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COMMENT ON WATER AND SANITATION CAPACITY FOR THE PROPOSED MIXED USE DEVELOPMENT- FARM 845- SIR LOWRY'S PASS VILLAGE

Background

This is a revised comment on water and sanitation infrastructure capacity. This comment covers the change in the number of units and the proposed phasing of the development. Developer has decided to increase the density of the development from 600 units to 1000 units and added a 3.69 Ha of mixed development. The developer has also proposed phased implementation.

The proposed site is located along Khorhoek road. This proposed development falls just inside the urban edge. The site is largely vacant with a few small structures on it.

This letter provides an overview of the existing water and sewer infrastructure in the vicinity of the development.

Table 1.1: Estimated water and sewer demands provided by the Consultant

Proposed Zoning	ERF	AADD	Design flows		ADWWF	Design flows	
	Units	Qty (Kl/d)	Kl/day	Peak Flow (l/s)PF = 2.5	Qty*	Kl/day	Peak Flow (l/s)PF = 2.5
apartments	832	0.5	416		0.45	374.4	10.8
Town Houses	168	0.612	102.8		0.55	92.5	2.66
Mixed use 3.69 Ha			14.44			13	0.38
Total	1 000		533.2	15.43		479.9	13.89

** Based on a 70% sewer flow design criterion

The developer has proposed the following phasing of the development with the resulting sewer discharge.

Phase	Units	ADWF kl/d	Total ADWF	Peak Flow l/s	Date By
Phase 1	585 units @ 0,45kl/units/d	263	263	7.6	1 May 2023
Phase 2	200 units @ 0,45kl/units/d	90	353	10.2	1 May 2024
Phase 3	215 units @ 0,45kl/unit/d	96.8	449.8	13.01	1 May 2025
Parcel A1 and A2	Mixed Use 3,69 Ha	13	462.8	13.4	

Proposed phasing of the development

Water Reticulation

The development falls adjacent to the Sir Lowry's Pass zone. This zone is supplied by the Mount Rhodes Helderberg Tank. This is a 5 Ml reservoir with limited capacity to accommodate future planned development.

The City's water network model shows that there is a 200mm Ø water main situated along the south western border of the farm, which has a modelled peak and static pressure of 45.31 m and 36.62 m respectively. The peak velocity is about is currently 0.21m/s. It should be noted that this development has not been part of the master plan and will take up capacity that was planned for future planned areas.

The nearest possible connection point is to the 200 mm main in Sir Lowry's Pass Road. It should be noted that the proposed development is on a steep slope with the highest point at approximately 160m. The water supply will require boosting to reach the highest point as well as satisfy fire requirements. Any additional storage and boosting and reticulation infrastructure will be at the developers cost.

The developer is required to incorporate water saving measures in the development.

Figure 1: Existing water network layout.

Bulk Water

No Bulk Water pipelines or infrastructures under the control of the Bulk Water Branch are directly affected by the proposed residential development.

The bulk supply system has sufficient water resource, treatment and bulk storage capacity to supply the estimated annual average daily demand of 533.2 kl/day of the proposed development.

