also be loaded onto the IRIS in the future.

WWTWs: Beaufort West Municipality owns and manages the following WWTWs and sewer drainage systems:

- Beaufort West WWTW and Drainage Systems
- Merweville WWTW and Drainage System
- Nelspoort WWTW and Drainage Systems
- Murraysburg WWTW and Drainage System

Current authorisations for the Beaufort West Municipality's WWTWs are as follows:

Table 8.1.3.3: Authorisations for the WWTWs	
WWTW	Authorisations
Beaufort West	GA 16/2/7/J210/D1/X1 (6 March 2012)
Merweville	GA 16/2/7/J210/D1/X1 (18 February 2016)
Nelspoort	GA 16/2/7/J210/D12 (10 September 2015)
Murraysburg	GA 27/2/2/L521/3/7 (12 July 2016)

The current classification of the WWTWs, according to Section 26 of the National Water Act (Act No.36 of 1998), for which Beaufort West Municipality is responsible is summarised in the table below. The required number of qualified personnel at the WWTWs according to Regulation 3630 (June 2023) for wastewater treatment personnel is shown in the table below, together with number of operational and supervisory personnel currently employed and their classifications.

Table 8.1.3.4: Required Class of Process Controllers for the WWTWs and existing classification of the Process Controllers at the WWTWs				
WWTW and Class	Shifts at WWTW	Requirements according to Regulation 3630	Process Controllers and Supervisors	Class of Process Controller
Beaufort West WWTW Class C (2024-06-19, To be reviewed)	06:00 – 18:00 18:00 – 06:00	Class III PC per shift Class V PC for Supervision (Does not have to be at the works at all times, but must be available at all times)	Richard Nongxaza	II
			Benneth Miennies	II
			Stanley Ndumiso Mjada	III
			Ricardo Florian Donal Prins	IV
	The minimum requirement for a Class C WTW is one Class III Process Controller per shift, plus one on standby. For the Beaufort West WTW, with two shift, there should therefore be three Process Controllers with minimum Class III classifications. One additional Class III Process Controller is required for the Beaufort West WWTW or one of the existing two Class II Process Controllers need to receive the required training to be classified as a Class III Process Controller. The Class IV Process Controllers needs to receive the required training to be classified as a Class V Supervisor.			
Nelspoort WWTW Class E (2021-09-16, Approved)	07:30 – 16:15	Class I Process Controller per shift Class V Process Controller for Supervision (Does not have to be at the works at all times, but must be available at all times)	No permanent Process Controller at WWTW	
Merweville WWTW Class E	07:30 – 16:15	Class I Process Controller per shift	No permanent Process Controller at WWTW	

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Table 8.1.3.4: Required Class of Process Controllers for the WWTWs and existing classification of the Process Controllers at the WWTWs				
WWTW and Class	Shifts at WWTW	Requirements according to Regulation 3630	Process Controllers and Supervisors	Class of Process Controller
(2021-09-16, Approved)		Class V Process Controller for Supervision (Does not have to be at the works at all times, but must be available at all times)		
	The minimum requirement for a Class E WWTW is one Class I Process Controller per shift, plus one on standby. For the Merweville WWTW, with one shift, there should therefore be two Process Controllers with minimum Class I classifications. Two Class I Process Controllers are required for the Merweville WWTW.			
Murraysburg WWTW E (2024-06-19, To be reviewed)	07:30 – 16:15	Class I Process Controller per shift Class V Process Controller for Supervision (Does not have to be at the works at all times, but must be available at all times)	No permanent Process Controller at WWTW	
	The minimum requirement for a Class E WWTW is one Class I Process Controller per shift, plus one on standby. For the Murraysburg WWTW, with one shift, there should therefore be two Process Controllers with minimum Class I classifications. Two Class I Process Controllers are required for the Murraysburg WWTW.			

Operational and Maintenance support personnel must be available at all times, but may be in-house or outsourced (Electrician, fitter and instrumentation technician). The Supervisor for Class C – E works does not have to be at the works at all the times, but must be available at all times.

Beaufort West Municipality is responsible to ensure that the number of Process Controllers per WWTW is in-line with DWS's requirements for Process Controllers per Class of plant. Submissions for the re-classification of Process Controllers, after specific training courses were completed, will also be loaded onto the IRIS in the future.

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

8.1.4 Technical Staff Capacity (Numbers)

Table 8.1.4.1: Technical Staff Capacity							
Technical Staff Capacity (Numbers) – Low Vulnerability 99%							
Your council approved technical staff organisational organogram meets your business requirements, and posts are filled (i.e. Superintendent of WTWs / WWTWs and below).							
Yes, and all posts filled (i.e. close to 100%) as per the approved organogram	Strongly agree, and most posts filled (i.e. >95%) as per the approved organogram	Yes, and most posts filled (i.e. >75%) as per the approved organogram	Yes, but only some posts filled (i.e. >50%) as per the approved organogram	Yes, but <50% of posts filled as per the approved organogram	No, does not meet requirements	Don't know	
WTWs are operated by the appropriate number of staff (as per Regulation 2834).							
Yes, close to 100% as per requirements	Strongly agree (i.e. >95% as per requirements)	Mostly agree (i.e. >75% as per requirements)	Agree somewhat (i.e. >50% as per requirements)	<50% as per requirements	None (i.e. 0% as per requirements)	Don't know	Not applicable
WWTWs are operated by the appropriate number of staff (as per Regulation 2834).							

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Table 8.1.4.1: Technical Staff Capacity							
Technical Staff Capacity (Numbers) – Low Vulnerability 99%							
Yes, 100% as per requirements	Strongly agree (i.e. >95% as per requirements)	Mostly agree (i.e. >75% as per requirements)	Agree somewhat (i.e. >50% as per requirements)	<50% as per requirements	None (i.e. 0% as per requirements)	Don't know	Not applicable
You have sufficient water and sewerage/sanitation network operations and repair staff/plumbers including contractors / outsourced resources (i.e. you have the appropriate number of staff).							
Yes, close to 100% as per functional requirements	Strongly agree (i.e. >95% as per functional requirements)	Mostly agree (i.e. >75% as per functional requirements)	Agree somewhat (i.e. >50% as per functional requirements)	<50% as per functional requirements	None (i.e. 0% as per functional requirements)	Don't know	
An active mentoring/shadowing programme is in place where experienced staff train younger, inexperienced municipal staff.							
Yes, strongly agree		In place, but not ideal		No, disagree		Don't know	

The Draft 2022/2023 Annual Report (January 2024) indicated that the municipality had 394 of the 513 budgeted posts filled for the 2022/2023 financial year (Vacancy rate of 23.20%). There were no vacancies for the 2022/2023 financial year for water services and 27.94% vacancies for sanitation services. The table below gives an overview of the number of employees for water and sanitation services for the last two financial years (2022/2023 Annual Report).

Table 8.1.4.2: Employees for Water and Sanitation Services for the last two financial years					
Job Level	2021/2022	2022/2023			
	Employees	Budgeted Posts	Employees	Vacancies	Vacancies (% of total budgeted posts)
	No.	No.	No.	No.	%
Water Services					
Top Management	0	0	0	0	0.0
Senior Management	0	0	0	0	0.0
Middle Management & Professionals	2	2	2	0	0.0
Skilled technical, superintendents etc.	2	2	2	0	0.0
Semi-skilled	11	10	10	0	0.0
Unskilled	3	9	9	0	0.0
Total	18	23	23	0	0.0
Sanitation Services					
Top Management	0	0	0	0	0.0
Senior Management	0	0	0	0	0.0
Middle Management & Professionals	0	1	1	0	0.0
Skilled technical, superintendents etc.	1	6	3	3	50.0
Semi-skilled	9	19	12	7	36.8
Unskilled	15	42	33	9	21.4
Total	25	68	49	19	27.9

Beaufort West Municipality is currently effectively managing their water and sanitation services, with the limited funding and personnel available to the Municipality. Special focus is however required to ensure adequate rehabilitation and maintenance of the existing water and sewerage infrastructure, with adequate operational personnel. Vandalism of the existing water and sewerage infrastructure and the vandalism of the boreholes that supply Beaufort West with groundwater negatively impact service delivery and reduce the assurance of water supply to the town.

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Tables 8.1.3.2 and 8.1.3.4 indicate the required number of process controllers per Class of WTWs and WWTWs, as well as the personnel currently employed at the WTWs and WWTWs and their classifications.

