



MMM Bulk Water Programme (MBWAP)

Water Services Development Plan

Report No. 305-7 (Revision 02)

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MANGAUNG BULK WATER PROGRAMME
Water Services Development Plan (WSDP)

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EXECUTIVE SUMMARY

The Water Services Authority (WSA) is tasked with the preparation of a formal water services development plan (WSDP) that contains information on the physical attributes of the area, the socio-economic attributes, existing infrastructure and water use, and provides a long-term water services plan with a five-year implementation plan.

The WSDP is part of the Integrated Development Plan (IDP) of a WSA, and should be prepared as part of the IDP preparation process.

This report gives an overview of the following:

- Background;
- Objectives;
- Scope of the Study;
- Methodology; and
- Conclusions

The key outcomes of the Water Services Development Plan report forms part of the Mangaung Bulk Water Augmentation Programme (MBWaP) as it influences and informs the short-, medium-, and long-term planning of Bloemfontein's water sources and distribution. The main activities and progress with regards to the five-year WSDP process will be addressed in the report.

List of Abbreviations

MBWaP	Mangaung Bulk Water Augmentation Programme
MMM	Mangaung Metropolitan Municipality
WCDM	Water Conservation Demand
WSDP	Water Services Development Plan
WSA	Water Services Authority

1. INTRODUCTION

1.1 Background

In terms of Section 11 of the Water Services Act 1997, all Water Services Authorities (WSAs) have a duty to progressively provide efficient, affordable, economical and sustainable access to water services. For this purpose, water services include both water supply and sanitation provision. To assist in the implementation of this duty, the WSA is also tasked with the preparation of a formal water services development plan (WSDP) that contains information on the physical attributes of the area, the socio-economic attributes, existing infrastructure and water use, and provides a long-term water services plan with a five-year implementation plan.

The WSDP is part of the Integrated Development Plan (IDP) of a WSA, and should be prepared as part of the IDP preparation process. The IDP is developed for every elected municipal council for their 5 year term. The current five year period is 2017-2022 and the submission of the WSDP report will thus require continuous revision and updating across this period.

1.2 Objectives

The main objective of the WSDP process is to fill the gap between where we are now (*status quo*) and where we want to be in the future. The key targets of the plan are thus to:

- Ensure the future provision of basic and higher levels of appropriate, affordable and sustainable water services whilst addressing the issue of free basic water and sanitation to indigent customers.
- Ensure that water resources are protected and sustainably managed.
- Ensure that the water services infrastructure and service are properly managed and maintained through appropriate institutional arrangements.

1.3 Scope of the Study

The Department of Water and Sanitation have developed guidelines, and a web-based system for all WSAs to utilise in the development of WSDPs. This system provides a standardised format for capturing water services information on a spatial geodatabase, as well as assessing, strategizing, as well as detailing the planned water services projects.

The system has been in use since 2010 but changes to the system were initiated in 2016. The system still works on an underlying geodatabase, and data from the previous system was carried through to the new system.

The water and sewer Master Plans are the base planning documents for the WSDP. All the data, plans, strategies and projects gathered during the Master Plan tasks are uploaded into the DWS online WSDP System. The structure of the Master Plan is such that it is in full alignment with the DWS WSDP requirements, and will form the basis of the WSDP.

Master Planning in terms of water and sanitation services for Mangaung Metropolitan Municipality was previously executed for Bloemfontein and hence does not form part of the immediate scope of the WSDP process but the outcomes of the respective masterplans were utilised to inform the project planning process of the WSDP.

One of the key shortcomings identified is that Master Planning documents have only been prepared for Bloemfontein (sewer and water) and Thaba Nchu (water), neglecting future planning for Botshabelo, Wepener, Dewetsdorp, Vanstadensrus and Soutpan. In order for the entire Municipality's planning to be confirmative across the various towns/entities, the Master Planning for these towns have been identified as a gap which should ideally be addressed as part of the five-year WSDP process. Master Planning for these towns have thus been listed as separate projects which MMM will need to incorporate as part of their planning.

In addition to all of the tasks that form part of the master planning process, the DWS WSDP system requires:

1. An assessment of each data element in terms of quality and quantity of data. There are a vast number of such data elements to assess, and the limiting factor is the speed of the DWS system in opening each field, and saving each field.
2. The development of five year strategies to close the gaps identified. The master planning process identifies projects and priorities for 5, 10 and 15 year horizon. In order to complete the WSDP, the first 5 years' worth of projects need to be unpacked further, with objectives, KPIs and annual targets to be set for each of the business areas.

The development of strategies and the setting of objectives, KPI's and annual targets is a process which will require continuous refinement and development. In order to initialise the process a draft list of all MMM's identified current and future projects is included in Annexure A. The projects contained in Annexure A merely focuses on the identified projects as extracted from several planning documents available and does not address the prioritisation in terms of the 5, 10, and 15 year horizon as this will be addressed as a further phase to the WSDP.

1.4 Methodology

The approach in initiating this WSDP five-year process, subject to further development and refinement, is thus as follows:

1. As the scope of the study was merely at desktop level all information pertaining to all sectors of WSDP planning which could supplement the process of completing and verifying the captured water services information on the spatial geodatabase had to be obtained. This included all existing Master Planning documentation, Water Conservation and Demand Management (WCDM) Strategies, existing water balances, Geographic Information System (GIS) data regarding all water services infrastructure, asset management registers and condition assessment reports where available.
2. The validity of the collected data had to be verified parallel to the review of the information previously uploaded on the spatial geodatabase. Based on the available data obtained the spatial geodatabase was updated and revised where new information was available. The updated spatial geodatabase was then submitted to the data custodian for review and mass uploading onto the web-based WSDP.
3. In addition to this identified projects also had to be updated on the projects geodatabase with information pertaining to cost, demand horizons, intervention horizons, problem definition, strategic importance and a vast amount of additional fields requiring assessment. In terms of completing the projects geodatabase the planning is very limited to projects where formal

funding was already assigned- this implies that several projects have been identified but can't be included as part of the WSDP as no funding has been assigned to the specific project and first needs to go through the various approval processes and hence a collaboration between the various sectors is required in order for strategic projects to be appropriately prioritised. For the purposes of the WSDP a complete list of identified projects were formulated with the existing projects geodatabase utilised as basis and all additional projects emanating from the water and sewer masterplans for Bloemfontein, WCDM strategies and other applicable strategic documents were also listed in terms of preliminary demand horizons. Refer to Annexure A for a summary of the identified projects for both water and sanitation services as part of the process for completing the projects geodatabase.