Sewer Reticulation

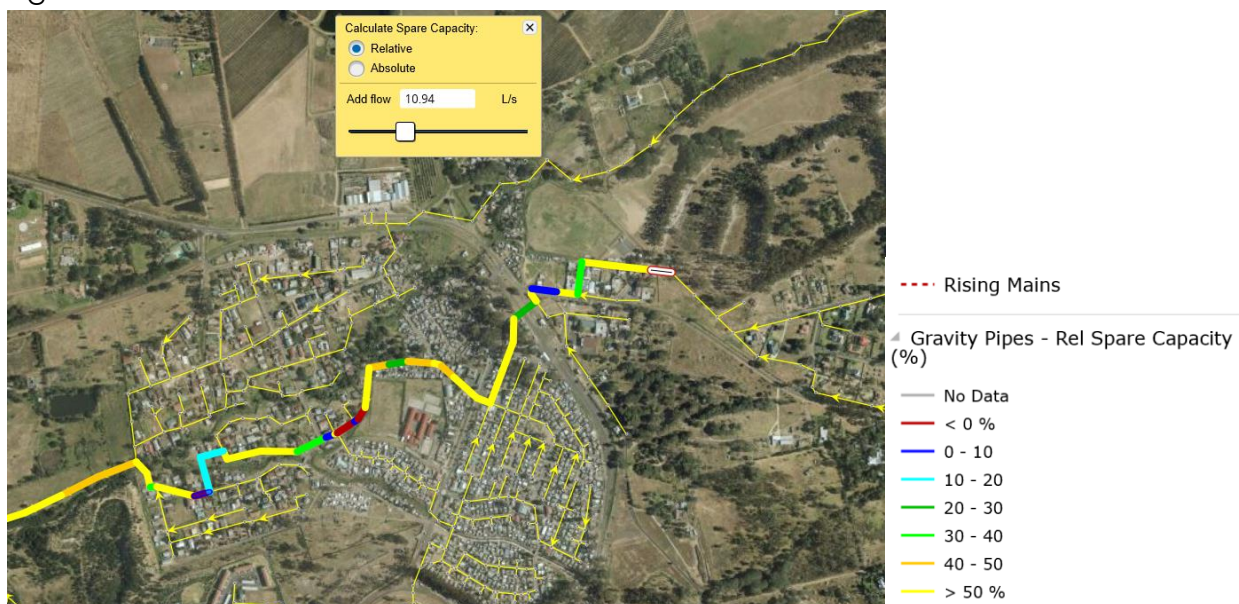
The City's sewer network model indicates a 150mm Ø gravity sewer main along Khorhoek road next to the proposed development. The impact of loading the sewer from the development will have an impact on the downstream system (See Figure 2a). There downstream segments that show capacity constraints where surcharging of the sewer can be expected. As pointed out in the background paragraph this area is not a priority development area for the city and all upgrades in the sewer system will be to the cost of the developer.

The developer has proposed phasing the development to reduce the immediate load on the sewer reticulation system. The existing downstream sewer can only accommodate maximum of 3 l/s peak flow. Development that generates flows above 3 l/s will require upgrading the sewer collector downstream of the development along Brinkhuis Road and up stream of Mission Street.

Figure 2a below reflects the downstream constraints in the system.

Further downstream the development will drain to the Lourens River pump station which has sufficient capacity to accommodate the proposed discharge.

Figure 2a: Sewer Downstream Constraints



See Figure 2: Existing sewer network layout.

Wastewater

The anticipated wastewater flow from the proposed Farm 845 development has been calculated to be 479.9 kl/d.

This proposed development is situated within the catchment of the Macassar Wastewater Treatment Works, which has insufficient capacity to handle the anticipated wastewater from this development. The planning of Macassar WWTW upgrading is underway with the expected completion date of 2026. However, the developers proposed phasing of the development as

reflected in the table above will allow the wastewater treatment branch to operationally accommodate the development.

At this stage the option to do on site treatment will not be allowed. The Wastewater branch will monitor progress on the upgrade of the works and the quality of treated effluent as additional phases come on line and make operational adjustments as required.

Conclusion

The water supply for the development may require storage and boosting to satisfy the needs of the development. The sewer network can accommodate a maximum of 3l/s above which sewer reticulation upgrades are required. The Macassar Wastewater Treatment works is being upgraded but will accommodate the development as per the proposed phases.

Conditions

The proposed development will have to satisfy the following conditions:

1. Development Contributions is payable as per the DC policy.
2. The water supply does not have sufficient pressure to reach the highest point in the development, storage and or boosting may be required.
3. The developer is required to show all water saving interventions in the development.
4. The downstream sewer network has constraints and can accommodate a maximum of 3 l/s peak. Sewer network will have to be upgraded for flows above this threshold.
5. The required link services are to be installed prior to the occupation of any dwelling.

Additional Technical Requirements

6. The owner is responsible for application for the new water meter or sewer connection including for relocation, at the standard tariff to the Reticulation District Head.
7. Water and Sanitation municipal services are to be designed according to Departmental Service Standards and be approved prior to construction.
8. Handover of any municipal water and sanitation services will be subject to quality control and testing during construction.

General/ Disclaimer

Information provided is based on best available data.

The flows and pressures provided in this comment are theoretical and not measured.

Yours Faithfully

2019/10/28

X 

Signed by: Shamile Manie

On behalf of

Michael John Webster

DIRECTOR: WATER & SANITATION DEPARTMENT

REPORT CONTRIBUTIONS

BRANCH	CONTACT PERSON	INPUT PROVIDED
Master Planning	S Manie	25/10/2019
Bulk Water	Kevin Balfour	out standing
Reticulation	Thembinkosi Lomboza	20/04/2018
Wastewater Treatment	Dr Sven Sotemann	24/10/2019