8.1.5 Water Resource Management (WRM)

Table 8.1.5.1: Water Resource Management								
Water Resource Management (WRM) – Low Vulnerability 90.0%								
The recommendations and actions from the Reconciliation Strategies (Large Systems / All Towns) have been incorporated into your WSDP, master planning and IDP processes.								
Yes, strongly agree	In process	No, disagree			Don't know		Not applicable	
The metered quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of abstraction and assurance of supply).								
No shortage (i.e. sufficient water)	1 - 10% shortage	11-20% shortage	21-30% shortage	31-40% shortage	41-50% shortage	>50% shortage	Don't know	Not applicable
The metered quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of abstraction and assurance of supply and considering possible climate change impacts) (i.e. no shortage in 10 years).								
No shortage (i.e. sufficient water)	1 - 10% shortage	11-20% shortage	21-30% shortage	31-40% shortage	41-50% shortage	>50% shortage	Don't know	Not applicable
The source water quality is regularly tested and is currently acceptable for its purpose.								
Yes, strongly agree (i.e. all sources (close to 100%) by water volume are acceptable)	Agree (i.e. >95% of sources by water volume are acceptable)	Agree somewhat (i.e. >50% of sources by water volume are acceptable)	<50% of sources by water volume acceptable	None (i.e. 0% of sources by water volume are acceptable)		Don't know		Not applicable
The source water quality is regularly tested and the trend indicates a deteriorating quality.								
Yes, all sources (100%) by water volume are deteriorating	>75% of sources by water volume are deteriorating	>50% of sources by water volume are deteriorating	>25% of sources by water volume are deteriorating	< 25% of sources by water volume are deteriorating	No, no sources (0%) are deteriorating		Don't know	Not applicable

See Topic 6 for more information on the water resource management of the municipality.

8.1.6 Water Conservation and Water Demand Management (WC/WDM)

Table 8.1.6.1: Water Conservation and Water Demand Management						
Water Conservation and Water Demand Management (WC/WDM) – Low Vulnerability 96%						
Your WSA has developed a council approved WC/WDM Strategy, which includes a standard water balance (e.g. modified IWA).						
WC/WDM Strategy and water balance developed	Only WC/WDM Strategy developed		Only water balance developed	None developed		Don't know
Please indicate your percentage Non-Revenue Water (NRW) as per the modified IWA water balance.						
Less than 15%	Less than 25%	Less than 30%	Less than 40%	Less than 50%	50% or more	Don't know
System input volumes (bulk) to the WSA are accurately monitored using calibrated bulk meters (e.g. check metering).						
Yes, all (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. >50%)	<50%	None (i.e. 0%)	Don't know
Please indicate what percentage of all connections are metered and billed (residential and non-residential (commercial, industrial, etc.)) on a monthly basis.						
>98%	75% - 98%	50% - 75%	<50%	< 25%	No metering	Don't know

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Table 8.1.6.1: Water Conservation and Water Demand Management						
Water Conservation and Water Demand Management (WC/WDM) – Low Vulnerability 96%						
Your WSA is implementing appropriate intervention programmes to reduce NRW (e.g. minimisation of night flows through pressure management, removal of unlawful connections, leak detection and repairs, consumer education / awareness).						
Yes, strongly agree (i.e. 100% implementation)	Agree (i.e. >95% implementation)	Mostly agree (i.e. >75% implementation)	Agree somewhat (i.e. >50% implementation)	<50% implementation	No implementation (i.e. 0%)	Don't know

Beaufort West 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 8.1.6.2: Description of No Drop Criteria	
Criteria 1	WC/WDM status quo, plans and strategies, budgets, and implementation of projects (Water Resource Diagram, Water Balance, Council approved WC/WDM strategies and budgets)
Criteria 2	Asset management as it relates to meter replacement. Monitoring, analysis, and action of high loss District Metered Areas (DMAs) in metropolitan municipalities
Criteria 3	Technical skills of WC/WDM team
Criteria 5	Compliance and Performance based on the water loss and efficiency Key Performance Indicators (KPI) and year on year improvement there-of

The purpose of the 2023 No Drop Assessments was twofold:

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

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

Table 8.1.6.3: No Drop Performance of the Municipality (DWS's 2023 No Drop Report)		
No Drop Score (2021/2022)		38%
Criteria	Weight	Score
1: WC/WDM Strategy, Planning and Implementation	45%	35% (Poor)
2: Asset Management	10%	0% (Critical)
3: Technical Skills	10%	0% (Critical)
5: Compliance and Performance	35%	36% (Poor)
Weighted Sub-Total		28%
Bonus		10%
Score		38% (Poor)
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	0.0 (Critical)	
1.2: Water Balance	0.7 (Average)	
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		

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Item	Score (Max = 1)
5.1: Reticulation Leak Repair	0.0 (Critical)
5.2: Physical Water Losses	0.0 (Critical)
5.3: Commercial Water Losses	0.7 (Average)
5.4: Non-Revenue Water	0.5 (Average)
5.5: Water Use Efficiency	0.6 (Average)
Water Balance Integrity	Medium (Average)

Regulatory Impression: The score of 38% indicates very poor performance.

- There is a need for targeted turnaround interventions at Beaufort West Local Municipality. The Municipality has not demonstrated a satisfactory 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 entire supply area. The integrity of the water balance was considered to be medium.
- No proof was provided of meter maintenance or replacements during the audit period.
- There was no evidence provided of a competent and qualified water loss management team.
- There was no evidence provided of a leak repair schedule for the audit period.
- The WSA could provide performance indicators for commercial water losses, non-revenue water, water use efficiencies.

See Topic 5 for more information on the WC/WDM of the municipality.

8.1.7 Drinking Water Safety and Regulatory Compliance

Table 8.1.7.1: Drinking Water Safety and Regulatory Compliance							
Drinking Water Safety and Regulatory Compliance – Low Vulnerability 95.0%							
Please indicate your microbiological drinking- water quality compliance for E.Coli (or faecal coliforms) for the communities you are monitoring for the last 12 months.							
99% - 100%	97% - <99%		95% - <97%		< 95%	Don't know	
ALL your supply schemes, WTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable Water Safety Planning framework.							
Yes, strongly agree (i.e. close to 100% covered)	Strongly agree (i.e. >95% covered)	Mostly agree (i.e. >75% covered)	Agree somewhat (i.e. >50% covered)	<50% covered	None covered (i.e. 0%)	Don't know	
Council have been made aware of high risk / critical water safety plan related issues (including those identified via the Blue Drop Certification programme) that require budget and actioning, and these issues have been actioned (where applicable).							
Yes, strongly agree (i.e. all (close to 100%) tabled)	Strongly agree (i.e. >95% tabled)	Mostly agree (i.e. >75% tabled)	Agree somewhat (i.e. >50% tabled)	<50% tabled	Issues noted but none tabled (i.e. 0%)	Not applicable (no issues requiring council resolution exist)	Don't know
Sufficient funds have been made available to address all these identified water safety related issues.							
Yes, strongly agree (i.e. 100% of required funds)	Strongly agree (i.e. >95% of required funds)	Mostly agree (i.e. >75% of required funds)	Agree somewhat (i.e. >50% of required funds)	<50% of required funds	Issues noted but no funds (i.e. 0%)	Not applicable (no issues requiring funding exist)	Don't know
Required corrective actions/remedial measures to address all these identified water safety related issues have been successfully implemented.							
Yes, strongly agree (i.e. 100% implementation)	Strongly agree (i.e. >95% implementation)	Mostly agree (i.e. >75% implementation)	Agree somewhat (i.e. >50% implementation)	<50% implementation	Issues noted but no implementation (i.e. 0%)	Not applicable (no issues requiring	Don't know

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Table 8.1.7.1: Drinking Water Safety and Regulatory Compliance

						corrective actions exist)	
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Drinking Water Quality Monitoring Programme: Operational and Compliance Water Quality Monitoring Programmes are implemented by the Beaufort West Municipality. The current and proposed operational and compliance water quality sampling programmes of Beaufort West Municipality for the various water distribution systems are summarised in the table below.

Table 8.1.7.2: Current and required water quality determinands to be sampled by Beaufort West Municipality for the various water distribution systems: Routine monitoring of Process Indicators

Sampling Point	Frequency of sampling	Samples taken by	Determinands
Beaufort West Reclamation Plant			
Current Operational and Compliance Sampling Programme			
Final effluent BW WWTW	Daily	PC	COD, TDS, Nitrate, Nitrite, Ortho Phosphates, pH, Suspended Solids
Maturation River Outlet	Daily	PC	Suspended Solids, Turbidity, P04-P
	Weekly	PC	TOC
After Sandfilter	Daily	PC	Turbidity
	Weekly	PC	TOC
After Ultrafiltration	Daily	PC	Colour, TDS, pH, Turbidity
	Weekly	PC	TOC
After Reverse Osmosis	Daily	PC	Colour, TDS, pH, Turbidity
	Weekly	PC	TOC
Final Water	Monthly	Water & Wastewater Eng.	Colour, EC, TDS (Calculated), pH, Turbidity, Ammonia, Chloride, Fluoride, Nitrate plus Nitrite as N, Sodium, Sulphate, Zinc, Aluminium, Antimony, Arsenic, Cadmium, Total Chromium, Cobalt, Copper, Cyanide, Iron, Lead, Manganese, Mercury, Nickel, Selenium, Uranium, Vanadium, Dissolved Oxygen Carbon, Total Organic Carbon, Faecal Coliforms, E.Coli, Giardia Species, Cytopathogenic Viruses, Cryptosporidium Species, COD, Suspended Solids, EC, Ortho Phosphate, Total Organic Carbon, Dissolved Organic Carbon
Beaufort West			
WTW: Raw Water	-	-	-
WTW: Filtered Water (Both filters)	2 Hourly	PC	Turbidity
WTW: Final Water	Daily	PC	Free Chlorine
	Monthly	External Lab	EC, Turbidity, pH, Heterotrophic Plate Count, E.Coli, Total Coliform Count, Sulphate, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Distribution System	Monthly	External Lab	EC, Turbidity, pH, Heterotrophic Plate Count, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Recommended Operational and Compliance Sampling Programme			
WTW: Raw Water	Daily	PC	pH, EC, Turbidity, Temperature
	Monthly	External Lab	pH, EC, Turbidity
	Annually	External Lab	Full SANS
WTW: Settled Water	Per shift	PC	pH, EC, Turbidity, Colour
WTW: Filtered Water	Per shift	PC	pH, EC, Turbidity, Colour
WTW: Final Water	Per shift	PC	pH, Turbidity, Free Chlorine, Colour, Temperature
	Daily	PC	EC
	Weekly	Internal Lab	E.Coli, Heterotrophic Plate Count
	Monthly	External Lab	EC, Turbidity, pH, Heterotrophic Plate Count, E.Coli, Total Coliform Count, Sulphate, Iron, Manganese, Aluminium