4. As Mangaung Metropolitan Municipality is the Water Services Authority, the information of water and sewer infrastructure as managed by the Water Service Provider, Bloem Water, also had to be obtained and reviewed for inclusion in the greater MMM's planning. One of the most critical delays experienced is due to the lack of Bloem Water's cooperation to supply the necessary technical data required for this WSDP process. This issue has been escalated to other stakeholders and in particular, the Department of Water and Sanitation, in order to obtain external assistance in obtaining Bloem Water's cooperation in data sharing as this is in an ultimate requirement for the successful completion of the WSDP.
5. The process which follows the upload of the geodatabase is the verification process where each data element has to be assessed in terms of the quality and quantity of data and this step will only be finalised in a later phase.

2. CONCLUSIONS

In completing the planning and implementation time-frames of projects it is evident that the planning is very limited to projects where formal funding was already assigned- this implies that several projects have been identified but can't be included as part of the WSDP as no funding has been assigned to the specific project and first needs to go through the various approval processes and hence a collaboration between the various sectors is required in order for strategic projects to be appropriately prioritised.

For the purposes of the WSDP a complete list of identified projects were formulated with the existing projects geodatabase utilised as basis and all additional projects emanating from the water and sewer masterplans, WCDM strategies and other applicable strategic documents were also utilised to inform MMM's preliminary project planning. Refer to Annexure A for a summary of the identified projects for both water and sanitation services for Mangaung Metropolitan Municipality.

One of the key shortcomings identified is that Master Planning documents have only been prepared for Bloemfontein (sewer and water) and Thaba Nchu (water), neglecting future planning for Botshabelo, Wepener, Dewetsdorp, Vanstadensrus and Soutpan. In order for the entire Municipality's planning to be confirmative across the various towns/entities, the Master Planning for these towns have been identified as a gap which should ideally be addressed as part of the five-year WSDP process. Master Planning for these towns have thus been listed as separate projects which MMM will need to incorporate as part of their planning.

As Mangaung Metropolitan Municipality is the Water Services Authority, the information of water and sewer infrastructure as managed by the Water Service Provider, Bloem Water, also had to be obtained and reviewed for inclusion in the greater MMM's planning. One of the most critical delays experienced is due to the lack of Bloem Water's cooperation to supply the necessary technical data required for this WSDP process. This issue has been escalated to other stakeholders and in particular, the Department of Water and Sanitation, in order to obtain external assistance in obtaining Bloem Water's cooperation in data sharing as this is an ultimate requirement for the successful completion of the WSDP.

Appendix A

Water Services Development Plan (WSDP)

