

PRESENTATION OUTLINE

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2. WATER SECURITY STATUS IN THE METRO
3. SUGGESTED WATER SECURITY INTERVENTIONS
4. STATUS WATER BUSINESS
5. CAPEX PROGRAMME: THREE KEY WATER PROJECTS
6. STATUS OF THE BULK SANITATION AND SEWERAGE SERVICE
7. SANITATION FOCUS ON RURAL AREAS
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1.1 BULK WATER SUPPLY SCHEME

- ❖ MMM is serviced by 8 dams(RUSTFONTEIN; WELBEDACHT; GROOTHOEK; KNELLPOORT; Mockes Dam; Maselspoort; KRUGERSDRIFT; Vanstandensrus) with a combined capacity of 297.2 million cubic metres (mM3).
- ❖ All the dams are currently full after the good rains.
- ❖ The surface sources are augmented by boreholes especially in small towns.
- ❖ Six Water treatment works (3BW & 3MMM) with a design capacity of 375 Megalitres per day service the Metro.
- ❖ Rustfontein plant is being upgraded by Bloemwater from 100 Megalitres per day to 150 Megalitres per day.

1.1 BULK WATER SUPPLY SCHEME

- ❖ Maselspoort plant (110MI/day) is owned by MMM and currently operate at around 40% capacity. The plant is being refurbished and upgraded with an intention to improve supply from the Metro.
- ❖ MMM is a Water Service Authority and Water Service Provider. In terms of the current SLA, MMM is supposed to supply 31% of the potable water and the balance of 69% coming from its Service Provider (Bloemwater).
- ❖ Average daily water demand for 2020/21 FY was 218.21 Megalitres per day (83% supplied by BW and 17% by MMM).
- ❖ The SLA is being reviewed. MMM plans to push its supply to 49% after the completion of the Maselspoort plant refurbishment and upgrade works.

1.2 WATER SECURITY STATUS IN THE METRO

- The current yield is 187 Megalitres per day compared to a theoretical demand of 247 Megalitres per day. This implies a deficit of 60 Megalitres per day (Approx = 24%).
- The future supply deficit in terms of potable water yield for medium growth (2%) is expected to be 290 Megalitres per day by 2040.
- Even more concerning is the projected 2040 peak water demand estimated to be 591 Megalitres per day for high growth rate.
- MMMM has been under water restrictions since 2014 as a result of infrastructure limitations and not drought conditions (All our major dams a full).
- The current water restriction sits at 16%
- **Water security issue in the metro is going to affect Mega** planned programmes/projects such as Bucket and VIPs Eradication Programme and 7 land parcels if not addressed.
- Water losses average at 46% of the restricted demand (avg 218.21 ML/day). This is higher than the norm of 15 to 30%.



1.3 SUGGESTED WATER SECURITY INTERVENTIONS

| PROPOSED INTERVENTION | ADDITIONAL YIELD (ML/day) | INTERVENTION DATE (TARGET PROJECT COMPLETION DATE) | INTERVENTION STATUS |
|--|---------------------------|--|--|
| Improved operation and management | 31 | 2019 | Achieved (Yield improved from 187ML/day to 218.21 ML/day) |
| Re-use Phase 1 Project (Waste water reclamation programme): Programme comprises of upgrade at Maselspoort, Mockes dam, Treatment works & construction of rising mains. | 45 | 2021 | Preliminary design. Project lagging behind by a year. Funding is the major constraint (Est = R800 million) |

1.3 SUGGESTED WATER SECURITY INTERVENTIONS CONT...1

| PROPOSED INTERVENTION | ADDITIONAL YIELD (ML/day) | INTERVENTION DATE (TARGET PROJECT COMPLETION DATE) | INTERVENTION STATUS |
|---|---------------------------|--|--|
| Gariep pipeline Phase 1: Construction of 180 kilometres | 90 | 2023 | Project lagging behind. MMM awaiting DWS directive |
| Re-use Phase 2 Project: upgrade of Bloemspruit treatment work, Sterkwaters treatment works and direct pipeline to Maselspoort | 32 | 2033 | Project at bankable Feasibility stage. Funding is a major challenge (Est = R500 million) |
| Gariep Phase 2 Project: Construction of 180 kilometres | 30 | 2037 | Awaiting directive from DWS |
| Total Additional yield by 2040 | 228 | 2040 | Total yield of the system by 2040 = 415MI/day |