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Table 8.1.7.2: Current and required water quality determinands to be sampled by Beaufort West Municipality for the various water distribution systems: Routine monitoring of Process Indicators			
Sampling Point	Frequency of sampling	Samples taken by	Determinands
	Annually	External Lab	Full SANS
Distribution System	Fortnightly	PC	pH, Turbidity, Free Chlorine, E.Coli and Heterotrophic Plate Count
	Monthly	External Lab	EC, Turbidity, pH, Heterotrophic Plate Count, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Merweville			
Current Operational and Compliance Sampling Programme			
Raw Water	-	-	-
Distribution System	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Recommended Operational and Compliance Sampling Programme			
Raw Water	Daily	PC	pH, EC, Turbidity
	Monthly	External Lab	pH, EC, Turbidity
	Annually	External Lab	Full SANS
Distribution System	Fortnightly	PC	pH, Turbidity, Free Chlorine, E.Coli and Heterotrophic Plate Count
	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium, Heterotrophic Plate Count
	Annually	External Lab	Full SANS
Nelspoort			
Current Operational and Compliance Sampling Programme			
Raw Water	-	-	-
Distribution System	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Recommended Operational and Compliance Sampling Programme			
Raw Water	Daily	PC	pH, EC, Turbidity, Temperature
	Monthly	External Lab	pH, EC, Turbidity
	Annually	External Lab	Full SANS
Final Water (Reservoir)	Daily	PC	EC, pH, Turbidity, Free Chlorine, Colour, Temperature
	Weekly	Internal Lab	E.Coli, Heterotrophic Plate Count
Distribution System	Fortnightly	PC	pH, Turbidity, Free Chlorine, E.Coli and Heterotrophic Plate Count
	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium, Heterotrophic Plate Count
	Annually	External Lab	Full SANS
Murraysburg			
Current Operational and Compliance Sampling Programme			
Raw Water	-	-	-
Distribution System	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium
	Annually	External Lab	Full SANS
Recommended Operational and Compliance Sampling Programme			
Raw Water	Daily	PC	pH, EC, Turbidity
	Monthly	External Lab	pH, EC, Turbidity
	Annually	External Lab	Full SANS
Distribution System	Fortnightly	PC	pH, Turbidity, Free Chlorine, E.Coli and Heterotrophic Plate Count
	Monthly	External Lab	EC, Turbidity, pH, E.Coli, Total Coliform Count, Iron, Manganese, Aluminium, Heterotrophic Plate Count

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Table 8.1.7.2: Current and required water quality determinands to be sampled by Beaufort West Municipality for the various water distribution systems: Routine monitoring of Process Indicators

Sampling Point	Frequency of sampling	Samples taken by	Determinands
	Annually	External Lab	Full SANS

Monitoring is the act of conducting a planned series of observations or measurements of operational and / or critical limits to assess whether the components of the water supply are operating properly. The first process is checking the water quality during the operational processes including abstraction, treatment and distribution. The second process is checking that the water delivered complies with the quality standards as set by government regulations.

A significant limitation of an approach that focuses on compliance monitoring only is that it promotes reactive management, rather than proactive preventative management, as corrective actions are initiated only after drinking water quality monitoring indicates that guideline values have been exceeded.

Other limitations of a compliance monitoring approach to protecting public health include that:

- It is neither technically nor economically feasible to monitor every possible chemical, physical and microbiological parameter. Furthermore, indicator organisms such as E.Coli do not always correlate well with risks for viruses and protozoa, and
- Contamination can occur between sampling events and be missed by the monitoring programme.

The objectives of operational monitoring are for the Beaufort West Municipality to monitor each control measure in a timely manner to enable effective system management and to ensure that health-based targets are achieved. It also ensures that all the risks identified during the risk assessment process are adequately monitored and that the drinking water quality requirements as set out in SANS:241 are fully complied with. Appropriate data capturing and record keeping systems are in place for the Beaufort West Municipality to satisfy the requirements of the Water Services Act.

The parameters to be selected by the Beaufort West Municipality for operational monitoring should

- reflect the effectiveness of each control measure;
- provide a timely indication of performance;
- are readily measured; and
- provide opportunity for an appropriate response.

The water quality results from operational monitoring should be used as a trigger for immediate short – term corrective action to operational procedures, to improve drinking water quality. Beaufort West Municipality's Compliance Sampling Programme for the internal water distribution networks is summarised in the table below.

Table 8.1.7.3: Existing Compliance Sampling Programme implemented by Beaufort West Municipality for their water distribution networks

Distribution System	Sampling Points	Frequency of sampling	Analyses performed on the samples
Beaufort West	Squatter Camp, Beaufort Mall, Checkers Square, Beaufort West WTW, Industrial Area, Rustdene, Kwa Mandlenkosi, Hospital Heuwel, Noordeinde, Nieuveland Park, Hillside, Tattieslaan 7, Reclamation Plant.	Monthly	See Table 8.1.7.2 for the analysis performed for
Merweville	Drankwinkel, Municipal Offices, Merweville WTW		
Nelspoort	Nelspoort WTW, SAPD, Restvale School		

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Table 8.1.7.3: Existing Compliance Sampling Programme implemented by Beaufort West Municipality for their water distribution networks			
Distribution System	Sampling Points	Frequency of sampling	Analyses performed on the samples
Murraysburg	Murraysburg South, Murraysburg North		the Distribution Systems

The Table below gives an overview of the number of compliance samples taken over the period July to June for the last two financial years for the various water distribution networks.

Table 8.1.7.4: Number of water quality samples taken throughout the various water distribution systems for the last two financial years										
Number of Sampling points within distribution system	11		1		2		2		2	
Parameter Sampled	Beaufort West		Beaufort West Reclamation		Merweville		Nelspoort		Murraysburg	
	23/24	22/23	23/24	22/23	23/24	22/23	23/24	22/23	23/24	22/23
Electrical Conductivity	134	-	12	9	21	-	23	-	21	-
Turbidity	134	-	12	9	21	-	23	-	21	-
pH	134	-	12	9	21	-	23	-	21	-
E.Coli	144	146	12	9	24	21	24	22	22	19
Total Coliform Count	144	154	12	9	24	27	24	26	22	27
Total Chlorine	2	-	-	-	1	-	1	-	1	-
Colour	2	-	12	9	1	-	1	-	1	-
Sodium	2	-	12	9	1	-	1	-	1	-
Zinc	2	-	12	9	1	-	1	-	1	-
Chloride	2	-	12	9	1	-	1	-	1	-
Fluoride	2	-	12	9	1	-	1	-	1	-
Sulphate	8	-	12	9	7	-	1	-	1	-
Total Dissolved Solids	2	-	12	9	1	-	1	-	1	-
Ammonia Nitrogen	2	-	12	9	1	-	1	-	1	-
Nitrate and Nitrite	2	-	12	9	1	-	1	-	1	-
Iron	134	-	12	9	21	-	23	-	19	-
Manganese	134	-	12	9	21	-	23	-	19	-
Aluminium	134	-	12	9	21	-	23	-	19	-
Chloroform	2	-	-	-	1	-	1	-	1	-
Bromodichloromethane	2	-	-	-	1	-	1	-	1	-
Dibromochloromethane	2	-	-	-	1	-	1	-	1	-
Bromoform	2	-	-	-	1	-	1	-	1	-
Total THM ratio	2	-	-	-	1	-	1	-	1	-
Phenols	2	-	-	-	1	-	1	-	1	-
Nitrate as N	2	-	12	1	1	-	1	-	1	-
Nitrite as N	2	-	12	1	1	-	1	-	1	-
Antimony	2	-	12	9	1	-	1	-	1	-
Arsenic	2	-	12	9	1	-	1	-	1	-
Cadmium	2	-	12	9	1	-	1	-	1	-
Chromium	2	-	12	9	1	-	1	-	1	-
Copper	2	-	12	9	1	-	1	-	1	-
Lead	2	-	11	9	1	-	1	-	1	-
Mercury	2	-	10	9	1	-	1	-	1	-
Nickel	2	-	12	9	1	-	1	-	1	-

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Table 8.1.7.4: Number of water quality samples taken throughout the various water distribution systems for the last two financial years										
Selenium	2	-	12	9	1	-	1	-	1	-
Vanadium	-	-	12	9	-	-	-	-	-	-
Cyanide	2	-	12	9	1	-	1	-	1	-
Total Organic Carbon	-	-	12	10	-	-	-	-	-	-
Uranium	2	-	12	9	1	-	1	-	1	-
Barium	2	-	12	9	1	-	1	-	1	-
Boron	2	-	12	9	1	-	1	-	1	-
Microcystin	2	-	-	-	1	-	1	-	1	-
Monochloramine	2	-	-	-	1	-	1	-	1	-
Cytopathogenic Viruses	-	-	12	-	-	-	-	-	-	-
Cryptosporidium Species	-	-	12	9	-	-	-	-	-	-
Giardia Species	-	-	12	9	-	-	-	-	-	-
Total	1 164	300	441	309	213	48	219	48	197	46

Drinking Water Sample Analysis (Credibility): The accreditation certificate of the external laboratory, who is responsible for compliance sampling for Beaufort West Municipality's internal water reticulation networks, are indicated below.