Preliminary Project Planning List

	Project Info Source	Project Name	Project Description	Estimated Total Project Cost (Incl. VAT)
1	DWS: Projects GDB & MMM Current Projects and Budget & Drought Relief Fund Projects	Maselspoort Water Treatment Works (WWTW) Upgrade & Refurbishment: Phase 1 (Conventional Treatment - to 60Ml/day)	Contract 1 - Plant A: Filters, Washwater sump (Contract W1515)	R 34 407 500
2	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Water Treatment Works (WWTW) Upgrade & Refurbishment: Phase 1 (Advanced Treatment - to 70Ml/day)	Contract 2 - Plant A: Inletworks, Low Lift P5, Post Chlorination, Ozone, GAC Filter, Ultra Filtration, Access Road (W1515A) Contract 3 - Plant B: Bulk Elec, SCADA, Low Lift P5, Ozone, GAC Filtration, Ultra Filtration (W1515B) Contract 4 - Plant A: Liquid Oxygen (Lox) Procurement and Supply Contract 5 - Plant A: Granular Activated Carbon (GAC) Procurement and Supply	R 336 606 520
3	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Water Treatment Works (WWTW) Upgrade & Refurbishment: Phase 1 (Conventional Treatment - to 137Ml/day)	Contract 6 - Plant A & B: Clarifiers, Pre-Chlorination, RGS Filters, Wash Water Sump	R 61 037 500
4	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Water Treatment Works (WWTW) Upgrade & Refurbishment: Phase 1 (Conventional Treatment - to 137Ml/day)	Contract 7 - Plant A & B: Ozone, GAC Filtration, Hydrogen Peroxide, Clearwater Tank, DAF, Sludge, Access Road Contract 8 - Plant A & B: Ozone, GAC Filtration, Ultra Filtration, DAF, Sludge, Post Chlorination	R 469 937 500
5	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Re-Use Pipeline: Phase 1A	NE WWTW To Mockes Dam - 45Ml/day	R 84 520 000
6	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Re-Use Pipeline: Phase 1B	NE WWTW To Mockes Dam - 45Ml/day	R 109 125 000
7	DWS: Projects GDB & MMM Current Projects and Budget	Maselspoort Re-Use Pipeline: Phase 2	Bloemspruit WWTW to NE WWTW - 22.5Ml/day	R 36 880 000
8	DWS: Projects GDB	Chlorination - Installation at Uitsyck (Bloemwater)	Chlorination - Installation at Uitsyck (Bloemwater)	R 3 000 000
9	DWS: Projects GDB	Chlorination - In line monitoring (Bloemwater)	Chlorination - In line monitoring (Bloemwater)	R 1 300 000
10	DWS: Projects GDB	Mangung RBIG Phase 4 to 4	Mangung RBIG PH3 Upgrade WWTW/Upgrade Maselspoort pumpstation, PH2 Construct new bulk pipeline/new reservoir Naval Hill, PH3 Upgrade pipeline to Longridge/LHP P/S/ New reservoir at Brandkop/Longridge, PH4 Upgrade Novo-Transfer Scheme	R 400 000 000
11	DWS: Projects GDB	Replacement of asbestos pipes and drilling and equipping three new boreholes in Wepener	The project will entail the following - Replacing 11km of asbestos pipes to uPVC medium pressure pipelines in Wepener - Drilling of three new boreholes that have been sited from a recent study and equipping them - Laying a total of 300m pipeline	R 7 656 000
12	DWS: Projects GDB	Replacement of asbestos pipes and equipping a borehole in Dewetsdorp	The project will entail the following - Replacing 6.5km of asbestos pipes to uPVC medium pressure pipelines - equipping an existing borehole - Laying a total of 300m of pipeline from borehole to the existing 0.5Ml water tank	R 4 416 500
13	DWS: Projects GDB	Botshabelo BML Reservoir	Construction of an 8Ml concrete reservoir, access road and control chamber.	R 48 000 000
14	DWS: Projects GDB	Rising main - Rehab/Upgrade capacity of Welbedacht supply	Steel Pipeline from Leeuwkop to Brandkop (33.7km)	R 66 800 000
15	DWS: Projects GDB	Naledi LM Borehole Development	Construction of 3 new boreholes - Thapelong, Construction of 3 new boreholes - Dewetsdorp, Construction of 3 new boreholes - Wepener	R 902 809
16	DWS: Projects GDB	Morijaanew/Dewetsdorp: Elevated tank and interlinking pipeline	Morijaanew/Dewetsdorp: Elevated tank and interlinking pipeline	R 22 320 723
17	DWS: Projects GDB	Dewetsdorp: 150 households due to dysfunctional Raw sewerage pump station	Dewetsdorp: 150 households due to dysfunctional Raw sewerage pump station (RSPS).	R 2 000 000
18	DWS: Projects GDB	Rustfontein: Pump set installation - Additional pump set	Pump set installation - Additional pump set at Rustfontein	R 10 960 000
19	DWS: Projects GDB	Pump sets-Service of Welbedacht pump sets, switchgear	Pump sets - Service of Welbedacht pump sets and switchgear	R 1 800 000
20	DWS: Projects GDB	Altitude valves - Service of all Bernad valves	Altitude valves - Service of all Bernad valves	R 400 000
21	DWS: Projects GDB	Dewetsdorp Scheme 2	Construction of the connection line from the BloemWwater supply line inc power supply upgrade	R 8 000 000
22	DWS: Projects GDB	Refurbishment of Sewer Systems: Refurbishment for a period of 3 years	Refurbishment of wwtw, Refurbishment of bulk sewer pipes, Refurbishment of Vista Park sewer	R 20 000 000
23	DWS: Projects GDB	Soutpan: Upgrading of bulk water supply and treatment works (297) - reservoir, water treatment plant, pumpstation	Soutpan: Upgrading of bulk water supply and treatment works (297) - reservoir, water treatment plant, pumpstation	R 22 010 016
24	MMM Drought Relief Fund Projects & WCDM Strategy	Water System Management: Integration and Optimisation - Telemetry and SCADA	Based on feasibility study report	R 14 000 000
25	MMM Drought Relief Fund Projects	Maselspoort Bloemfontein Rising Main Condition Assessment and Leak Detection and Repair	Intrusive investigation and repair of the 20km x 2 Maselspoort feeder lines as per Dec 2015 proposed scope of works.	R 1 100 000
26	MMM Drought Relief Fund Projects	Old and New Arboretum Reservoir Leak Repair	Reservoir leak detection and sealant	R 1 100 000
27	MMM Drought Relief Fund Projects	Hamilton Park Pump Station Refurbishment	Refurbishment of old pumpset and pipework (As per PED report)	R 18 327 000
28	MMM Drought Relief Fund Projects & WCDM Strategy	Bulk Supply Meters Audit, Verification Study, Calibration and Installation	Study and Field Assessment to identify, locate bulk supply meter positions and installations	R 2 500 000
29	MMM Drought Relief Fund Projects	Bulk Supply Meters Location, Replacement, Calibration and Installation of Control Meters	Execution of the study recommendation	R 8 000 000
30	DWS: Projects GDB & Drought Relief Fund Projects & WCDM Strategy	Pressure and Network Zone Management (including auditing of valves and PRV Commissioning)	Pressure Management Programme and PRV Commissioning	R 11 700 000
