

Ref: 10171

Attention: Mr. Clinton Geyser

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Dear Sir,

RE: ADDITIONAL INFORMATION SUPPLEMENTING THE BULK WATER SUPPLY NETWORK REPORT OF NOVEMBER 2018 FOR THE PROPOSED UITKOMS DEVELOPMENT IN KATHU

1.0 BULK WATER SUPPLY FOR UITKOMS DEVELOPMENT

1.1 INTRODUCTION

MVD Kalahari's initial report namely *BULK SERVICES AND INFRASTRUCTURE STATUS QUO REPORT AND RECOMMENDATIONS FOR THE SIMS AND UITKOMS PROJECT IN KATHU*, dated 10 March 2015 discussed the bulk water status and constraints in paragraph 4.2 of the report and is still applicable to the proposed Uitkoms development except the calculated water demands and cost estimates. The revised report as presented by MVD Kalahari in November 2018 re-calculated the water demands for a reduced development opportunity.

This document will further discuss the status quo water sources, treatment plants, bulk supply pipelines and storage capacities of the potable bulk water system of Kathu. A reservoir and pressure tower which is known as the Kathu West Reservoir and Tower has still not been constructed. Potable water supply to Kathu East where the study area is cannot be separated from the rest of the bulk supply network of the town of Kathu, for example, planning of another 5000 housing units is scheduled for the Kathu West area near the proposed Sims Development which does not form part of the study but will have a significant impact on the whole of the bulk water supply system of Kathu. A bulk water supply investigation/report will therefore be required to allow for the short and long term development requirements of Kathu. The 2011 Census shows a population of 11 510 for Kathu for 2011 with an annual average growth rate of 7.33% from 2001 to 2011. The growth rate the past few years has not maintained the latter rate and is expected to increase again in the near future. It is therefore imperative for the Local Municipality to do proper planning to ensure sustainable service delivery.

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1.2 STATUS QUO:

1.2.2 Water Sources:

- Sishen Mine: Sishen mine is a net exporter of water to Kathu. The mine abstracts water from boreholes within the mining area as a dewatering process to allow mining to take place. This water is then pumped through a 450mm diameter steel pipe from Sishen mine to Kathu where the raw water is delivered to three different areas, namely: Water Treatment Works(Municipal Softener Plant) directly to the Kathu Central reservoir's raw water chamber and into the raw water dam named Lategan Dam which is adjacent to the R380. This dam is a storage dam and is unlined. It must be noted that this is not a constant supply and depends on the mining operations and there have been periods where no surplus water was available from the mine.
- Sedibeng Water: Sedibeng Water is a Water Service Providing Authority which operates the Vaal-Gamagara Water Supply Scheme. This scheme is the main water supplier to Kathu East Reservoir which is within the study area and is also used to supplement the potable water supply from the local Softener Plant to Kathu Central Reservoir if required. According to the Reconciliation Strategy for Kathu, the town has an authorised allocation from the Vaal Gamagara Scheme of 500 000m³/annum or 15,8ℓ/s. This allocation is not nearly enough. An agreement of 80ℓ/s has been frequently discussed and is sometimes provided by Sedibeng Water. This authorisation was never formalised. Sedibeng Water is in the process to improve the supply capacities and pressures in the Vaal Gamagara System which will improve the supply to Kathu. Timeframes however is not available.
- Borehole abstraction: Ground water is abstracted from boreholes situated in the Kathu and Khai Appel aquifers which supplement the supply to Kathu. The boreholes located in the Kathu aquifer pump directly into the 6.8MI reservoir at Kathu Central. The Khai-Appel boreholes feed the Khai-Appel resort and Sesheng Reservoir.
 - Five municipal production boreholes and two Sishen Mine boreholes allocated to the Gamagara Municipality are located in the Khai Appel aquifer. If all boreholes are in operation they could yield 79ℓ/s but primarily to Sesheng.
 - Three Municipal boreholes and the Bestwood Housing Development boreholes on the Kathu aquifer could collectively yield 60ℓ/s. The boreholes providing water directly to the town of Kathu only yield 21.7ℓ/s of the total of 60ℓ/s. The boreholes at Bestwood which yield the more significant difference, supply water primarily to the Bestwood Housing Development. An agreement is in place to provide surplus water to the Kathu East Reservoir over the short term whilst Bestwood is being developed. All abstracted water will eventually be utilised by the Bestwood Development. Thus, any water from Bestwood to Kathu will then cease.