- Compliance Testing for Beaufort West Municipality in 2023/2024: Integral Laboratories (Pty) Ltd, Accreditation Number T0417 for Chemical and Microbiological Analysis (Expiry Date 11 February 2025).

The water quality compliance sample results are loaded onto the IRIS, which indicate the compliance performance for the month for each of the distribution systems, with specific indication of samples that does not comply. The water quality compliance sample results are also summarised in Annexure E for each of the schemes.

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

Table 8.1.7.5: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)	
Municipal Blue Drop Score	2011 - 92.01%, 2012 - 94.91%, 2014 - 89.52% and 2023 - 53.02%
<p>Introductions: The Beaufort West Local Municipality supplies approximately 54 000 people with potable water through 4 water supply systems. The municipality is responsible for 100% of the total SIV of 9 459 kl/d. For the smaller towns the water supply is quite conventional, either groundwater or surface water.</p> <p>For the Beaufort West system, 50% of the water supplied is groundwater that is abstracted, chlorinated, and mixed with water from the other sources. These are water from the Gamka Dam, about 40%, treated in a conventional WTW, and water from a Water Reclamation Works operated by NuWater, about 10% of the total water supply.</p> <p>It is unfortunate that the BD score dropped from almost 90% in 2014 to 53% during the last audit. The Regulator however notes that, with the exception of Murraysburg, the WSI's systems are in the low Risk Rating category. This discrepancy seems to be due to the WSI's overall approach to the provision of safe potable water where the technical hands-on tasks required to perform this service is prioritised over the need to ensure that the documents, systems, and plans required during the Blue Drop audit are in place. This lack of reproducible evidence (uploaded to the IRIS system) does however not directly relate to a lack of performance in ensuring the community is provided with clean, safe drinking water. The Regulator is however concerned about the Murraysburg system and the WSI is encouraged to ramp up the way in which this system is managed.</p> <p>Regulator's Comments: The WSI is cognisant of the constraints and challenges that needs to be managed to ensure the sustainable provision of potable water to the community they serve. Even though many of the management systems and plans, like Water Safety Plans, were developed during the early stages of the Blue Drop Programme more than 10 years ago, the overall approach to the operation of their water services does have a strong risk-management undertone.</p>	

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Table 8.1.7.5: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)

Blue Drop Findings: The Regulator finds that the 4 supply systems exhibited similar shortcomings, and summarises the collective recommendations as follows:

- Process Controllers linked to the smaller supply systems needs to be aligned to the relevant Regulation. Even though process-related tasks on the sites are limited, appropriately skilled personnel need to take responsibility for the Works and be registered on IRIS accordingly.
- The same applies to operational monitoring – It needs to be remembered that even simple systems where a limited degree of treatment is required needs to be monitored in line with SANS241:2015 Table 1.
- As the Beaufort West system also receives water from a Reclamation Plant, comprehensive, risk-based operational monitoring is in place.
- Compliance monitoring needs to be aligned to SANS241:2015 in terms of the frequency at which microbiological analyses is performed. For the smaller systems, the chemical and physical determinants analysed should also be checked and aligned to a risk-based approach, similar to the Beaufort West system.
- Risk management is central to the provision of safe water in a sustainable manner and the Water Safety Plans need to be updated.
- An Infrastructure Functionality Assessment was conducted by MISA, but the report was unpublished at the time of the audit. The WSI is encouraged to conduct their own Plant and Process Audits as these recommendations are to be incorporated into the WaSP.
- No capital projects were noted for the WSI.

Technical Site Assessment: The Beaufort West WTW was inspected to assess the condition and functionality of infrastructure and treatment processes on the ground, i.e., to verify the Blue Drop audit findings. The works received a technical site score of 70%. This basic conventional water treatment works is in a fair condition and produces water which complies with the SANS241 standard. The works is somewhat dated, but functional. The largest amount of work required relates to optimising the chlorine dosing facility.

The Regulator note the dire state of management and drinking water quality in the Murraysburg and Nelspoort water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.

Performance Area		Beaufort West	Merweville	Murraysburg	Nelspoort
Bulk/WSP		-	-	-	-
Capacity Management	15%	60.81%	52.00%	62.00%	52.00%
DWQ Risk Management	20%	30.20%	12.00%	20.00%	12.00%
Financial Management	10%	66.25%	61.00%	61.00%	61.00%
Technical Management	20%	28.55%	12.50%	20.00%	12.50%
DWQ Compliance	35%	84.00%	53.00%	20.00%	41.00%
Bonus	10%	0.00%	0.00%	0.00%	0.00%
Penalties	10%	0.00%	25.00%	37.50%	25.00%
Disqualifiers		None	None	None	None
Blue Drop Score (2023)	%	56.90%	34.85%	26.65%	30.65%
Blue Drop Score (2014)	%	95.22%	78.33%	48.36%	70.10%
Blue Drop Score (2012)	%	96.30%	86.40%	N/A	74.20%
Blue Drop Score (2011)	%	95.40%	79.70%	N/A	61.20%
System Design Capacity	kl/d	22 144	280	600	500
System Available Capacity	kl/d	15 644	280	600	500
System Input Value	kl/d	8 148	160	749	402
Capacity utilization	%	52.23%	57.14%	124.83%	80.40%
Average Daily Consumption	l/p/d	181	129	176	115
Resource Abstracted From		Boreholes / Ganka Dam / Reclaimed Water	Boreholes	Boreholes	Soutrivier augmented by boreholes
Microbiological Compliance	%	99.99%	99.99%	95.83%	99.99%
Chemical Health Compliance	%	99.59%	99.99%	0.00%	99.99%
Risk Defined Compliance	%	93.62%	94.17%	76.67%	81.25%
VROOM	Rand	R4 540 000	-	-	-
BDRR 2023	%	22.97%	17.76%	56.42%	17.76%

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Table 8.1.7.5: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)

BDRR 2022	%	15.70%	29.10%	39.40%	28.60%
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The average residential daily consumption (l/p/d) for the last four financial years are summarised in the table below.

Table 8.1.7.6: Average residential daily consumption (l/p/d) for the last four financial years.

Distribution System	2022/2023			2023/2024		
	Estimated Permanent Population	Aver. Daily System Input Volume (kl)	Aver. Daily residential consumption (l/p/d)	Estimated Permanent Population	Aver. Daily System Input Volume (kl)	Aver. Daily residential consumption (l/p/d)
Beaufort West	40 150	7 667	191	40 753	10 226	251
Merweville	1 875	166	89	1 903	178	94
Nelspoort	1 896	392	207	1 914	327	171
Murraysburg	5 971	806	135	6 061	1 072	177
Total	49 892	9 031	181	50 631	11 803	233
Distribution System	2020/2021			2021/2022		
	Estimated Permanent Population	Aver. Daily System Input Volume (kl)	Aver. Daily residential consumption (l/p/d)	Estimated Permanent Population	Aver. Daily System Input Volume (kl)	Aver. Daily residential consumption (l/p/d)
Beaufort West	38 972	7 423	190	39 577	8 143	206
Merweville	1 820	237	130	1 848	191	103
Nelspoort	1 858	420	226	1 877	399	
Murraysburg	5 796	925	160	5 883	785	
Total	48 446	9 005	186	49 165	9 518	

The above figures include the water losses and commercial and other water usage. Accurate billed metered residential consumption figures are not available and it is therefore not possible to accurately calculate the residential water usage with the water losses and the commercial and other water usage excluded.