31	DWS: Projects GDB & Drought Relief Fund Projects & WCDM Strategy	Pro-Active Leak Detection & Repair Programme	Service connections and pipelines including visible and non visible leaks.	R 22 125 751
32	MMM Drought Relief Fund Projects	Purchase of leak detection devices, tools, equipment & vehicles	Service connections and pipelines including visible and non visible leaks.	R 15 000 000
33	MMM Drought Relief Fund Projects	Refurbishment Infrastructure (Pipelines)	Hoofweg, Maroela, Slabbert	R 21 000 000
34	MMM Drought Relief Fund Projects & WCDM Strategy & MMM Current Projects and Budget	Condition Assessment Programme Development (Phased Approach)	Desktop study, focussing on critical areas, non-intrusive and determine value for money pipe replacement	R 10 000 000
35	MMM Drought Relief Fund Projects & WCDM Strategy	Pipe Replacements	Design and execution of identified pipe replacements (following phase a)	R 15 000 000
36	MMM Drought Relief Fund Projects & WCDM Strategy	Meter Monitoring & Top Consumer ID (Billing Programme)	Review of billing programme. Implementation of automated and billing programme in support to finance. Top Consumers ID and Meter Monitoring Programme	R 6 166 759
37	MMM Drought Relief Fund Projects & WCDM Strategy	Installation of meters on unmetered connections and metering of informal settlements	Installation of Meters on Unmetered Connections and New Connections including informal settlements	R 15 317 044
38	MMM Drought Relief Fund Projects & WCDM Strategy	Prepaid Programme (Automated meters)	Installation of prepaid meters	R 11 007 374
39	MMM Drought Relief Fund Projects & WCDM Strategy	Replace Water Meters	Domestic Meter Replacement and Relocations Large Meter Replacements Communal Stand Meter Installations and Replacement	R 7 815 600
40	MMM Drought Relief Fund Projects & WCDM Strategy	Consumer Awareness and Education Programmes	Public awareness campaign, school visits, media etc (similar to previous successful program)	R 5 000 000
41	MMM Drought Relief Fund Projects & WCDM Strategy	Fire hydrants (Auditing, locking and repair etc)	Audit, identify the required required to prevent illegal abstraction and repair leaking fire hydrants	R 1 000 000
42	MMM Current Projects and Budget	REFURBISHMENT OF SEWER SYSTEMS - bloemfontein	REFURBISHMENT OF SEWER SY	R 25 000 000
43	MMM Current Projects and Budget	WATERBORNE SANITATION(LEANER SHIPS)	WATERBORNE SANITATION(LEA	R 100 000
44	MMM Current Projects and Budget	REFURBISHMENT OF WWTW'S	REFURBISHMENT OF WWTW'S	R 10 000 000
45	MMM Current Projects and Budget	EXTENSION BOTSHABELO WWTW	EXTENSION BOTSHABELO WWTW	R 556 600 000
46	MMM Current Projects and Budget	EXTENSION THBA NCHU WWTW (SELOSESHA)	EXTENSION THBA NCHU WWTW	R 126 500 000
47	MMM Current Projects and Budget	Sterkwater WWTW Phase 3: Civil, Mechanical and Electrical	Sterkwater WWTW Phase 3: Civil, Mechanical and Electrical	R 175 000 000
48	MMM Current Projects and Budget	RAYTON MAIN SEWER	RAYTON MAIN SEWER	R 20 610 288
49	MMM Current Projects and Budget	WATERBORNE SANI INTER BULK SERV IN MMMM	WATERBORNE SANI INTER BULK SERV IN MMMM	R 34 455 018
50	MMM Current Projects and Budget	WATERBORNE SANI INTER BULK SERV IN BOTSH	WATERBORNE SANI INTER BULK SERV IN BOTSH	R 30 046 038
51	MMM Current Projects and Budget	WATERBORNE SANI INTER BULK SERV IN THABA	WATERBORNE SANI INTER BULK SERV IN THABA	R 61 288 457
52	MMM Current Projects and Budget	REFURBISHMENT SEWER SYSTEMS IN SOUTPAN	REFURBISHMENT SEWER SYSTEMS IN SOUTPAN	R 500 000
53	MMM Current Projects and Budget	REFURB SEWER SYSTEMS VAN STADENSURUS	REFURB SEWER SYSTEMS VAN STADENSURUS	R 500 000
54	MMM Current Projects and Budget	REFURB OF SEWER SYSTEMS IN WEPENER	REFURB OF SEWER SYSTEMS IN WEPENER	R 7 798 466
55	MMM Current Projects and Budget	REFURB OF SEWER SYSTEMS IN DE WETSDORP	REFURB OF SEWER SYSTEMS IN DE WETSDORP	R 500 000
56	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Bloemfontein	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Bloemfontein	R 55 000 000
57	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Botshabelo	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Botshabelo	R 1 000 000
58	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Thaba Nchu	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Thaba Nchu	R 1 000 000
59	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Wepener	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Wepener	R 1 000 000
60	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Dewetsdorp	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Dewetsdorp	R 1 000 000
61	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Vanstadensrus	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Vanstadensrus	R 1 000 000
62	MMM Current Projects and Budget	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Soutpan	REFURBISHMENT OF WATER SUPPLY SYSTEMS - Soutpan	R 1 000 000
63	MMM Current Projects and Budget	BOTSHABELO INTERNAL BULK WATER(PIPELINE)	BOTSHABELO INTERNAL BULK WATER(PIPELINE)	R 45 000 000
64	MMM Current Projects and Budget	WATER NETWORKS TO STANDS	WATER NETWORKS TO STANDS	R 500 000
65	MMM Current Projects and Budget	NALEDI: REFURB OF WATER SUPPLY SYSTEMS	NALEDI: REFURB OF WATER SUPPLY SYSTEMS	R 2 000 000
66	MMM Current Projects and Budget	SOUTPAN: REFURB OF WATER SUPPLY SYSTEMS	SOUTPAN: REFURB OF WATER SUPPLY SYSTEMS	R 1 000 000
67	DWS: Projects GDB & MMM Current Projects and Budget	MASELSPOORT WATER RE-USE (GARIEP AUGMENTATION)	MASELSPOORT WATER RE-USE (GARIEP AUGMENTATION)	R 1 145 000 000
68	Water Masterplan	Arboretum New Retiulation Pipeline - Long-Term	Supply towards the Bloemfontein Zoo Development (Mixed-Use With Industry)	R 1 215 764
69	Water Masterplan	Bloemduin New Bulk Pipeline Long-Term with New Bloemduin No. 2 (17Ml) Reservoir	Bloemduin New Bulk Pipeline Long-Term with New Bloemduin No. 2 (17Ml) Reservoir	R 33 494 373
70	Water Masterplan	Bloemduin New Retiulation Pipeline - Long-Term	Connecting network between existing Bloemduin Reservoir and future Bloemduin No.2 Reservoir	R 240 152
71	Water Masterplan	Bloemduin New Retiulation Pipeline - Long-Term	Retiulation Network	R 28 147 821
72	Water Masterplan	New Distribution Zones: Brandkop New Connecting Bulk Pipeline	Incorporate Network Connection Change necessary to enable supply from the Brandkop Reservoir to Universities and Gardeningpark.	R 118 988
73	Water Masterplan	Brandkop New Bulk Pipeline Long Term with New Brandkop No. 2 (22.5Ml) and New Brandkop No. 3 (22.5Ml) Reservoirs	Brandkop New Bulk Pipeline Long Term with New Brandkop No. 2 (22.5Ml) and New Brandkop No. 3 (22.5Ml) Reservoirs	R 128 705 413