1.2.3 *Water Treatment Works – Municipal Softener Plant:* This plant receives raw water from Sishen Mine and pass through the softener plant at a rate of 48,3l/s. This supply of raw water is not continuous.

1.2.4 *Water Storage and Distribution:* The water supply in the town of Kathu is currently serviced from two reservoirs within the town, namely Kathu Central Reservoir and Kathu East Reservoir.

- Kathu Central Reservoir : Kathu Central Reservoir is fed via two 200mm diameter steel pipes from the municipalities softener plant. This reservoir can also be fed from the main Vaal Gamagara pipeline via an existing 355mm diameter uPVC, Class 9 pipeline. This pipeline connects onto the two 200mm diameter steel pipes from the softener plant near the Kathu Mall. From Kathu Central Reservoir, water is pumped into the potable water section of the elevated tower. Remember that there is also a section in the elevated tower for grey water that supplies the grey water network. The potable water is then gravity fed into the network.
- Kathu East Reservoir: This reservoir is fed via a 355mm diameter uPVC, Class 9 pipe from the Vaal Gamagara pipeline. A supply pipeline (450mm diameter) is proposed from the proposed WTW at Lategan Dam to connect into this 355mm diameter Vaal Gamagara pipeline. See below. This will supplement water to Kathu East reservoir that will have the potential to augment the supply to the proposed development at Uitkoms.
- Sesheng: This area does not form part of the study area but will have an impact on supply to the study area as it will be able to relieve demands to areas which is dependent on the Kathu East reservoir. Sesheng is served by a 2Ml concrete reservoir and a concrete elevated split tower with separate treated and untreated water compartments. The Sesheng Reservoir can also be fed from the main Vaal Gamagara pipeline via the existing 355mm diameter Class 9, uPVC pipeline. The main supply to Sesheng however remains from Khai Appel. Water is then pumped into the elevated tower from where it gravitates into the reticulation network.

The following projects were identified for the future expansion of Kathu’s bulk water supply due to the current demands as well as future demands. The following is directly associated with the proposed development at Uitkoms and are as follows:

- Upgrade Lategan Dam and installation of a water treatment works,
- Full upgrades of Lategan Dam pump station for new bulk supply network when new proposed WTW is completed. This will be required when the newly proposed 355mm link pipeline between upgraded Lategan Dam and Kathu East reservoir is installed as mentioned below,
- A new 450mm link pipeline between the upgraded Lategan Dam and the supply line from the Vaal Gamagara to Kathu East Reservoir,
- A detailed assessment of the existing bulk water and water reticulation infrastructure of Kathu including the current demands,



- New dedicated 355mm link pipeline between the upgraded Lategan Dam and existing Kathu East Reservoir,
- Full upgrades of Lategan Dam pump station for new bulk supply network when new proposed WTW is installed.

The proposed Uitkoms Development is situated north east of Kathu and bulk water supply to this area is also dependant on the bulk water supply to the rest of Kathu, for example Sesheng. Projects that have been identified within the rest of Kathu e.g. Sesheng area/Kathu West are as follows:

- New Kathu West reservoir and pressure Tower that will accommodate future developments and that will contribute to the whole Kathu Bulk Water System,
- New off-take from the existing 355mm diameter pipeline to Kathu East Reservoir to the proposed Kathu West Reservoir.
- A new connection from the proposed groundwater export pipeline from Sishen Mine connecting into the Sesheng network,
- New Sesheng reservoir/s and pressure tower/s,
- New 250mm link from the Softener Plant to Sesheng reservoir,
- Full upgrades of Lategan Dam pump station for new bulk supply network when new proposed WTW is installed.

1.3 CONCLUSION

It is evident from the above information that the town of Kathu require a bulk water system upgrade to supply current and future demands. The water demand at peak flow for the proposed Uitkoms Development is 4,24l/s that equates to 365m³/day which is insignificant to the total demand of the town of Kathu but still has to be approved and then allocated by the municipality. It is therefore recommended to forward the demand requirements of the proposed Uitkoms Development to the municipality for approval as soon as possible.

1.4 REFERENCES

- Bulk Services and Infrastructure Status Quo Report and Recommendations for the Sims and Uitkoms Project in Kathu, 10 March 2015,
- Kathu Integrated Human Settlement: Civil Services Report,
- Kathu Water Management Plan: Funding Plan for Water Infrastructure in Kathu, July 2013

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