1.4 STATUS WATER BUSINESS

- ❖ Operating with a Net deficit of approx. R600million per Annum.
- ❖ Cash collection dropped to less than 50%.
- ❖ Global Efficiency dropped to less than 30%.
- ❖ Water losses average at 46% of the restricted demand (avg 218.21 ML/day) (higher than 15 to 30% norm)
- ❖ 166 km of pipeline (Asbestos and Cast Iron) in ten suburbs needs urgent replacement (Estimated cost = R58 million).

1.4 WATER FOCUS ON RURAL AREAS

| TOWN/REGION | CHALLENGES | INTERVENTION PROGRAMMES/PROJECTS | COMMENTS |
|-------------|---|---|---|
| Dewetsdorp | <ul style="list-style-type: none"> • Inadequate supply from BW due to incomplete pump station. • Average supply = 2ML/day. • All boreholes (7) nonoperational (5 vandalized and 2 Contaminated). • High leaks and pipe burst due to old pipes and high pressures. • Riverside needs full reticulation network. • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Parallel pipeline (dia 250mm) and pumpstation being constructed by Bloemwater. • Refurbishment work to connect the steel tanks and concrete reservoirs being implemented by MMM. • Implementation of the Water Conservation and Water Demand Management strategy. | <ul style="list-style-type: none"> • Pipeline complete. However, Bloemwater only using one pump due to Eskom challenges. • Balancing tanks need to be upgraded by Bloemwater. • Refurbishment by MMM ongoing (Est. R5million). • Boreholes refurbished but vandalized within a year. • Security should be prioritized. • Resources constraint is a significant challenge. |
| Wepener | <ul style="list-style-type: none"> • Average supply = 2.6 ML/day by BW. • A total of 7 boreholes. 1 operational and 6 nonoperational (5 vandalized and 1 Contaminated). • SCADA and TELEMTRY system vandalized. • High leaks and pipe burst due to old pipes and high pressures. • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Implementation of the Water Conservation and Water Demand Management strategy. • Refurbishment of boreholes. | <ul style="list-style-type: none"> • Boreholes refurbished but vandalized. • SCADA and TELEMTRY system not operational due to vandalism • Security should be prioritized. • Resources constraint are major challenge for the full implementation of Water Conservation and Water Demand Management programme. |

1.4 WATER FOCUS ON RURAL AREAS CONT...1

| TOWN/REGION | CHALLENGES | INTERVENTION PROGRAMMES/PROJECTS | COMMENTS |
|----------------|--|---|---|
| Vanstandensrus | <ul style="list-style-type: none"> • 0.5 Megalitres supply from MMM. • A total of 6 boreholes. 5 operational and 1 nonoperational (mechanical fault). • Farmers damage pipe to access water for the livestock • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Implementation of the Water Conservation and Water Demand Management strategy. • Refurbishment of boreholes. | <ul style="list-style-type: none"> • Security should be prioritized. |
| Soutpan | <ul style="list-style-type: none"> • Unreliable supply due old water treatment plant. • Inadequate reservoir capacity. • All boreholes (2) are nonoperational due to high sodium chloride content. • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Refurbishment works at old Krugersdrift plant and integration of the old and new plant. • Upgrade of the reservoir in IKGOMOTSENG (from 465 megalitres to 1046 megalitres. • Condition assessment of the main pipeline from Krugersdrift plant to Soutpan | <ul style="list-style-type: none"> • Refurbishment work on going albeit at a slow pace due to budget constraint. • Reservoir to be upgraded |
| Tierpoort | <ul style="list-style-type: none"> • A total of 4 boreholes. 2 operational and 2 nonoperational due to electricity challenges • Shortage of water tankers during emergencies | | <ul style="list-style-type: none"> • Centlec to provide connection point for the 2 boreholes. |