74	Water Masterplan	Brandkop New Reticulation Pipeline to Connect Brandkop Reservoir to New Brandkop Reservoirs as supplementary storage/supply	Brandkop New Reticulation Pipeline to Connect Brandkop Reservoir to New Brandkop Reservoirs as supplementary storage/supply	R 49 945 733
75	Water Masterplan	New Distribution Zones: Brandkop New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Water will not be supplied directly from Welbedacht Reservoir anymore but from the new Brandkop Reservoirs	R 13 718 886
76	Water Masterplan	New Distribution Zones: Brandkop Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. Water will not be supplied directly from Welbedacht Reservoir anymore but from the new Brandkop Reservoirs. This can be completed in a second phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The upgrade in network is required for the necessary capacity increases to accommodate increased demand.	R 7 695 178
77	Water Masterplan	New Distribution Zones: Brandkop New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Water will not be supplied directly from Welbedacht Reservoir anymore but from the new Brandkop Reservoirs. This can be completed in a third phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The new infrastructure is still required for the necessary capacity increases and increased network distribution.	R 6 101 833
78	Water Masterplan	Brandkop New Reticulation Pipeline - Long-Term	Brandkop New Reticulation Pipeline - Long-Term	R 24 462 336
79	Water Masterplan	Brandkop New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	Brandkop New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	R 3 533 851
80	Water Masterplan	Ganep New Bulk Pipeline - Critical	Critical to address future demand and to supply water to Longridge Reservoirs and corresponding redefined distribution zones.	R 107 711 877
81	Water Masterplan	Longridge New Bulk Pipeline Critical and connecting pipework with new Longridge Reservoir No. 4 (30ME) and Longridge Reservoir No. 5 (30ME)	Critical to address increased demand of Longridge Reservoir distribution zones.	R 106 863 061
82	Water Masterplan	Longridge New Reticulation Pipeline - Long-Term	Critical to address increased demand of the northern Longridge Reservoir distribution zones. New route and increased capacity of distribution pipeline.	R 12 992 876
83	Water Masterplan	Longridge New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase and is not dependant on the completion of L1. Supplies the northern Longridge Reservoir distribution zone.	R 6 462 059
84	Water Masterplan	Longridge New (Ø300mm) Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	Large diameter (Ø300mm) reticulation pipeline. Supplies the southern Longridge Reservoir distribution zone.	R 15 466 856
85	Water Masterplan	New Distribution Zones: Groenlei New Connecting Bulk Pipeline with new Groenlei Reservoir No. 1 (21ME)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Installation of new bulk supply pipeline in order to incorporate network redistribution for the new Groenlei Reservoir No.1 to get water from Welbedacht. This redistribution will ensure that the Groenlei lower north-eastern distribution zone is not supplied from the Rayton Tower anymore but from Welbedacht via Groenlei Reservoir No.2.	R 56 766 272
86	Water Masterplan	Groenlei New Reticulation Pipeline - Short-Term	New Infrastructure Required to supply future developments.	R 14 627 709
87	Water Masterplan	Groenlei New Reticulation Pipelines - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a next phase given that Gr1.1 is completed.	R 1 962 063
88	Water Masterplan	New Distribution Zones: Groenlei Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. The Groenlei lower north-eastern distribution zone to not be supplied from the Rayton Tower anymore but from Welbedacht via Groenlei Reservoir No.1.	R 3 124 675
89	Water Masterplan	New Distribution Zones: New Groenlei Reservoir No. 2 (21ME)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Installation of new Groenlei Reservoir No.2 which will receive water from Welbedacht. This redistribution will ensure that the Groenlei north-western and south-western distribution zones are not supplied directly from Welbedacht Reservoir anymore but from Welbedacht via Groenlei Reservoir No.2. This redistribution will further ensure that a portion of the Groenlei distribution zone is not supplied from the Rayton Tower anymore but from Welbedacht via Groenlei Reservoir No.2.	R 38 383 235
90	Water Masterplan	New Distribution Zone: Groenlei New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Groenlei north-western distribution zone to not be supplied directly from Welbedacht Reservoir anymore but from Welbedacht via Groenlei Reservoir No.2.	R 3 508 376
91	Water Masterplan	New Distribution Zones: Groenlei Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. The Groenlei north-western distribution zone to not be supplied directly from the Welbedacht Reservoir anymore but from Welbedacht via Groenlei Reservoir No.2. This can be completed in a second phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The upgrade in network is required for the necessary capacity increases to accommodate increased demand.	R 1 739 381
92	Water Masterplan	New Distribution Zones: Groenlei Reticulation Pipeline Upgrades and A Small Section of New Connecting Reticulation Pipeline	Network Upgrades to Incorporate New Distribution Zones: i.e. A portion of the Groenlei distribution zone to not be supplied from the Rayton Tower anymore but from Welbedacht via Groenlei Reservoir No.2. This can be completed in a second phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The upgrade in network is required for the necessary capacity increases to accommodate increased demand.	R 10 276 457
93	Water Masterplan	New Distribution Zones: Groenlei Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network change and network upgrades in order for a portion of the Groenlei distribution zone to not be supplied from the Rayton Tower anymore but from Welbedacht via Groenlei Reservoir No.2.	R 587 085
94	Water Masterplan	Groenlei New Reticulation Pipelines - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area.	R 1 001 278
95	Water Masterplan	New Distribution Zone: Groenlei New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for a portion of the Groenlei distribution zone to not be supplied directly from Welbedacht anymore but from Welbedacht via Groenlei Reservoir No.2.	R 1 150 872
96	Water Masterplan	New Distribution Zones: Groenlei New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Groenlei south-western distribution zone to not be supplied directly from Welbedacht Reservoir anymore but from Welbedacht via Groenlei Reservoir No.2.	R 5 775 393