8.1.8 Basic Sanitation

Table 8.1.8.1: Basic Sanitation

Basic Sanitation – Moderate Vulnerability 70.0%							
You have formal housing areas that are not fully serviced with sanitation infrastructure.							
No, all formal areas are fully serviced (i.e. no bucket sanitation service)	Yes, but these are new households that will be serviced within 2 years	Yes, still trying to meet formal backlog but >90% are serviced	Yes, still trying to meet formal backlog with 80 - 90% serviced	Yes, still trying to meet formal backlog with 60 - 80% serviced	Yes, still trying to meet formal backlog with <60% serviced (e.g. occurrence of bucket systems, existence of open defecation)	Don't know	
You have informal housing or rural areas that are not fully serviced with sanitation infrastructure.							
No, all informal and rural areas are fully serviced	We have no informal areas and rural areas are serviced	Yes, but these are new households that will be serviced within 2 years	Yes, still trying to meet informal or rural backlog with >90% serviced	Yes, still trying to meet informal or rural backlog but 80- 90% are serviced	Yes, still trying to meet informal or rural backlog with 60 - 80% serviced	Yes, still trying to meet informal or rural backlog with <60% serviced (e.g. occurrence of bucket systems, existence of open defecation)	Don't know

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Table 8.1.8.1: Basic Sanitation							
Basic Sanitation – Moderate Vulnerability 70.0%							
You have a detailed plan and programme to provide safe sanitation to all households (including health and hygiene education and user awareness including Water, Sanitation and Health (WASH) aspects).							
Yes, strongly agree (i.e. close to 100% implementation)	Strongly agree (i.e. >95% implementation)	Mostly agree (i.e. >75% implementation)	Agree somewhat (i.e. >50% implementation)	<50% implementation	No implementation (i.e. 0%)	Don't know	Not applicable
Your sanitation budget is appropriate for required sanitation programmes (implementation and O&M).							
Yes, strongly agree (i.e. close to 100% of required funds)	Mostly agree (i.e. >95% of required funds)	Some shortfall (i.e. >75% of required funds)	Disagree, significant shortfall (50-75% of required funds)	Serious underfunding (<50% of required funds)	No funds (i.e. 0%)	Don't know	Not applicable
You are servicing your basic sanitation facilities (e.g. pit latrines) as per safe sanitation requirements (healthy, environmentally safe, structurally sound, regularly maintained, following faecal sludge management best practices).							
Yes, close to 100% as per requirements	Strongly agree (i.e. >95% as per requirements)	Mostly agree (i.e. >75% as per requirements)	Agree somewhat (i.e. >50% as per requirements)	No, we only manage to service <50% of the sanitation infrastructure	No, we have serious shortfalls in the servicing of sanitation infrastructure (i.e. <20 %)	Don't know	Not applicable

See Topic 2 for more information on the Service Levels of the municipality.

8.1.9 Waste Water / Environmental Safety and Regulatory Compliance

Table 8.1.9.1: Waste Water / Environmental Safety and Regulatory Compliance							
Wastewater / Environmental Safety and Regulatory Compliance – Low Vulnerability 79.0%							
Please indicate your treated wastewater effluent compliance for COD for your (or your service provider's) WWTWs for the last 12 months.							
>95%	90% - 95%	80% - <90%	<80%	Don't know			
ALL your WWTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable waste water risk abatement framework.							
Yes, strongly agree (i.e. close to 100% covered)	Agree (i.e. >95% covered)	Mostly agree (i.e. >75% covered)	Agree somewhat (i.e. >50% covered)	< 50% covered	None covered (i.e. 0%)	Don't know	
Council have been made aware of all W ₂ RAP related issues (e.g. pollution incidents, Green Drop deficiencies) that require budget and actioning, and these issues have been actioned (where applicable).							
Yes, strongly agree (i.e. all (close to 100%) tabled)	Agree (i.e. >95% covered)	Mostly agree (i.e. >75% tabled)	Agree somewhat (i.e. >50% tabled)	< 50% tabled	Issues noted but none tabled (i.e. 0%)	Not applicable (no issues requiring council resolution exist)	Don't know
Sufficient funds have been made available to address all identified wastewater and environmental safety related issues.							
Yes, strongly agree (i.e. 100% of required funds)	Agree (i.e. >95% covered)	Mostly agree (i.e. >75% of required funds)	Agree somewhat (i.e. >50% of required funds)	< 50% of required funds	Issues noted but no funds (i.e. 0%)	Not applicable (no issues requiring funding exist)	Don't know
Required corrective actions/remedial measures to address all identified wastewater and environmental safety related issues have been successfully implemented.							
Yes, strongly agree (i.e. 100% implementation)	Agree (i.e. >95% covered)	Mostly agree (i.e. >75% implementation)	Agree somewhat (i.e. >50% implementation)	<50% implementation	Issues noted but no implementation (i.e. 0%)	Not applicable (no issues requiring corrective actions exist)	Don't know

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Waste Water Monitoring Programme: Operational sampling is only done by the Process Controllers at the Beaufort West WWTW. The current operational monitoring programme of Beaufort West Municipality for their WWTWs is summarised in the table below.

Table 8.1.9.2: Beaufort West Municipality's Operational Waste Water Quality Sampling Programme		
Position	Frequency	Determinant
Beaufort West		
Reactor	Daily	VSC (30 minute)
Merweville		
-	-	-
Nelspoort		
-	-	-
Murraysburg		
-	-	-

The table below gives an overview of the monthly parameters tested by the external laboratory at the various WWTWs and the place where the samples are taken.

Table 8.1.9.3: Monthly effluent quality parameters monitored by External Laboratory for compliance monitoring	
Position	Determinand
Beaufort West Mun	
Final	Faecal Coliforms
Beaufort West NEWATER	
Final	Conductivity, Total Suspended Solids, pH, Ammonia Nitrogen, COD, Ortho Phosphate, Nitrate Nitrogen, Nitrite Nitrogen, Nitrite/Nitrate Nitrogen, Total Organic Carbon, Dissolved Organic Carbon
Merweville	
-	-
Nelspoort	
-	-
Murraysburg	
Final	Faecal Coliforms

The current Operational and Compliance Monitoring Programmes for the WWTWs are not adequate to ensure proper process control. The final effluent results are loaded onto DWS's IRIS. The Municipality needs to take immediate action to rectify problems and / or improve operational aspects as and when it may be required. For serious failures an Incident Response Management Protocol needs to be followed, which should be included in the W₂RAPs, to ensure rapid remedying of the problems, which includes notification to the DWS as may be necessary.

Waste Water Sample Analysis (Credibility): Compliance Waste Water Samples of Beaufort West Municipality are analysed by an accredited external laboratory. Once the analyses of the wastewater samples received at the laboratory are completed the results are given through to Beaufort West Municipality. Any final effluent samples that do not comply with the target values (corresponding to the General Authorisation Limits) are reported.

The final effluent quality compliance sample results are loaded onto the IRIS, which indicate the compliance performance for the month for each of the WWTWs, which specific indication of samples that does not comply. The final effluent quality compliance sample results for the 2023/2024 financial year are also summarised in Annexure E for each of the WWTWs.

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

Table 8.1.9.4: Green Drop Performance of the Beaufort West Municipality (DWS's 2022 Green Drop Report)

Average Green Drop Score	2009 – 43.0%, 2011 – 90.0%, 2013 – 80.0%, 2021 – 59.0%
<p>Regulator's Comment: Beaufort West was represented by the Manager Technical Services, a senior clerk, as well as relevant officials as/when required to provide a wide-angle perspective on wastewater services. The team was well prepared and had evidence categorised based on the assessment criteria. The municipality achieved a 59% Green Drop score which is a regress from the 80% baseline in 2013 and 90% in 2011. However, the Regulator note that systems, processes, and qualified persons have been put in place, which bodes well to return to this excellent status by time of the next audit in 2023. Unfortunately, the Murraysburg system is a reason for concern and impacts negatively on the overall municipal score.</p> <p>Areas for improvement include plans and systems linked to the Technical Management Category, like Process Audits and Sewer Mains Inspections, as well as implementing updated Wastewater Risk Abatement Plans. Flow metering and process monitoring remains a gap and contributed to a penalty for lack of inflow and outflow measurement. The Regulator would like to encourage the WSA to use the information from the current Green Drop audit as a baseline from which to move beyond compliance once again and into excellence. The Regulator is satisfied that 3 WWTWs reside in low risk space, and 1 plant in medium risk position.</p> <p>Green Drop findings:</p> <ol style="list-style-type: none"> 1. Plant Supervisor, and Process Controller registrations are in place at most of the systems with the WSA complying with the Green Drop standard (Draft Reg. 813) 2. Inhouse competencies of the Millwright could be verified, who oversees maintenance performed by Service Providers. The capacity of the Service Providers was considered before a contract was awarded 3. Engineering capacity is available inhouse and scientific capacity is currently provided by the external laboratories. The internal laboratory must assure that quality assurance, such as PTS and Z-scores, are in place for operational monitoring. 4. Older versions of Wastewater Risk Abatement Plans are available. Even though these need to be updated, risk management principles still prevail within the municipality 5. Operational and compliance monitoring is in place for the Beaufort West system. Merweville and Nelspoort are considered as zero-effluent systems and some of the compliance monitoring requirements is waived. Monitoring at Murraysburg is however lacking. 6. Financial information was provided. Murraysburg was however excluded from this as the system initially fell within another WSA's jurisdiction. Effort must be put to get this plant up to the same standard as the others. 7. Flow measurement is in place for Beaufort West WWTW, but not for the remaining systems, predominantly due to the flows being too low to do accurate flow measurement. Alternative ways of monitoring may be implemented i.e., pump hours, etc. to ensure the plant is not hydraulically overloaded. 8. No monitoring is in place at Merweville and Nelspoort, which are seen as zero-effluent systems. The same situation prevails at Murraysburg even though the final effluent is being irrigated. 9. NMR requirements on final effluent need to be verified by way of Authorisations during the next audit to waive monitoring of these systems. However, good practice would still require monitoring of the raw and final effluent as a minimum. 10. Beaufort West WWTW is producing effluent of an acceptable quality, noting that only microbiological quality achieved the excellence standard of >90%. 11. A capital project is in place to address some of the gaps identified: <ul style="list-style-type: none"> o R42,696,730: Upgrade of the Beaufort West WWTW – funds not secured yet. 	

