Infrastructure planning

19 February 2024

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

Attention: Mr Dennis Hendriks

Dear Sir,

DEVELOPMENT OF ERF 1486, VERMONT: CAPACITY ANALYSIS OF THE BULK WATER AND SEWER SERVICES

The request by Mr André Wiehahn of ITRP Town and Regional Planning regarding comments on the bulk water and sewer supply to the proposed development (residential development on Erf 1468, 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 GH8.6, which included the proposed development area on Erf 1468, 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 is accommodated within the existing Vermont reservoir water distribution zone. The connection to the existing reticulation system should be made to the existing 200 mm Ø pipe in Lynx Avenue east of Erf 1468, as shown in Figure 1 attached.

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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 1468 (future area GH8.6 in the June 2021 master plan) of 22,6 kL/d.

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

- 9 Single Residential units @ 0,6 kL/d/unit [(1)] = 5,4 kL/d
- Fire flow criteria (Low risk) = 15 L/s @ 7 m

[(1)] As per Table J.2 from Section J - Water Supply of "The Neighbourhood Planning and Design Guide" (so called "Red book").

1.3 *Present situation*

1.3.1 *Network conveyance*

The existing Vermont reservoir network has sufficient capacity to accommodate the proposed development on Erf 1468.

The connection to the existing system can be done at the 200 Ø mm diameter pipeline in Lynx Avenue (East of the proposed development), as shown on Figure 1 attached.

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 1486 should be accommodated within the existing Onrus Main pumping station (PS) drainage area.

The proposed connection point to the sewer system is to the existing 110 Ø small bore sewer pipe in Lynx Road, 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 1468 (future area GH8.6 in the June 2021 sewer master plan) was calculated at 17,3 kL/d.

For this re-analysis, the PDDWF for the proposed development was calculated as 3,8 kL/d.

2.3 *Present situation*

2.3.1 *Gravity sewers*

The existing 110 mm diameter small bore sewer system from Erf 1486 to Malmok Street, and the small section of 110 mm diameter small bore sewer system (that has not yet been upgraded to a 200 mm) 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 development on Erf 1486 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 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), to accommodate the proposed development in the existing sewer system:

The existing Onrus Main PS drainage area in Vermont has sufficient capacity to accommodate the proposed development within the existing sewer system, except for a small section of a 110 mm Ø outfall sewer in Malmok Crescent that has not yet been upgraded to a 200 mm diameter pipe.

(The old 110 mm outfall sewer in Malmok Crescent before and after this section of pipe has recently been upgraded to a Ø of 200 mm, as proposed in the June 2021 Sewer Master Plan.)

Network upgrade:

• Item 1	: 570 m x 160 mm Ø new outfall sewer (replace existing 110 mm Ø small bore system)	R 1 470 000 *
• OHS11.12	: 20 m x 200 mm Ø new outfall sewer (replace existing 110 mm Ø small bore system)	R 186 000 *
	Total	R 1 656 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2023/24 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the route of the proposed pipeline is schematically shown on Figure 2 and will have to be finalised after a detail pipeline route investigation has been performed.

2.3.2 *Pumping Stations*

The proposed development gravitates to the Onrus Main PS from where sewage is pumped to the Hermanus Wastewater Treatment Plant (WWTP). The pump station has sufficient spare capacity to accommodate the proposed development.

2.4 *Minimum items required*

The minimum requirements to accommodate the proposed development in the existing sewer system are link services item 1 to connect the development to the existing Onrus Main PS drainage area and master plan item OHS11.12 to reinforce the existing Onrus Main PS sewer reticulation system.

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3. CONCLUSION

The developer of Erf 1486 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 and no network upgrades will be required.

There is sufficient hydraulic spare capacity in the existing small bore sewer reticulation system downstream of the proposed development to accommodate the proposed development. Accommodation of the development on Erf 1486 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.

The minimum requirements to accommodate the proposed development in the existing sewer system are therefore link services item 1 and master plan item OHS11.12 to reinforce the existing Onrus Main PS sewer reticulation system.

We trust that you find this of value.

Yours sincerely,

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Per: PC DU PLESSIS

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