97	Water Masterplan	New Distribution Zones: Groenlei Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network change and network upgrades in order for the Groenlei south-western distribution zone to not be supplied directly from Welbedacht Reservoir anymore but from Welbedacht via Groenlei Reservoir No.2.	R 7 609 410
98	Water Masterplan	Groenlei New Reticulation Pipeline - Long-Term	New Infrastructure Required to accommodate future developments. The new development will get water from Welbedacht via Groenlei Reservoir No.2	R 2 932 685
99	Water Masterplan	Groenlei Reticulation Pipeline Upgrades to Accommodate Increase in Demand	Increase capacity.	R 6 218 519
100	Water Masterplan	Groenlei New Reticulation Pipelines - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area.	R 5 401 143
101	Water Masterplan	New Distribution Zones: Heuvelsig Tower New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipeline in order for the Heuvelsig Tower distribution zone to not be supplied from the Rayton Tower anymore but from the Heuvelsig Tower.	R 369 755
102	Water Masterplan	New Distribution Zones: Naval Hill New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones. The 700mm diameter pipeline has already been installed. Critical to make the connection for the distribution zones to receive water from the new Naval Hill reservoirs.	R 737 773
103	Water Masterplan	New Distribution Zones: Naval Hill New Bulk Pipeline and connecting pipework with new Naval Hill Reservoir No. 2 (35ME) and Naval Hill Reservoir No. 3 (130ME)	New Infrastructure Required to Incorporate New Distribution Zones: Network redistribution to ensure that the Naval Hill upper north-western distribution zone (Lillyvale, Wild Olive and De Kloof) to not be supplied from Pentagon Park Reservoir anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3. This will further ensure that the Naval Hill northern distribution zone (Strathorn, Nicholwood and Dubois) to not be supplied from the Pentagon Park Reservoir anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 233 236 014
104	Water Masterplan	New Distribution Zones: Naval Hill New Reticulation Pipeline with Naval Hill Balancing Reservoir (3ME)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Naval Hill upper north-western distribution zone (Lillyvale, Wild Olive and De Kloof) to not be supplied from Pentagon Park Reservoir anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 129 831 584
105	Water Masterplan	New Distribution Zones: Naval Hill Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. The Naval Hill northern (Strathorn, Nicholwood and Dubois) distribution zone to not be supplied from the Pentagon Park Reservoir anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3. This can be completed in a second phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The upgrade in network is required for the necessary capacity increases to accommodate increased demand.	R 5 843 000
106	Water Masterplan	Naval Hill New Reticulation Pipeline - Long-Term	New Infrastructure Required to accommodate future development areas from the SDF.	R 1 486 466
107	Water Masterplan	Naval Hill New Reticulation Pipeline - Short-Term	New Infrastructure Required to accommodate possible short-term development based on development capacity analyses applications. The new development will get water from Maselspoort via the Naval Hill Reservoirs.	R 1 903 315
108	Water Masterplan	Naval Hill New Reticulation Pipeline - Long-Term	New Infrastructure Required to accommodate future development areas from the SDF.	R 7 203 345
109	Water Masterplan	Naval Hill New Reticulation Pipeline - Cadastral Backlog	New reticulation pipelines required to accommodate Lakeside Development listed as a possible short-term development already captured on the latest cadastral information.	R 10 625 336
110	Water Masterplan	New Distribution Zones: Naval Hill New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Naval Hill south-eastern distribution zone to not be supplied from Hamilton Park Reservoir anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 1 953 007
111	Water Masterplan	New Distribution Zones: Naval Hill New Reticulation Pipeline	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Naval Hill north-eastern distribution zone to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3. A new reticulation connection will also allow for the airport to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 7 757 822
112	Water Masterplan	New Distribution Zones: Naval Hill Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. The Naval Hill north-eastern distribution zone to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3. This will also allow for the airport to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3. This can be completed in a second phase as these areas will still be able to receive water from the existing infrastructure as long as the first phase has been implemented. The upgrade in network is required for the necessary capacity increases to accommodate increased demand.	R 32 082 449
113	Water Masterplan	New Distribution Zones: Naval Hill New Reticulation Pipeline (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Naval Hill north-eastern distribution zone and Estore area to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 7 542 713
114	Water Masterplan	New Distribution Zones: Naval Hill Reticulation Pipeline Upgrades (For Short-Term Developments)	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Naval Hill north-eastern distribution zone and Estore area to not be supplied from Maselspoort directly anymore but from Maselspoort via the new Naval Hill Reservoir No.2 or No.3.	R 8 407 156
115	Water Masterplan	Naval Hill New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions		R 26 631 119
116	Water Masterplan	Naval Hill Reticulation Pipeline Upgrades		R 25 483 802
117	Water Masterplan	New Distribution Zones: Pentagon Park Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. The Pentagon Park distribution zone to not be supplied from the Heuvelsig Tower anymore but from Pentagon Park Reservoir.	R 2 875 853
118	Water Masterplan	Pentagon Park New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions		R 2 448 246
119	Water Masterplan	Pentagon Park Reticulation Pipeline Upgrades		R 1 995 785
120	Water Masterplan	New Distribution Zones: Rayton Tower Bulk Pipeline Upgrades and Increase in Rayton Sump Capacity	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new bulk pipelines in order for the Rayton Tower to receive water from Welbedacht via the new Groenlei Reservoirs and not from Welbedacht directly anymore. This will also ensure the Rayton Tower distribution zone to not be supplied from Heuvelsig Tower anymore but from the Rayton Tower.	R 5 310 380
121	Water Masterplan	Rayton Tower Reticulation Pipeline Upgrades to Accommodate Increase in Demand	Increase capacity.	R 13 095 093

