GLS

Infrastructure planning

30 January 2024

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

Attention: Mr Dennis Hendriks

Dear Sir,

PROPOSED HOUSING DEVELOPMENT OF ERF 438, STANFORD: CAPACITY ANALYSIS OF THE BULK WATER & SEWER SERVICES

The request by Mr Richard Kotzé of WRAP Town Planning & Project Management for GLS Consulting (Pty) Ltd to investigate and comment on the bulk water supply and sewer discharge of the proposed development of 29 residential properties on Erf 438, Stanford, 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.

The proposed development was not taken into consideration for the master plans for the water and sewer networks.

1. WATER DISTRIBUTION SYSTEM

1.1 *Distribution zone*

The master plan indicated that the proposed development should be accommodated within the existing Stanford reservoir water distribution zone. The proposed connection to the existing Stanford water system is to the existing 160 mm Ø pipe along the R43 Road, as shown in Figure 1 attached.

The proposed development is situated inside the water priority area.

1.2 *Water demand*

The original water analysis for the master plan was performed with a total annual average daily demand (AADD) for Erf 438 of 1.7 kL/d.

For this re-analysis of the master plan, the total AADD and fire flow for the proposed development were calculated as follows:

- 29 Group housing units @ 0,6 kL/d/unit = 17.4 kL/d
- Fire flow criteria (Low risk) = 15 L/s @ 7 m

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1.3 *Present situation*

1.3.1 Reticulation network

The existing Stanford reservoir water reticulation network has insufficient spare capacity available to provide the required water pressure and fire flow criteria for the development as set out in the Overstrand Water Master Plan.

It is proposed in the Water Master Plan for Stanford that the existing 110 mm Ø supply pipe in Kleine Street is reinforced to improve network conveyance and fire flow capacity to the Stanford North area.

The following master plan item is proposed in order to improve network conveyance to the proposed development and to improve the capacity of the existing system to supply fire flow:

Network upgrade:

- OSW1.3: 485 m x 160 mm Ø parallel reinforcement R 1 200 000 *

(* 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).

The route of the proposed pipeline is schematically shown on Figure 1, but has to be finalised subsequent to a detailed pipeline route investigation.

1.3.2 Reservoir capacity

The criteria for total reservoir volume used in the Overstrand Water Master Plan is 48 hours of the AADD (of the reservoir supply zone) for gravity and pumped supply to the reservoir.

According to the water master plan the AADD of the Stanford water distribution zone is currently approximately 880 kL/d. The current combined reservoir storage capacity of the existing Stanford reservoirs is 2 750 kL, which results in a current reservoir storage capacity of 75 hours of the AADD.

There is therefore sufficient capacity in the existing Stanford reservoirs to accommodate the proposed development.

1.3.3 Bulk supply

The existing bulk supply system from the Stanford boreholes to the Stanford reservoir has sufficient capacity in order to accommodate the proposed development within the Stanford water system.

1.4 *Minimum items required*

The minimum item required to accommodate the proposed development in the existing Stanford water system is master plan item OSW1.3 to improve network conveyance to the proposed development and to improve the capacity of the existing system to supply fire flow.

2. SEWER NETWORK

2.1 *Drainage area*

The master plan indicated that the proposed development should be accommodated within the existing Stanford pumping station (PS) drainage area. The proposed connection to the existing Stanford sewer system is to the existing 200 mm Ø outfall sewer in Daneel Street, as shown on Figure 2 attached.

The development is inside the sewer priority area.

2.2 *Sewer flow*

The original sewer analysis for the master plan was performed with a total peak day dry weather flow (PDDWF) for Erf 438 of 0.9 kL/d.

For this re-analysis, the PDDWF of the proposed development was calculated as 12.2 kL/d.

2.3 *Present situation*

The existing Stanford PS drainage area in Stanford has insufficient capacity to accommodate the proposed development within the existing sewer system.

2.4 *Implementation of the master plan*

The following master plan item will be required to reinforce the existing sewer network of the Stanford PS drainage area in order to accommodate the proposed development together with other future development areas.

Network upgrade:

- OSS2.3: 260 m x 400 mm Ø upgrade existing 250 mm Ø outfall sewer R 1 540 000 *

(* 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).

The route of the proposed pipeline is schematically shown on Figure 2, but has to be finalised subsequent to a detailed pipeline route investigation.

2.5 *Minimum items required*

The minimum item required to accommodate the proposed development in the existing sewer system is master plan item OSS2.3 to reinforce the existing Stanford sewer system downstream of the Stanford PS.