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Table 8.1.9.4: Green Drop Performance of the Beaufort West Municipality (DWS's 2022 Green Drop Report)

The Regulator is concerned about the overall poor state of wastewater services at the Murraysburg systems and the consequential impact on respective water resources. It is thus required that the WSI submit a detailed corrective action plan within 60 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvements as out lined in the Regulatory Comment. The plan will be considered against the Regulatory Comment and recommended for approval by a national regulation committee.

The Beaufort West WWTW was inspected to verify the Green Drop audit findings (**Technical Site Assessment: Beaufort West WWTW 64%**):

- The network and pumpstation was in good condition, with operations and maintenance attended to.
- Screens were covered with GRP-plates as good practice.
- Logbooks & systems were adequate, but Process Controllers should be encouraged to take more responsibility for their WWTW, start interpreting data collected and first order maintenance.
- Minor building repairs were required. The staff facilities seem to be due for an update.
- Upgrades to the Head of Works would include a screening washing system with compactor and/or conveyor.
- The incinerator on site was in fair condition.
- The biofilter section of the plant has been de-commissioned. Indications are, however, that the Activated Sludge Plant has sufficient capacity to deal with the current load.
- A few signs of spalling concrete on reactor walkway were visible. This creates questions around condition of concrete on submerged sections.
- Provision has been made for additional aerator to be installed. As the hydraulic capacity is in order the installation of another aerator would be a meaningful upgrade and will contribute to effluent quality improvement in the chemical category.
- The corrosive nature of ferric was noted and need to be addressed as risk, i.e. tanks be replaced on a regular basis.
- The chlorine dosing facility was functional but could be upgraded. The building is, by design, open while more modern trends are to contain chlorine gas, especially noting that one of the residential areas is expanding in the direction of the WWTW.
- Only lagoons were in use for sludge handling.
- Having a Water Reclamation Works linked to the system creates a certain expectation in terms of technology use on site and as such it would be fitting to start considering sludge as a resource as opposed to simply storing it for future disposal.

GREEN DROP REPORT CARD

Key Performance Area	Weight	Beaufort West	Merweville	Nelspoort	Murraysburg
A: Capacity Management	15%	74.0%	92.5%	92.5%	55.0%
B: Environmental Management	15%	60.5%	37.5%	25.0%	12.5%
C: Financial Management	20%	74.5%	68.1%	55.6%	0.0%
D: Technical Management	20%	60.0%	15.3%	15.3%	15.3%
E: Effluent & Sludge Compliance	30%	46.3%	100.0%	88.8%	18.8%
F: Bonus		25.5%	10.5%	10.5%	3.8%
G: Penalties		0.0%	-25.0%	-25.0%	-25.0%
H: Disqualifiers		None	None	None	None
2021 Green Drop Score		64%	64%	56%	16%
2013 Green Drop Score		94%	89%	89%	12%
2011 Green Drop Score		91%	59%	88%	57%
2009 Green Drop Score		83%	20%	26%	0%

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Table 8.1.9.4: Green Drop Performance of the Beaufort West Municipality (DWS's 2022 Green Drop Report)				
System Design Capacity (Ml/d)	4.659	0.390	0.200	0.500
Design Capacity Utilisation (%)	57%	NI	NI	77%
Resource Discharged into	Reclamation	No Discharge	No Discharge	Irrigation to Field – 400m from Buffelsrivier
Microbiological Compliance (%)	92%	NMR	NMR	No Monitoring
Chemical Compliance (%)	84%	NMR	NMR	No Monitoring
Physical Compliance (%)	56%	NMR	NMR	No Monitoring
Wastewater Risk Rating (CRR% of CRRmax)				
CRR (2011)	35.3%	23.5%	29.4%	NA
CRR (2013)	23.5%	58.8%	64.7%	94.1%
CRR (2021)	47.1%	35.3%	35.3%	52.9%

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

Table 8.1.9.5: Green Drop Risk Rating of the Beaufort West Municipality (DWS's 2023 Green Drop Progress Report)	
Municipal CRR% 2023 (%CRR/CRRmax)	68.7%
<p>Introduction:</p> <p>Beaufort West Local Municipality is a town situated in the Great Karoo region of the Western Cape, which is home to a population of approximately 51 074 people and includes the towns of Beaufort West, Merweville, Murraysburg and Nelspoort. The Beaufort West Local Municipality owns and operates the four WWTWs in each of these towns. The Beaufort West WWTW is an activated sludge plant while the WWTWs at Merweville and Nelspoort are Oxidation pond systems. No information is available for the Murraysburg WWTW.</p> <p>Regulator's Comment: According to the CRR calculation, two of the four WWTWs are classified as critical risks (Merweville and Nelspoort) while a third (Murraysburg) is classified as a high risk system. It is noted that these systems have also all showed an increase in their risk ratings since the 2023 audit.</p> <p>The Murraysburg system has not been classified and this should be addressed as soon as possible. In addition, it is noted that there is a lack of flow measurement at both the oxidation pond systems (Merweville and Nelspoort). It is required that all flows are measured and the WSA must ensure that flow meters are installed/ repaired, daily flow readings are recorded, and annual meter calibration is conducted.</p> <p>The water quality monitoring data indicates that the Beaufort West system is monitoring the effluent discharged however 50% of the parameters are non-compliant. The Nelspoort system does not discharge, but no monitoring is taking place here. The Merweville and Murraysburg systems are both not compliant with all effluent parameters. The WSA is urged to ensure that sufficient monitoring of the final effluent is taking place, and that the LM strives to ensure compliance of the effluent with the regulatory limits to ensure the health and well-being of the communities and the environment downstream.</p> <p>There is a lack of technical skills especially with regards to the lack of qualified Supervisory staff and insufficient Process Controllers. The WSA is urged to ensure that these positions are prioritized and filled with qualified and competent staff as soon as possible. Some maintenance capacity is noted and the WSA should ensure that the operational and maintenance teams are aligned with the regulatory requirements.</p> <p>A significant risk exists due to the lack of information provided evidenced by the critical risk rating of two of these WWTWs and the high risk rating of the third works. A lack of wastewater management and risk management is evident as there is no W₂RAP documentation or GDIP documentation loaded onto the IRIS. In addition, there is no evidence of a Corrective Action Plan or financial information available and no evidence of any capital budget for refurbishment has been provided.</p> <p>The WSA should develop the W₂RAP and GDIP as a matter of urgency to address the poor wastewater management and effluent quality which is being discharged at present. The WSA is encouraged to develop a W₂RAP, have it signed and annually reviewed and implementing the risk-based methodology for the purpose of minimizing the overall risk rating and improving effluent quality. The WSA must develop and implement a GDIP which identifies the shortcomings for all Green Drop Criteria, allocate responsibility, as well as budget and time frames for addressing the gaps identified.</p>	

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Table 8.1.9.5: Green Drop Risk Rating of the Beaufort West Municipality (DWS's 2023 Green Drop Progress Report)						
Risk Assessment Areas		Weight	Beaufort West	Merweville	Murraysburg	Nelspoort
Class of Works			C: Approved	E: Approved	Incomplete	E: Approved
Treatment Technology			Activated Sludge	Oxidation ponds	None	Oxidation ponds
A: Total Design Capacity	Kl/d		4 600	100	1 000	200
B: Operational Capacity (% inflow/design)	%		65.3%	0.0%	30.0%	0.0%
C: Effluent Quality Non-compliance	#		4	3	6	6
% Microbiological Compliance	%		40.0%	0.0%	0.0%	0.0%
% Physical Compliance	%		54.3%	0.0%	0.0%	0.0%
% Chemical Compliance	%		92.1%	NMR	0.0%	0.0%
D: Technical Skills Compliance	%		33.3%	38.9%	22.2%	38.9%
Process Controller Compliance	%		33.0%	50.0%	0.0%	50.0%
Supervisor Compliance	%		0.0%	0.0%	0.0%	0.0%
Maintenance Team Compliance	%		66.7%	66.7%	66.7%	66.7%
CRR (2023)	%		64.7%	91.7%	80.0%	93.3%
CRR (2021)	%		47.1%	35.3%	52.9%	35.3%
CRR (2013)	%		23.5%	58.8%	94.1%	64.7%
CRR (2011)	%		35.3%	23.5%	-	29.4%
W ₂ RAP Status: 2022 Green Drop Report			No Proof	No Proof	No Proof	No Proof
W ₂ RAP Status: 2023 Green Drop PAT			No Proof	No Proof	No Proof	No Proof
Capital and Refurbishment Projects (Rand)			0	0	0	0
Description of Capital and Refurbishment Projects			N/A	N/A	N/A	N/A
2022 GD Score	%		64.0%	64.0%	16.0%	56.0%
GD Improvement Plan (GDIP)	Y/N		No	No	No	No
Corrective Action Plan (CAP)	Y/N		No	No	No	No

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8.1.10 Infrastructure Asset Management (IAM)

