Infrastructure planning

18 July 2023

The Director : Civil Engineering Services
Overstrand Municipality
P. O. Box 20
HERMANUS
7200

Attention: Mr Dennis Hendriks

Dear Sir,

DEVELOPMENT OF ERF 1489, VERMONT: CAPACITY ANALYSIS OF THE BULK WATER AND SEWER SERVICES

The request by Mr Richard Kotzé of WRAP regarding comments on the bulk water and sewer supply to the proposed development (residential development on Erf 1489, Vermont), refers.

This document should inter alia be read in conjunction with the Water Master Plan (performed for the Overstrand Municipality) dated June 2021 and the Sewer Master Plan, dated June 2021.

Future development area GH8.5, which included the proposed development area on Erf 1489, was conceptionally taken into consideration for the June 2021 master plans for the water and sewer networks.

1. WATER DISTRIBUTION SYSTEM

1.1 *Distribution zone*

It is proposed that the development area is accommodated within the existing Vermont reservoir zone. The connection to the existing system should be done to the existing 110 mm diameter pipe to the south of Erf 1489, as shown in Figure 1 attached.

1.2 *Water demand*

The original water analysis for the master plan was performed with a total annual average daily demand (AADD) for development on Erf 1489 (a portion of future area GH8.5 in the June 2021 master plan) of 12,6 kL/d.

For this re-analysis, the AADD and fire flows for the proposed development were calculated as follows:

- 22 Single Residential units @ 0,6 kL/d/unit = 13,2 kL/d
- Fire flow criteria (Low risk) = 15 L/s @ 7 m

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1.3 *Present situation*

1.3.1 *Network conveyance*

The existing Vermont reservoir network has sufficient capacity to accommodate the proposed development on Erf 1489.

The following link services items will however be required to connect the proposed development to the existing Vermont reticulation network:

Link services items

• Item 1	: 170 m x 110 mm Ø supply pipe	R	204 000 *
• Item 2	: 20 m x 110 mm Ø inter-connection pipe	R	51 000 *
	Total	R	255 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2022/23 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the routes of the proposed pipelines are schematically shown on Figure 1, but have to be finalised subsequent to detail pipeline route investigations.

1.3.2 *Bulk supply system*

The existing bulk supply system from the Preekstoel Water Treatment Plant (WTP) to the Vermont reservoirs has sufficient capacity to accommodate the proposed development.

1.3.3 *Reservoir capacity*

There is sufficient reservoir storage capacity in the existing Vermont reservoirs to accommodate the proposed development.

2. SEWER NETWORK

2.1 *Drainage area*

The development on Erf 1489 should be accommodated within the existing Onrus Main pumping station (PS) drainage area.

The proposed connection point to the existing sewer system is to the existing 110 mm diameter small bore sewer system at the southern boundary of Erf 1489, as shown on Figure 2 attached.

The development is inside the sewer priority area.

2.2 *Sewer flow*

In the original sewer master plan, the peak day dry weather flow (PDDWF) for development on Erf 1489 (a portion of future area GH8.5 in the June 2021 sewer master plan) was calculated at 8,5 kL/d.

For this re-analysis, the PDDWF for the proposed development was calculated as 9,2 kL/d.

2.3 *Present situation*

2.3.1 *Gravity sewers*

The existing 110 mm diameter small bore sewer system from Erf 1489 to Malmok Street, and the 110 mm diameter small bore sewer system in Malmok Street towards the 200 mm outfall sewer in Malmok Street (as shown on Figure 2 attached), have sufficient hydraulic spare capacity to accommodate the peak sewage flow from the proposed development.

Accommodation of the proposed development on the existing small bore system is however not supported due to operational problems that are experienced with smaller diameter sewer systems, specifically frequent sewer blockages.

In the sewer master plan upgrading of the existing system in Malmok Street is proposed in order to accommodate potential future development areas within the upstream drainage area.

It is therefore proposed that the existing 110 mm diameter small bore sewer system from the proposed development to the existing 200 mm diameter outfall sewer in Malmok Street is upgraded to 160 mm diameter and 200 mm diameter outfall sewers (as indicated on Figure 2), in order to accommodate the proposed development in the existing sewer system:

Network upgrade

• Item 3	: 255 m x 160 mm Ø new outfall sewer (replace existing 110 mm Ø small bore system)	R	734 000 *
• OHS11.12	: 430 m x 200 mm Ø new outfall sewer (replace existing 110 mm Ø small bore system)	R	1 312 000 *
	Total	R	2 046 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2022/23 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the routes of the proposed pipelines are schematically shown on Figure 2, but have to be finalised subsequent to detail pipeline route investigations.

The existing gravity sewer system downstream of Malmok Street has sufficient spare capacity to accommodate the proposed development in the existing sewer system.

2.3.2 *Pumping stations*

The proposed development gravitates to the Onrus Main PS from where sewage is pumped to the Hermanus Waste Water Treatment Works (WWTW). The pump station has sufficient spare capacity to accommodate the proposed development.

3. CONCLUSION

The developer of Erf 1489 in Vermont may be liable for the payment of a Development Contribution (as calculated by the Overstrand Municipality) for bulk water and sewer infrastructure as per Council Policy.

There is sufficient capacity in the existing water reticulation system to accommodate the proposed development.

Link services items 1 & 2 will however be required to connect the internal reticulation network of the proposed development to the existing water network.

There is sufficient capacity in the existing sewer reticulation system downstream of the 200 mm diameter outfall sewer in Malmok Street to accommodate the proposed development.

Upgrading of the existing small bore system from the development to the 200 mm diameter outfall sewer in Malmok Street (through the implementation of master plan items 3 & SHS11.12) is however proposed in order to accommodate the proposed development in the existing sewer system.

We trust that you find this of value.

Yours sincerely,

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Per: PC DU PLESSIS

cc. WRAP
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Attention: Mr Richard Kotzé