3. CONCLUSION

The developer of Erf 438 in Stanford 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 insufficient capacity in the existing water reticulation system to accommodate the proposed development.

The minimum requirement to accommodate the proposed development on Erf 438 in the existing water system is the implementation of master plan item OSW1.3 to improve network conveyance to the proposed development.

There is insufficient capacity in the existing sewer reticulation system to accommodate the proposed development.

The minimum item required to accommodate the proposed development in the existing sewer system is master plan items OSS2.3 to reinforce the existing Stanford sewer system downstream of the Stanford PS.

We trust you find this of value.

Yours sincerely,

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Per: PC DU PLESSIS

cc. WRAP Project Office Town Planning & Project Management
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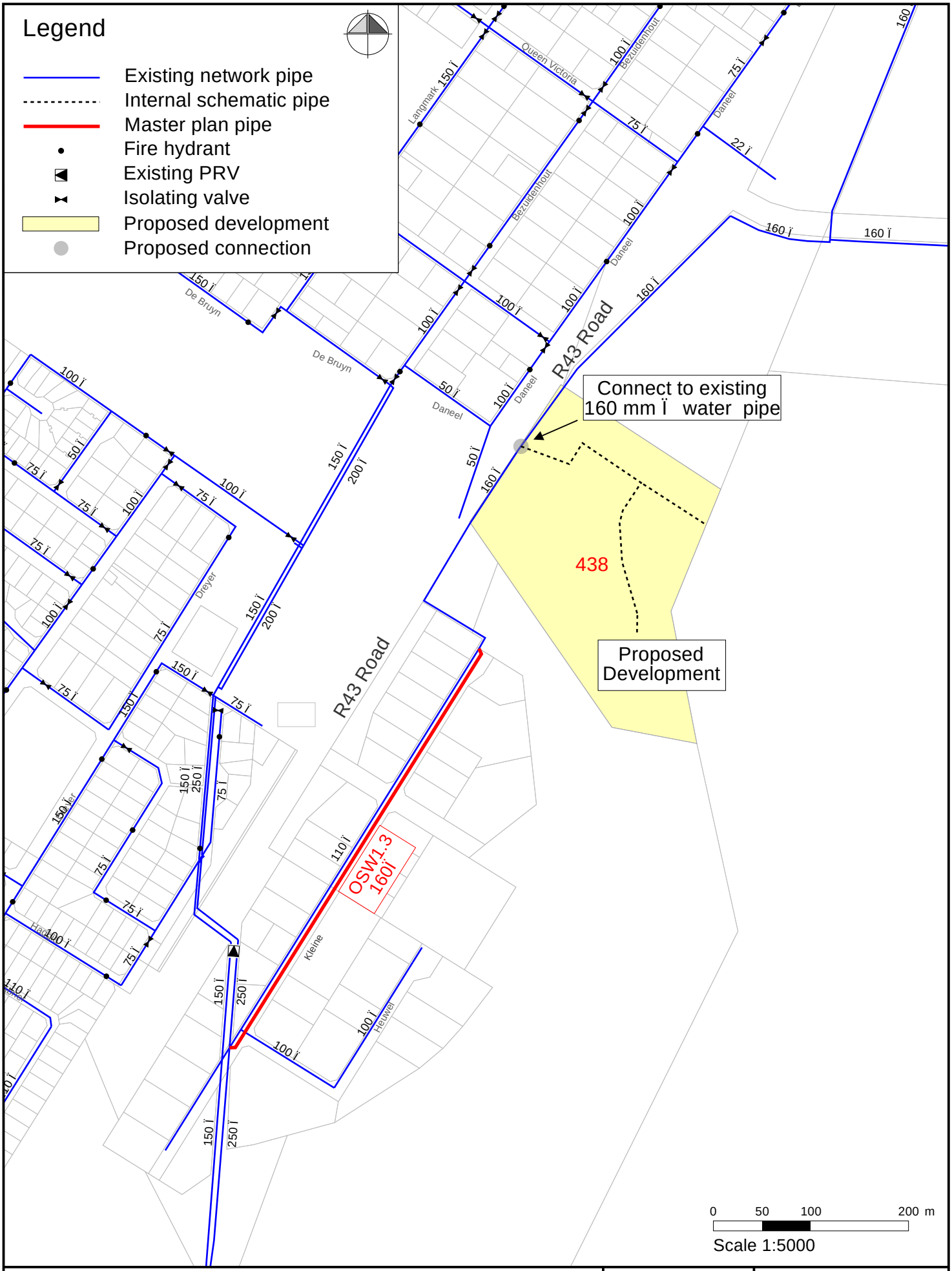
Attention: Mr Richard Kotzé