Table 8.1.10.1: Infrastructure Asset Management							
Infrastructure Asset Management (IAM) – Low Vulnerability 95.0%							
You have an appropriate and up-to-date water and sanitation services technical Asset Register (includes asset name, location, condition, extent, remaining useful life, performance and risk). NOTE: This does only not refer to GRAP17 asset register requirements.							
Yes, strongly agree (e.g. advanced asset register)	Yes, agree (e.g. basic asset register - i.e. not all aspects included)	Not ideal (e.g. outdated asset register)		No, disagree (i.e. no asset register)		Don't know	
You have developed an appropriate Infrastructure Asset Management (IAM) Plan for your WSA.							
Yes, strongly agree	In place, with occasional non-optimal performance	Partially in place, but not ideal		No, disagree		Don't know	
You are implementing the IAM outcomes.							
Yes, strongly agree (i.e. 100% implementation)	Agree (i.e. >95% implementation)	Mostly agree (i.e. >75% implementation)	Agree somewhat (i.e. >50% implementation)	< 50% implementation	No implementation (i.e. 0%)	Don't know	
Budget allocated to implement IAM outcomes is sufficient and is being effectively spent.							
Yes, strongly agree (i.e. 100%)	Agree (i.e. >95%)	Mostly agree (i.e. >75%)	Agree somewhat (i.e. >50%)	< 50%	No (i.e. 0%)	Don't know	
You conduct annual technical assessments of your water and wastewater related systems (including sources, WTWs, WWTWs, pump stations, network, etc.) and implement required follow-up actions.							
Yes, all systems (i.e. 100%)	Almost all systems (i.e. >95%)	Most systems (i.e. >75%)	Some systems (i.e. > 50%)	< 50% systems	No systems (i.e. 0%)	Don't know	Not applicable

An Asset Management Policy (Reviewed and amended, in effect from 1 July 2023) is in place for Beaufort West Municipality. The current water and sewerage infrastructure assets, as included in the latest Asset Register of Beaufort West Municipality (June 2023), are summarised under Section 3.1.1 of Topic 3.

8.1.11 Operation and Maintenance of Assets

Table 8.1.11.1: Operation and Maintenance of Assets					
Operation and Maintenance of Assets –Low Vulnerability 80.0%					
Appropriate maintenance facility(ies) that is (are) secure and stocked with essential equipment (e.g. spare parts), plant and tools is (are) available.					
Yes, strongly agree	In place, with occasional non-optimal performance	Partially in place, but not ideal	No, disagree		Don't know
Appropriate water and sanitation services infrastructure / equipment planned / preventative maintenance schedules are developed.					
Yes, strongly agree	In place, with occasional non-optimal performance	Partially in place, but not ideal	No, disagree		Don't know
Appropriate planned / preventative maintenance is performed at all WTWs and associated reservoirs, pump stations and distribution networks.					
Yes, all (i.e. 100%)	Almost all (i.e. >95%)	Some (i.e. > 50%)	< 50%	None (i.e. 0%)	Don't know
Appropriate planned / preventative maintenance is performed at all WWTWs and associated collection systems and pump stations.					
Yes, all (i.e. 100%)	Almost all (i.e. >95%)	Some (i.e. > 50%)	< 50%	None (i.e. 0%)	Don't know

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Table 8.1.11.1: Operation and Maintenance of Assets					
Operation and Maintenance of Assets –Low Vulnerability 80.0%					
Please indicate your infrastructure repairs and maintenance costs as a function of total operating expenditure (%).					
<5%	5% - <10%	10% - <15%	15% - <12%	20% or more	Don't know

See Topic 4 for more information on the Operation and Maintenance of the water and sewerage infrastructure of the municipality.

8.1.12 Financial Management

Table 8.1.12.1: Financial Management					
Financial Management – Low Vulnerability 90.0%					
Financial controls - Please state the audit opinion with regard to your last audit report on the financial statements.					
Clean audit outcome (i.e. unqualified with no findings)	Financially unqualified audit opinion (with findings)	Qualified audit opinion	Disclaimer of audit opinion	Adverse audit opinion	Don't know
Cash flow status – Please state your Cash / Cost Coverage Ratio (excluding Unspent Conditional Grants)					
> 90 days	60 - 90 days	30 - 60 days	< 30 days	Don't know	
Your actual operating expenditure closely reflects your budgeted operating expenditure (i.e. Operating Expenditure Budget Implementation Indicator).					
95% - 100%	90% - <95%	85% - <90%	80% - <85%	<80%	Don't know
Your actual revenue closely reflects your budgeted operating revenue (i.e. Operating Revenue Budget Implementation Indicator).					
95% - 100%	90% - <95%	85% - <90%	80% - <85%	<80%	Don't know
Liabilities (Creditors) - Money is owed by your municipality to major / critical service providers (e.g. ESKOM, Water Board, largest contractors, etc.) for more than 30 days from receipt of invoice (NOTE: Ignore disputed invoices).					
Never	Once per year	Twice per year	Once per quarter	More frequently than quarterly	Don't know

See Topic 7 for more information on the financial management of the municipality.

8.1.13 Revenue Collection

Table 8.1.13.1: Revenue Collection					
Revenue Collection - Low Vulnerability 95.0%					
Please indicate the frequency of actual consumer meter readings.					
Actual meter reading on a monthly basis	Actual meter reading at least every 2nd month	Meter reading at least on a quarterly basis	Meter reading less frequently than quarterly	Don't know	
Net Surplus / Deficit – Please state your net surplus / deficit from water services activities for the last 12 months (NOTE: This question tests whether your WSA currently has fully cost reflective Water and Sanitation Tariffs, which take into account cost of maintenance and renewal of purification plants and networks and the cost of new infrastructure).					
Surplus (i.e. >0%)	Breakeven (i.e. = 0%)		Net deficit (i.e. <0%)	Don't know	
Revenue collections - Please state the revenue collection rate in respect to Water and Sanitation Services (%).					
<50%	50% - <70%	70% - <80%	80% - <95%	95% or more	Don't know
Revenue Growth – Please state your Water and Sanitation Services revenue growth for the last financial year (%).					
>CPI	Equals CPI	<CPI, but >0%	Negative growth (-ve)	Don't know	
Grant dependency – Actual-operating revenue less operational grants / subsidies (e.g. equitable share) sufficiently covers actual operating expenditure.					
Yes, all (i.e. 100%)	Most (i.e. >75%)	Some (i.e. > 50%)	< 50%	None (i.e. 0%)	Don't know

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See Topic 7 for more information on the revenue collection of the municipality.

8.1.14 Financial Asset Management

Table 8.1.14.1: Financial Asset Management						
Financial Asset Management – High Vulnerability 50.0%						
Capital Expenditure (Municipal). Please state your municipal Capital Expenditure as a percentage of Total Expenditure (i.e. Total Operating Expenditure + Capital Expenditure).						
<5%	5% - <10%	10% - <15%	15% - <20%	20% or more	Don't know	
Capital Expenditure (Water Services). Please state your Capital Expenditure on Water and Sanitation Services as a percentage of Total Capital Expenditure (Capital Expenditure (Municipal)).						
<25%	25% - <50%	50% - <75%		75% or more	Don't know	
Asset Renewal. Please state your Asset Renewal investment as percentage of Depreciation Costs.						
100%	>90%	>75%	>50%	<50%	None (i.e. 0%)	Don't know
Repairs and Maintenance. Please state your Repairs and Maintenance expenditure as a percentage of Property, Plant and Equipment, Investment Property (Carrying Value).						
<5%	5% - <8%	8% - <10%	10% or more	Don't know		
Grant funding of capital expenditure – Please state your reliance on grant funding.						
>90%	> 75%	>50%	<50%	Don't know		

See Topic 3, Section 3.1.1. for more information on the financial asset management of the municipality.

8.1.15 Information Management (IT)

Table 8.1.15.1: Information Management					
Information Management (IT) – Low Vulnerability 100.0%					
You have a developed, approved and implemented IT Master Systems Plan (e.g. covering 3-5 years) that addresses your IT business requirements.					
Yes, developed, approved and being implemented	Developed and approved, but not yet implemented	Developed but not yet approved or implemented	In development	No, disagree	Don't know
You have a developed, approved and implemented ICT Technology Master Plan that addresses your current and future IT infrastructure requirements.					
Yes, developed, approved and being implemented	Developed and approved, but not yet implemented	Developed but not yet approved or implemented	In development	No, disagree	Don't know
You have IT systems that support your full range of water and sanitation services business requirements (e.g. billing, GIS, customer care, O&M, asset management).					
Yes, strongly agree (i.e. 100% of required systems)	Mostly agree (i.e. >75% of required systems)	Agree somewhat (i.e. >50% of required systems)	< 50% of required systems	None (i.e. 0% of required systems)	Don't know
ICT service continuity – Adequate IT security exists with off-site back-ups / archiving of operation critical applications, databases, data, etc. routinely performed in terms of an IT disaster Recovery Plan.					
Yes, strongly agree (i.e. All (close to 100%) in place)	Mostly agree (i.e. >75% in place)	Agree somewhat (i.e. >50% in place)	< 50% in place	Nothing in place (i.e. 0%)	Don't know
You have sufficient budget and staff to keep key IT systems stable and up-to-date as per IT policies and procedures.					
Yes, strongly agree (i.e. 100%)	Mostly agree (i.e. >75%)	Agree somewhat (i.e. >50%)	< 50%	No (i.e. 0%)	Don't know

The ICT department consist of a permanent appointed ICT Manager. All Technical support functionalities are outsourced to a service provider (2022/2023 Draft Annual Report).