1.4 WATER FOCUS ON RURAL AREAS CONT...2

| TOWN/R EGION | CHALLENGES | INTERVENTION PROGRAMMES/ PROJECTS | COMMENTS |
|-----------------|---|---|--|
| Thaba Nchu | <ul style="list-style-type: none"> • Average supply = 16.4 ML/day by Bloemwater. • Expansiveness of the trust areas. Being supplied using boreholes and water tankers by Bloemwater. • High leaks and pipe burst due to old pipes and high pressures. • Illegal connections are ubiquitous. • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Rustfontein plant being upgraded by Bloemwater (100MI/d to 150 MI/d). • Implementation of the Water Conservation and Water Demand Management strategy. | <ul style="list-style-type: none"> • Resources constraint are major challenge for the full implementation of Water Conservation and Water Demand Management programme (Vacancy rate = 62%; operational fleet = 18%) |
| Botshabelo | <ul style="list-style-type: none"> • Average supply = 36 ML/day by Bloemwater. • High leaks and pipe burst due to old pipes and high pressures. • Illegal connections are ubiquitous. • Shortage of water tankers during emergencies | <ul style="list-style-type: none"> • Rustfontein plant being upgraded by Bloemwater (100MI/d to 150 MI/d). • Implementation of the Water Conservation and Water Demand Management strategy. | <ul style="list-style-type: none"> • Resources constraint are major challenge for the full implementation of Water Conservation and Water Demand Management programme (Vacancy rate = 62%; operational fleet = 18%) |

1.5 CAPEX PROGRAMME: THREE KEY WATER PROJECTS

| PROGRAMME/PROJECT | IDP OUTCOME KEY PERFORMANCE INDICATOR | SDBIP TARGET 2021/2022 | Actual Performance (July – Dec 2021) | Corrective Action |
|---|---|--|---|---|
| MASELSPOORT WTW UPGRADING (MASSELSPOORT) | To refurbish and upgrade facility to treat re-use/recycle water for 130MI/d | Refurbish 60 MI/d | - BAC - R1.57/R12.08 m | - Accelerate the SCM processes. |
| REFURBISHMENT OF WATER SUPPLY SYSTEMS | Percentage of households with access to basic water | 100% completion of all unplanned system failures | - 100% Of Budget was spend - R18.4m /R11m | Reprioritise the budget |
| AUTOMATED METER READING AND PREPAID PROGRAMME | Total number of prepaid water meters replaced/installed | To install/ replace 4460 prepaid water meters | -1300 prepaid water meters installed. - 243 bulk meters replaced - R28.2/R27.91 | Resolve budget constraint and accelerate progress on site |

2.1 STATUS OF THE BULK SANITATION AND SEWERAGE SERVICE

- ❖ The Metro has thirteen WWTWs (10=mechanised; 3=oxidation ponds) with a current Spare capacity of 8.5ML/day.
- ❖ 75ML/day upgrades are planned as per the master plan (A budget of R1,162 million is required).
- ❖ Four of the treatment plants are in good condition and treating 52% of the wastewater.
- ❖ Five are in fair condition and account for 30% of the total treated wastewater.
- ❖ Four are in poor condition and account for 18% of the total wastewater treated for the City.
- ❖ 244km of pipelines (clay) in 10 suburbs urgent replacement (Est, budget = R244million).