122	Water Masterplan	Rayton Tower New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions		R	817 640
123	Water Masterplan	Rodenbeck New Reticulation Pipeline to Accommodate Increase in Demand	New infrastructure required for additional capacity to accommodate possible short-term development based on development capacity analyses applications.	R	16 179 740
124	Water Masterplan	Rodenbeck Reticulation Pipeline Upgrades to Accommodate Increase in Demand	Network upgrades required for additional capacity to accommodate possible short-term development based on development capacity analyses applications.	R	6 448 217
125	Water Masterplan	Rodenbeck New Reticulation Pipeline to Accommodate Increase in Demand	New infrastructure and reworking of pipelines required for additional capacity and improved network distribution to accommodate possible short-term development based on development capacity analyses applications.	R	8 799 497
126	Water Masterplan	Slypssteenberg New Connecting Bulk Pipeline with new Slypssteenberg Reservoir No. 2 (6M) and New Connecting Reticulation Pipeline	New Infrastructure Required to Accommodate increase in demand in this area and connecting reticulation network to connect old network to the new Slypssteenberg Reservoir No. 2.	R	15 370 298
127	Water Masterplan	Slypssteenberg New Reticulation Pipeline	New infrastructure required to accommodate increase in demand and ensure a shortened supply route and extended network distribution	R	8 418 422
128	Water Masterplan	Slypssteenberg Reticulation Pipeline Upgrades to Accommodate Increase in Demand	Increase capacity.	R	4 387 245
129	Water Masterplan	Slypssteenberg New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions		R	1 510 799
130	Water Masterplan	New Distribution Zones: Springfield New Bulk Pipeline with New Springfield Reservoir No. 1 (45M).	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Construction of new Springfield Reservoir No. 1, incorporation of network change and installation of new bulk supply pipelines from Welbedacht towards the new Springfield Reservoirs No. 1, 2 and 3. This network redistribution will ensure that the Springfield distribution zone no longer receives water from either the Naval Hill or Rodenbeck Reservoirs but from the new Springfield Reservoir.	R	203 782 283
131	Water Masterplan	New Distribution Zones: Springfield New Reticulation Pipelines with New Springfield Reservoir No. 2 (35M) (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate network change and installation of new reticulation pipelines in order for the Springfield north-western distribution zone (N8 Nodal Development Phase 8) to not be supplied from the Naval Hill Reservoir anymore but from Welbedacht via the new Springfield Reservoir No.2. This network redistribution will also ensure that the Springfield south-western distribution zone is not supplied from the Rodenbeck Reservoir anymore but from Welbedacht via the new Springfield Reservoir No.2.	R	112 113 414
132	Water Masterplan	New Distribution Zones: Springfield New Reticulation Pipelines (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate new infrastructure in order for the Springfield north-western distribution zone to not be supplied from the Naval Hill Reservoir anymore but from Welbedacht via the new Springfield Reservoir No. 2.	R	9 603 349
133	Water Masterplan	New Distribution Zones: Springfield Reticulation Pipeline Upgrades (For Short-Term Developments)	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network upgrades in order for the Springfield north-western distribution zone to not be supplied from the Naval Hill Reservoir anymore but from Welbedacht via the new Springfield Reservoir No. 2.	R	50 582 055
134	Water Masterplan	New Distribution Zones: Springfield New Reticulation Pipelines (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate new infrastructure in order for the Springfield south-western distribution zone to not be supplied from the Rodenbeck Reservoir anymore but from Welbedacht via the new Springfield Reservoir No. 2.	R	37 989 623
135	Water Masterplan	New Distribution Zones: Springfield Reticulation Pipeline Upgrades (For Short-Term Developments)	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network upgrades in order for the Springfield south-western distribution zone to not be supplied from the Rodenbeck Reservoir anymore but from Welbedacht via the new Springfield Reservoir No. 2.	R	116 322 384
136	Water Masterplan	New Distribution Zones: Springfield New Reticulation Pipelines with New Springfield Reservoir No. 3 (35M) (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Construction of new Springfield Reservoir No. 3, incorporation of network change and installation of new reticulation pipelines in order for the existing Springfield south-eastern distribution zone to not be supplied from neither the Naval Hill or Rodenbeck Reservoirs anymore but from Welbedacht via the new Springfield Reservoir No.3.	R	71 571 404
137	Water Masterplan	New Distribution Zones: Springfield New Reticulation Pipelines (For Short-Term Developments)	New Infrastructure Required to Incorporate New Distribution Zones: i.e. Incorporate new infrastructure in order for the Springfield south-eastern distribution zone to not be supplied from neither the Naval Hill or Rodenbeck Reservoirs anymore but from Welbedacht via the new Springfield Reservoir No.3.	R	3 206 456
138	Water Masterplan	New Distribution Zones: Springfield Reticulation Pipeline Upgrades	Network Upgrades to Incorporate New Distribution Zones: i.e. Incorporate network upgrades in order for the Springfield south-eastern distribution zone to not be supplied from neither the Naval Hill or Rodenbeck Reservoirs anymore but from Welbedacht via the new Springfield Reservoir No.3.	R	3 509 607
139	Water Masterplan	Springfield New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area.	R	8 592 232
140	Water Masterplan	Springfield New Reticulation Pipeline - Long-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area.	R	7 680 238
141	Water Masterplan	Welbedacht New Reticulation Pipeline - Short-Term Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area.	R	3 111 562
142	Water Masterplan	Welbedacht Reticulation Pipeline Upgrades to Accommodate Increase in Demand (For Short-Term Developments)	Network upgrades required for additional capacity to accommodate possible short-term development based on development capacity analyses applications.	R	10 880 550
143	Water Masterplan	Welbedacht New Reticulation Pipeline - Extensions to Reach Future Development Expansions	Can be incorporated in a separate phase depending on the development programme in the area. Project includes the installation of a new short reticulation parallel pipeline connection for future maintenance purposes.	R	1 415 099
144	Water Masterplan	Welbedacht Reticulation Pipeline Upgrades to Accommodate Increase in Demand	Increase capacity.	R	3 917 786
145	Sewer Masterplan	Upgrade of Bainsvlei WWTW to accommodate an additional 40M/day	Upgrade of Bainsvlei WWTW to accommodate an additional 40M/day	R	487 025 000
146	Sewer Masterplan	Future Bainsvlei rising main (400mm, 1.2km) and pump station	Future Bainsvlei rising main (400mm, 1.2km) and pump station	R	17 000 000
147	Sewer Masterplan	Future reticulation pipelines for new developments within the Bainsvlei WWTW catchment (150-250mm, Length ± 13km)	Future reticulation pipelines for new developments within the Bainsvlei WWTW catchment (150-250mm, Length ± 13km)	R	15 700 000
148	Sewer Masterplan	Future bulk pipelines for new developments within the Bainsvlei WWTW catchment (Various diameters, Length ± 30km)	Future bulk pipelines for new developments within the Bainsvlei WWTW catchment (Various diameters, Length ± 30km)	R	78 900 000