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8.1.16 Organisational Performance Monitoring

Table 8.1.16.1: Organisational Performance Monitoring					
Organisational Performance Monitoring – Low Vulnerability 90.0%					
Appropriate plans, policies and procedures to address Disaster Management / emergencies and other issues (safety, public participation, communication, etc.) are developed and implemented. NOTE: Although Disaster Management is a district function, LMs need to ensure they are aware of their associated roles and responsibilities and have developed a Disaster Management Framework.					
Yes, developed and implemented	Developed but not yet implemented	In development	No, disagree	Don't know	
An organisational performance management system is developed and implemented (i.e. effectively measure, monitor and track water and sanitation services performance indicators).					
Yes, developed and implemented	Developed but not yet implemented	In development	No, disagree	Don't know	
A municipal risk management framework is developed and implemented and includes monitoring and tracking of water and sanitation related risks.					
Yes, developed and implemented and includes water and sanitation related risks	Yes, developed and implemented but does not include water and sanitation related risks	Developed but not yet implemented	In development	No, disagree	Don't know
Effective administration support is available to technical staff to assist with processing work orders, providing order numbers, handling correspondence, etc.					
Yes, strongly agree (i.e. 100% effective)	Mostly agree (i.e. >75% effective)	Agree somewhat (i.e. >50% effective)	< 50% effective	No, completely ineffective (i.e. 0%)	Don't know
"Access to Basic Water and Sanitation Services" progress reports are frequently produced and presented to council for discussion, action and follow-up.					
At least quarterly	At least bi-annually	At least annually	Less frequently (i.e. > 1 year)	No, never	Don't know

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.

The 2022/2023 water and sanitation KPIs and the performance with regard to these KPIs are summarised in the table below (Draft Annual Report 2022/2023).

Table 8.1.16.2: 2022/2023 Water and Sanitation KPIs and the performance			
KPI	Unit of Measurement	Annual Target	Actual
Number of formal properties that receive piped water (credit and prepaid water) that is connected to the municipal water infrastructure network and which are billed for water or have pre-paid meters as at 30 June 2023	Number of residential properties which are billed for water of have prepaid meters as at 30 June 2023	11 510	15 341
Number of formal residential properties connected to the municipal waste water sanitation/sewerage network for sewerage service, irrespective of the number of water closets (toilets) which are billed for sewerage as at 30 June 2023.	Number of residential properties which are billed for sewerage as at 30 June 2023	11 870	12 271

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Table 8.1.16.2: 2022/2023 Water and Sanitation KPIs and the performance			
KPI	Unit of Measurement	Annual Target	Actual
Provide free basic water to active indigent households as defined in paragraph 9(1) of the Municipality's Credit Control and Debt Collection Policy as at 30 June 2023.	Number of active indigent households receiving free basic water as at 30 June 2023.	5 600	6 866
Provide free basic sanitation to active indigent households as defined in paragraph 9(1) of the Municipality's Credit Control and Debt Collection Policy as at 30 June 2023.	Number of active indigent households receiving free basic sanitation as at 30 June 2023.	5 953	3 957
The percentage of the municipal capital budget spent by 30 June 2023 [(Actual amount spent/Total amount budgeted for capital projects) x 100]	% of capital budget spent by 30 June 2023.	95%	94%
95% of the approved project budget spent on the rehabilitation of sanitation oxidation ponds in Nelspoort by 30 June 2023. [(Actual expenditure divided by the total approved budget) x100]	% of budget spent by 30 June 2023.	95%	0%
95% of the approved project budget spent on the augmentation and upgrade of the water supply network in Merweville by 30 June 2023. [(Actual expenditure divided by the total approved budget) x100]	% of budget spent by 30 June 2023.	95%	100%
Draft the Waste By-Law and submit to Council for approval by 31 October 2022.	Number of by-laws submitted for approval.	1	0
95% of water samples in Beaufort West jurisdiction area comply with SANS 241 microbiological indicators.	% of samples compliant to SANS 214.	95%	100%

8.1.17 Water and Sanitation Service Quality

Table 8.1.17.1: Water and Sanitation Service Quality							
Water and Sanitation Service Quality – Low Vulnerability 100.0%							
Critical business databases and documents (e.g. as-built drawings, records, manuals, agreements, billing/revenue collection, project and scheme management data, etc.) are current, maintained and stored in secure locations (on-site and off-site, both paper and electronic).							
Yes, strongly agree (i.e. 100% in place)	Agree (i.e. >95% in place)	Mostly agree (i.e. >75% in place)	Agree somewhat (i.e. >50% in place)	< 50% in place	Nothing in place (i.e. 0%)	Don't know	
Customers have a functional, reliable and safe water supply system with sufficient quantity and flow, good quality and minimal interruptions.							
Yes, all have a functional, reliable and safe service (i.e. close to 100%)	At least 90% have a functional, reliable and safe service	Most have a functional, reliable and safe service (i.e. >75%)	Some have a functional, reliable and safe service (i.e. > 50%)	< 50% of customers have a functional, reliable and safe service	None have a functional, reliable and safe service (i.e. 0%)	Don't know	
All consumers served experience interruptions of less than 48 hours (at any given time) and a cumulative interruption time during the year of less than 15 days.							
Yes, all (i.e. close to 100%)	>90% of households	>75% of households	>50% of households	<50% of households	None (i.e. 0%)	Don't know	
Households in your WSA experience water pressure problems (i.e. meet requirements as per National Norms and Standards for Domestic Water (Sep 2017) (not to be confused with interruption to supply).							
Yes, no households experience pressure problems (i.e. close to 100% do not experience pressure problems)	>90% of households do not experience pressure problems	>75% of households do not experience pressure problems	>50% of households do not experience pressure problems	<50% of households do not experience pressure problems	All households (i.e. 100%) experience pressure problems	Don't know	
Customers have a functional, reliable, dignified and safe sanitation system with no blockages resulting in overflows that impact on the environment, including effective collection and treatment of faecal sludge.							
Yes, all customers have a functional.	> 98% of all customers have a functional.	Almost all have a functional.	Most have a functional, reliable, dignified	Some have a functional	< 50% of customers have a	None have a functional, reliable.	Don't know

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Table 8.1.17.1: Water and Sanitation Service Quality							
Water and Sanitation Service Quality – Low Vulnerability 100.0%							
reliable, dignified and safe service with no impact on the environment (i.e. close to 100%)	reliable, dignified and safe service with minimal impact on environmental health	reliable, dignified and safe service (i.e. >90%)	and safe service (i.e. >75%)	, reliable, dignified and safe service (i.e. > 50%)	functional, reliable, dignified and safe service	dignified and safe service (i.e. 0%)	

Beaufort West Municipality is currently effectively managing its water and sanitation services. Disruptions to water supply and sanitation services at the consumer's end are minimal. Standby pumps and motors and backup generators are available at most of the pump stations and additional standby pumps and motors are also kept in storage by Beaufort West Municipality in order to minimise the risk of interruption in water supply from pump stations and possible sewage spillages at the sewer pump stations.

8.1.18 Customer Care (CRM)

Table 8.1.18.1: Customer Care						
Customer Care (CRM) – Low Vulnerability 80.0%						
A functional customer service system manned by appropriate customer services representatives and using a complaints register, is in place to address complaints and appropriately inform customers of service interruptions, contamination of water, boil water alert, etc.						
Yes, strongly agree	In place, with occasional non-optimal performance	Partially in place, but not ideal	No, disagree	Don't know		
Regular municipal wide customer satisfaction surveys are conducted to determine customer satisfaction levels and inform the Customer Care Management Plan.						
Annual customer satisfaction surveys	Biennial (i.e. every 2nd year) customer satisfaction surveys	Less frequent customer satisfaction surveys (i.e. > 2 years)	No customer satisfaction surveys	Don't know		
Please indicate what percentage of the reported water related complaints/callouts are acknowledged, including consumer response, within 24 hours.						
All (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. > 50%)	< 50%	None (i.e. 0%)	Don't know
Please indicate what percentage of the reported wastewater/sanitation related complaints/callouts are acknowledged, including consumer response, within 24 hours.						
All (i.e. close to 100%)	Almost all (i.e. >95%)	Most (i.e. >75%)	Some (i.e. > 50%)	< 50%	None (i.e. 0%)	Don't know
A comprehensive customer awareness programme (informing customers of water and wastewater system O&M activities, water quality, resource protection / pollution, reporting incidents / security concerns, etc.) is in place and implemented.						
Yes, strongly agree	Partially in place, but not ideal	No, disagree (i.e. no awareness programme)	Don't know			

A comprehensive Customer Services and Complaints system is in place at Beaufort West Municipality and the Municipality has maintained a high and a very consistent level of service to its urban water consumers. After hour emergency requests are being dealt with by the control room on a twenty-four-hour basis. All water and sanitation related complaints are logged through the system in order to ensure quick response to complaints.