2.2 SANITATION FOCUS ON RURAL AREAS

| TOWN/R EGION | CHALLENGES | INTERVENTION PROGRAMMES /PROJECTS | COMMENTS |
|-----------------|--|---|---|
| Thaba Nchu | <ul style="list-style-type: none"> • Inadequate bulk treatment capacity. • 17 000 VIPs that fill regularly due to high water table. • 7 Honey suckers required (Only 2 operational) • Old pipelines prone to collapse. • Abuse of the system by discharging foreign objects. • Vandalism of the pumpstations and treatment. The target is on the mechanical and electrical installations. • 2000 trust areas require decent sanitation service | <ul style="list-style-type: none"> • Seloshesha treatment plant being upgraded from 6MI/day to 18MI/day. The project is on construction stage. • Alternative sanitation technology being explored to overcome bulk challenges. | <ul style="list-style-type: none"> • Resources constraint are major challenge. • R1.02 billion required for the conversion of VIPs to full waterborne system. |
| Botshabelo | <ul style="list-style-type: none"> • Inadequate bulk treatment capacity. • Outfall sewer flowing at full capacity. • 27 000 VIPs that fill regularly due to high water table. • Buckets are 900. • 11 Honey suckers required (Only 2 operational). • Informal settlement sprawl. • Old pipelines prone to collapse. • Abuse of the system by discharging foreign objects. • Vandalism of the pumpstations and treatment. The target is on the mechanical and electrical installations | <ul style="list-style-type: none"> • Botshabelo treatment plant planned for upgraded from 20MI/day to 40MI/day. • Alternative sanitation technology being explored to overcome bulk challenges. • Outfall sewer line being upgraded (Project at Design stage). | <ul style="list-style-type: none"> • Resources constraint are major challenge. • R377 million required for the upgrade of Botshabelo treatment plant. • R60 million required for the upgrade of the outfall line. • R1.62 billion required for the conversion of VIPs and buckets to waterborne system. |

2.2 SANITATION FOCUS ON RURAL AREAS CONT...1

| TOWN/REGION | CHALLENGES | INTERVENTION PROGRAMMES/PROJECTS | COMMENTS |
|----------------|---|--|--|
| Dewetsdorp | <ul style="list-style-type: none"> Waterborne system installed in Riverside but not commissioned due water supply challenges. A total of 300 buckets are being used as temporary. | <ul style="list-style-type: none"> BW and MMM are addressing the water problem. Once completed the system will be connected and buckets discontinued. | |
| Wepener | <ul style="list-style-type: none"> Old pipelines susceptible collapse. Rampant vandalism of the pump stations and treatment plant. Informal settlement sprawl | <ul style="list-style-type: none"> Phase 1 of sewer refurbishment work completed. MMM to move on to phase 2. Informal settlement being upgraded using the informal settlement grant. Alternative sanitation technology being explored to overcome water challenges. | <ul style="list-style-type: none"> Rampant vandalism of the mechanical and electrical installation is a significant challenge |
| Vanstandensrus | <ul style="list-style-type: none"> Septic tanks not connected to the main reticulation network. Emptying of VIPs. Vacuum system giving operational challenges | <ul style="list-style-type: none"> 130 VIPs converted to a full waterborne system. | <ul style="list-style-type: none"> Vacuum system needs to be converted to the conventional waterborne system. |
| Soutpan | <ul style="list-style-type: none"> New informal settlement needs full waterborne system. The chemical toilets have been withdrawn as they are not sustainable. | <p>Refurbishment of the treatment plant completed.</p> | <ul style="list-style-type: none"> Budget appropriated for the project in the MTREF. |

2.3 CAPEX PROGRAMME: TOP SANITATION PROJECTS

| PROGRAMME/ PROJECT | IDP OUTCOME KEY PERFORMANCE INDICATOR | SDBIP TARGET 2021/2022 | Actual Performance (July – Dec 2021) | Corrective Action |
|--|---|--|--|--|
| EXTENSION THABANCHU WWTW (SELOSESHA) CIVIL | Percentage of households with access to basic sanitation | 100% spending on the allocated budget | -Excavation and Blinding Chlorine contact tank Blinding Inlet works Blinding Biological reactor Blinding | -Accelerate progress on site. - Ring-fence budget |
| Refurbishment of sewer systems | Percentage of households with access to basic sanitation | 100% completion of all unplanned system failures | - R13m /R14.88m | Reprioritise the budget |