149	Sewer Masterplan	Upgrade of Welvaart WWTW to accommodate an additional 32M/day	Upgrade of Welvaart WWTW to accommodate an additional 32M/day	R	320 000 000
150	Sewer Masterplan	Existing pipeline upgrades in the Welvaart catchment area (700-800mm, ±0.7km)	Existing pipeline upgrades in the Welvaart catchment area (700-800mm, ±0.7km)	R	3 200 000
151	Sewer Masterplan	Future reticulation pipelines for new developments within the Welvaart WWTW catchment (150-250mm, Length ± 5.6km)	Future reticulation pipelines for new developments within the Welvaart WWTW catchment (150-250mm, Length ± 5.6km)	R	6 800 000
152	Sewer Masterplan	Future bulk pipelines for new developments within the Welvaart WWTW catchment (Various diameters, Length ± 14km)	Future bulk pipelines for new developments within the Welvaart WWTW catchment (Various diameters, Length ± 14km)	R	37 100 000
153	Sewer Masterplan	Upgrade of North-Eastern WWTW to accommodate an additional 89M/day	Upgrade of North-Eastern WWTW to accommodate an additional 89M/day	R	890 000 000
154	Sewer Masterplan	Existing pipeline upgrades in the North-Eastern catchment area (700-800mm, ±1.3km)	Existing pipeline upgrades in the North-Eastern catchment area (700-800mm, ±1.3km)	R	60 800 000
155	Sewer Masterplan	Future North-Eastern rising mains (Various diameters, ±3.3km) and pump stations	Future North-Eastern rising mains (Various diameters, ±3.3km) and pump stations	R	20 000 000
156	Sewer Masterplan	Future reticulation pipelines for new developments within the North-Eastern WWTW catchment (150-250mm, Length ± 82km)	Future reticulation pipelines for new developments within the North-Eastern WWTW catchment (150-250mm, Length ± 82km)	R	97 400 000
157	Sewer Masterplan	Future bulk pipelines for new developments within the North-Eastern WWTW catchment (Various diameters, Length ± 30.5km)	Future bulk pipelines for new developments within the North-Eastern WWTW catchment (Various diameters, Length ± 30.5km)	R	88 430 000
158	Sewer Masterplan	Upgrade of Sterkwater WWTW to accommodate an additional 10M/day	Upgrade of Sterkwater WWTW to accommodate an additional 10M/day	R	100 000 000
159	Sewer Masterplan	Existing reticulation pipeline upgrades in the Sterkwater catchment area (150-250mm, ±4.4km)	Existing reticulation pipeline upgrades in the Sterkwater catchment area (150-250mm, ±4.4km)	R	5 300 000
160	Sewer Masterplan	Existing bulk pipeline upgrades in the Sterkwater catchment area (Various diameters, ±5.9km)	Existing bulk pipeline upgrades in the Sterkwater catchment area (Various diameters, ±5.9km)	R	22 300 000
161	Sewer Masterplan	Future reticulation pipelines for new developments within the Welvaart WWTW catchment (150-250mm, Length ± 6.2km)	Future reticulation pipelines for new developments within the Welvaart WWTW catchment (150-250mm, Length ± 6.2km)	R	7 400 000
162	Sewer Masterplan	Upgrade of Bloemendrustia WWTW to accommodate an additional 28.6M/day	Upgrade of Bloemendrustia WWTW to accommodate an additional 28.6M/day	R	286 000 000
163	Sewer Masterplan	Existing bulk pipeline upgrades in the Bloemendrustia catchment area (Various diameters, ±6.7km)	Existing bulk pipeline upgrades in the Bloemendrustia catchment area (Various diameters, ±6.7km)	R	24 800 000
164	Sewer Masterplan	Future reticulation pipelines for new developments within the Bloemendrustia WWTW catchment (150-250mm, Length ± 18.2km)	Future reticulation pipelines for new developments within the Bloemendrustia WWTW catchment (150-250mm, Length ± 18.2km)	R	21 741 600
165	Sewer Masterplan	Future bulk pipelines for new developments within the Bloemendrustia WWTW catchment (Various diameters, Length ± 3.5km)	Future bulk pipelines for new developments within the Bloemendrustia WWTW catchment (Various diameters, Length ± 3.5km)	R	7 896 800
166	Sewer Masterplan	Future Bloemendrustia rising mains (Various diameters, ±2.6km) and pump stations	Future Bloemendrustia rising mains (Various diameters, ±2.6km) and pump stations	R	11 820 398
167	Critical Outstanding Studies and Planning Identified	Thaba Nchu Water Masterplan	Revise and Update Thaba Nchu Water Masterplan	R	229 025
168	Critical Outstanding Studies and Planning Identified	Thaba Nchu Water and Sewer Infrastructure Condition Assessment	Thaba Nchu Water and Sewer Infrastructure Condition Assessment	R	4 000 000
169	Critical Outstanding Studies and Planning Identified	Thaba Nchu Sewer Masterplan	Develop Thaba Nchu Sewer Masterplan	R	231 416
170	Critical Outstanding Studies and Planning Identified	Botshabelo Water Masterplan	Develop Botshabelo Water Masterplan	R	231 416
171	Critical Outstanding Studies and Planning Identified	Botshabelo Water and Sewer Infrastructure Condition Assessment	Botshabelo Water and Sewer Infrastructure Condition Assessment	R	4 000 000
172	Critical Outstanding Studies and Planning Identified	Botshabelo Sewer Masterplan	Develop Botshabelo Sewer Masterplan	R	231 416
173	Critical Outstanding Studies and Planning Identified	Dewetsdorp Water Masterplan	Develop Dewetsdorp Water Masterplan	R	148 324
174	Critical Outstanding Studies and Planning Identified	Dewetsdorp Water and Sewer Infrastructure Condition Assessment	Dewetsdorp Water and Sewer Infrastructure Condition Assessment	R	2 000 000
175	Critical Outstanding Studies and Planning Identified	Dewetsdorp Sewer Masterplan	Develop Dewetsdorp Sewer Masterplan	R	151 387
176	Critical Outstanding Studies and Planning Identified	Wepener Water Masterplan	Develop Wepener Water Masterplan	R	151 387
177	Critical Outstanding Studies and Planning Identified	Wepener Water and Sewer Infrastructure Condition Assessment	Wepener Water and Sewer Infrastructure Condition Assessment	R	2 000 000
178	Critical Outstanding Studies and Planning Identified	Wepener Sewer Masterplan	Develop Wepener Sewer Masterplan	R	151 387
179	Critical Outstanding Studies and Planning Identified	Vanstadensrus Water Masterplan	Develop Vanstadensrus Water Masterplan	R	151 387
180	Critical Outstanding Studies and Planning Identified	Vanstadensrus Water and Sewer Infrastructure Condition Assessment	Vanstadensrus Water and Sewer Infrastructure Condition Assessment	R	2 000 000
181	Critical Outstanding Studies and Planning Identified	Vanstadensrus Sewer Masterplan	Develop Vanstadensrus Sewer Masterplan	R	151 387
182	Critical Outstanding Studies and Planning Identified	Soutpan Water Masterplan	Develop Soutpan Water Masterplan	R	151 387
183	Critical Outstanding Studies and Planning Identified	Soutpan Water and Sewer Infrastructure Condition Assessment	Soutpan Water and Sewer Infrastructure Condition Assessment	R	2 000 000
184	Critical Outstanding Studies and Planning Identified	Soutpan Sewer Masterplan	Develop Soutpan Sewer Masterplan	R	151 387
185	DWS: Projects GDB & MMM Current Projects and Budget	North Eastern WWTW - Civil Construction (Phase 1)	North Eastern WWTW (Phase 1): Including Inlet Works, Biological Reactor, Secondary Settling Tanks, Chlorination Tank, Buffer Pond, Treated Sewage Effluent Outfall, Emergency Overflow Pond, Sludge Lagoons, WAS/RAS Pump Station, Wash-Water Pump Station, Ancillary Structures, Buildings, Flow Conduits, Treated Effluent Outfall Sewer to Reservoir (1500mm ND)	R	177 412 811
186	DWS: Projects GDB & MMM Current Projects and Budget	North Eastern WWTW - Civil Construction (Phase 2)	North Eastern WWTW (Phase 2): Including Liquid Stream and Sludge Stream. Includes Outfall Sewer to WWTW (800mm HDPE outfall sewer to the treatment works) and a portion of the Outfall Pipeline in Grasslands (The construction of a portion of the outfall pipeline in Grasslands to eventually connect to the main outfall pipeline to the treatment works)	R	143 121 744
187	MMM Current Projects and Budget	North Eastern WWTW - Construction of Sludge Stream: Mechanical and Electrical	Construction Sludge Stream: Mechanical Electrical	R	267 950 000