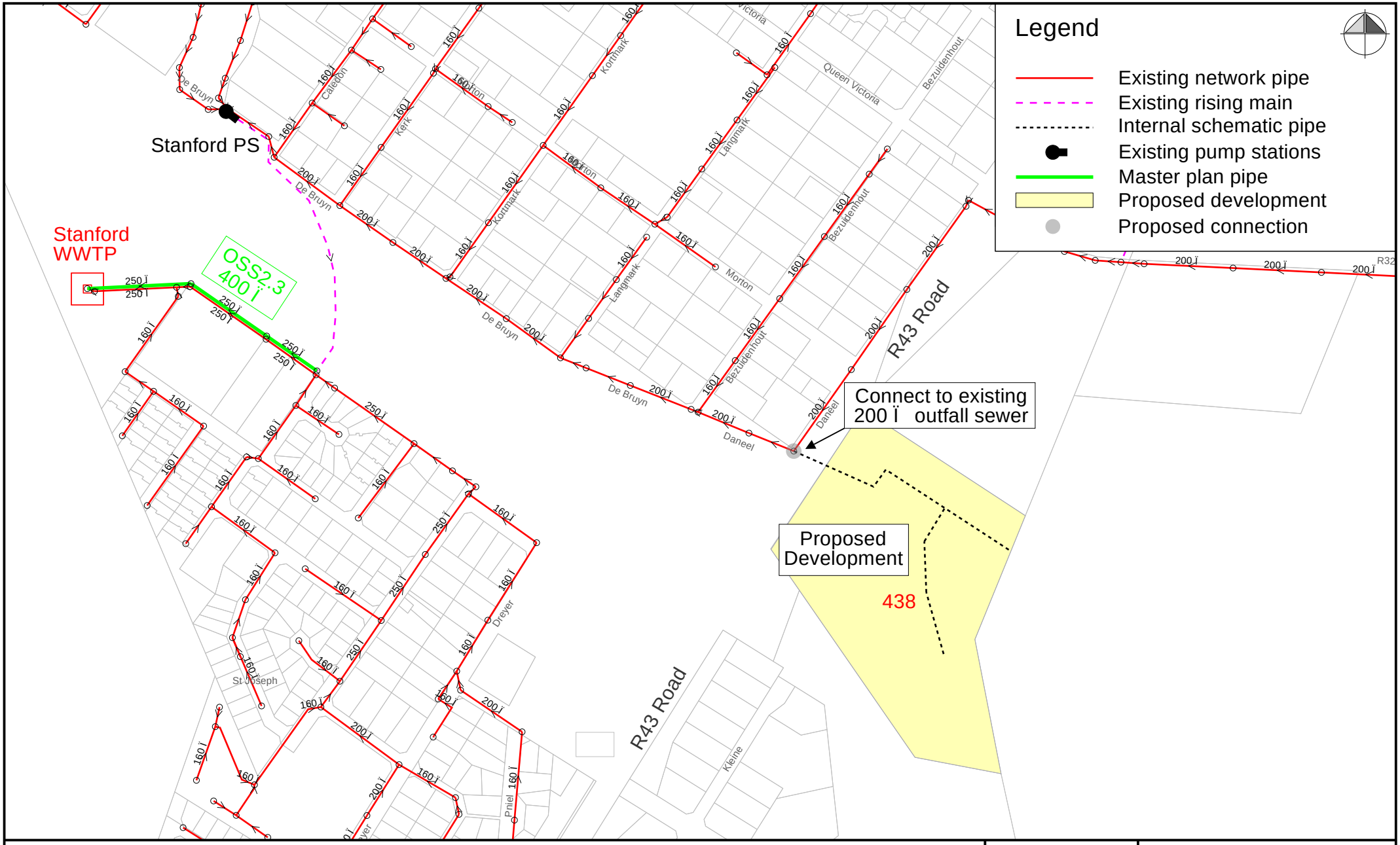


January 2024

Development of Erf 438 - Stanford

Figure 1

Proposed Development
Stanford - Erf 438
Water Master Plan



January 2024

Development of Erf 438 - Stanford

0 50 100 200 m

Scale 1:5000

Figure 2

Proposed Development
Stanford - Erf 438
Sewer Master Plan