



15 February 2021

The Manager : Civil Engineering Services  
Drakenstein Municipality  
P. O. Box 1  
PAARL  
7620

**Attention: Mr Louis Pienaar**

Dear Sir

## **DEVELOPMENT OF PORTION 8 OF FARM 851, PAARL: CAPACITY ANALYSIS OF THE BULK WATER AND SEWER SERVICES**

This report replaces the previous bulk water and sewer capacity report for development on Farm 851/8, dated May 2018.

The request by Mr Simon Knutton from .kce Consulting regarding comments on the bulk water and sewer supply to the proposed development (proposed Drakenzicht development on portion 8 of Farm 851, Paarl), refers.

This document should inter alia be read in conjunction with the Water Master Plan (performed for the Drakenstein Municipality) dated June 2020 and the Sewer Master Plan dated June 2020.

Future development area PF12.2, which includes the proposed development area, was conceptually taken into consideration for the recently completed master plans for the water and sewer networks.

### **1. WATER DISTRIBUTION SYSTEM**

#### **1.1 *Distribution zone***

The master planning indicated that the proposed development should be accommodated in the existing Wemmershoek Road PRV zone. The connection to the existing system should be done to the 400 mm diameter pipe in Drakenstein Road, as shown on Figure 1 attached.

The development is situated inside the water priority area.

#### **1.2 *Water demand***

In the water master plan, the total annual average daily demand (AADD) for the proposed development area (future area PF12.2 in the July 2020 water master plan) was calculated at 950,0 kL/d. The AADD relevant to the proposed development on portion 8 of Farm 851 was calculated as 175,0 kL/d.

For this re-analysis, the total AADD and fire flows for the proposed development on portion 8 of Farm 851 was calculated as follows:

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• 205 Residential units @ 0,6 kL/d	=	123,0 kL/d
• 1 300 m <sup>2</sup> Lifestyle centre @ 0,4 kL/d/100m <sup>2</sup>	=	5,2 kL/d
• 180 Pupil school @ 100 L/d/pupil	=	<u>18,0 kL/d</u>
	Total	= 146,2 kL/d
• Fire flow criteria (Moderate risk)	=	25 L/s @ 10 m

### 1.3. Present situation

#### 1.3.1 Reservoir capacity

The existing Leliefontein reservoir has sufficient storage capacity to accommodate the proposed development.

#### 1.3.2 Reticulation system

The existing water reticulation network has sufficient capacity to accommodate the proposed development in order to comply with the pressure and fire flow criteria as set out in the master plan.

It is however proposed that the existing 400 mm Ø pipeline in Drakenstein Road is extended to the Wemmershoek Road and that a portion of the proposed 450 mm Ø pipeline along the Wemmershoek Road is implemented along the western boundary of Farm 851/8, as shown on Figure 1 attached.

#### 1.3.3 Static pressure

The static pressure at portion 8 of Farm 851 exceeds 90 m water head and a pressure reducing valve (PRV) is required on the water supply pipeline in Drakenstein Road in order to reduce the existing high static pressure along the pipeline.

### 1.4 Implementation of the master plan

The following master plan items will be required to reinforce the existing water system in order to accommodate the proposed development together with other future development areas.

#### Network upgrade

• DPW4.8	: 260 m x 400 mm Ø new supply pipe	R 1 091 000 *
• DPW4.10	: 730 m x 450 mm Ø new supply pipe	R 3 718 000 *
• DPW4.11	: 520 m x 450 mm Ø new supply pipe	R 3 703 000 *
• DPW4.23 <sup>1</sup>	: Upgrade PRV on existing 250 mm Ø pipe	<u>R 320 000 *</u>
	Total	R 8 832 000 *

(\* Including P & G, Contingencies and Fees, but excluding VAT - Year 2019/20 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.

<sup>1</sup> The PRV should be upgraded from a 80 mm Ø to a 200 mm Ø and the setting of the PRV should be adjusted to 27,5 m head (energy grade line = 165 m).

Provision should be made for a six (6) metre wide pipeline servitude (in favour of Drakenstein Municipality, at the cost of the developer) along the northern and western boundaries of the proposed development to accommodate master plan items DPW4.8 and DPW4.11 above.

The minimum requirements to accommodate the proposed development in the existing water system are link services item DPW4.23 to reduce the static pressure at the development and master plan items DPW4.8 & DPW4.11 to extend the existing water network along Drakenstein and Wemmershoek Roads.

## 2. SEWER NETWORK

### 2.1 Drainage area

The development falls within the Paarl rural bulk sewer drainage area. The recommended position for the sewer connection for the proposed development is at future outfall sewer DRS2.7, as shown on Figure 2 attached. From here sewage should gravitate through master plan items DRS2.7 & DRS2.1 towards the existing Paarl bulk sewer adjacent to the Berg River.

The development is inside the sewer priority area.

### 2.2 Sewer flow

In the recently completed sewer master plan, the peak day dry weather flow (PDDWF) for the proposed development area (future area PF12.2 in the June 2020 sewer master plan) was calculated at 665,0 kL/d. The PDDWF of the portion of development area PF12.2 relevant to the proposed development was calculated at 122,5 kL/d.

For this re-analysis, the peak day dry weather flow (PDDWF) for the proposed development on portion 8 of Farm 851 was calculated at 117,0 kL/d.

### 2.3 Present situation

There is currently no infrastructure between the proposed development and the existing sewer network.

The following master plan items will be required to connect the proposed development to the existing sewer system.

#### Network upgrades

• DRS2.1 : 1 380 m x 800 mm Ø new outfall sewer	R 19 000 000 *
• DRS2.7 : 208 m x 315 mm Ø new outfall sewer	R 7 000 000 *
Total	R 26 000 000 *

(\* Including P & G, Contingencies and Fees, but excluding VAT - Year 2019/20 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

#### Notes:

- The routes of the proposed pipelines are schematically shown on Figure 2, but have to be finalised subsequent to detail pipeline route investigations.
- Provision should be made for a servitude (in favour of Drakenstein Municipality, at the cost of the developer) to accommodate the portion of master plan items DRS2.7 & DRS2.17 that runs alongside the development area (master plan item DRS2.17 is the proposed 200 mm Ø rising main of Future PS R3, as shown on Figure 2 attached, in order to service potential future areas to the south of the proposed development).
- The minimum requirements to accommodate the proposed development on portion 8 of Farm 851 in the existing sewer system are master plan items DRS2.1 & DRS2.7.

### 3. CONCLUSION

The developer of portion 8 of Farm 851 in Paarl may be liable for the payment of a Development Contribution (as calculated by the Drakenstein 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 item DPW4.23 should however be implemented in order to reduce high static pressure at the development and master plan items DPW4.8 & DPW4.11 to extend the existing water network along Drakenstein and Wemmershoek Roads.

There is currently no sewer infrastructure between the proposed development and the existing sewer reticulation system.

The minimum requirements to accommodate the proposed development on portion 8 of Farm 851 in the existing sewer system are link service items DRS2.1 & DRS2.7.

Also find attached hereto Appendix A which includes general notes from Drakenstein Municipality regarding development approvals and conditions.

We trust that you find this of value.

Yours sincerely

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Per: PC DU PLESSIS

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Attention: Mr Simon Knutten

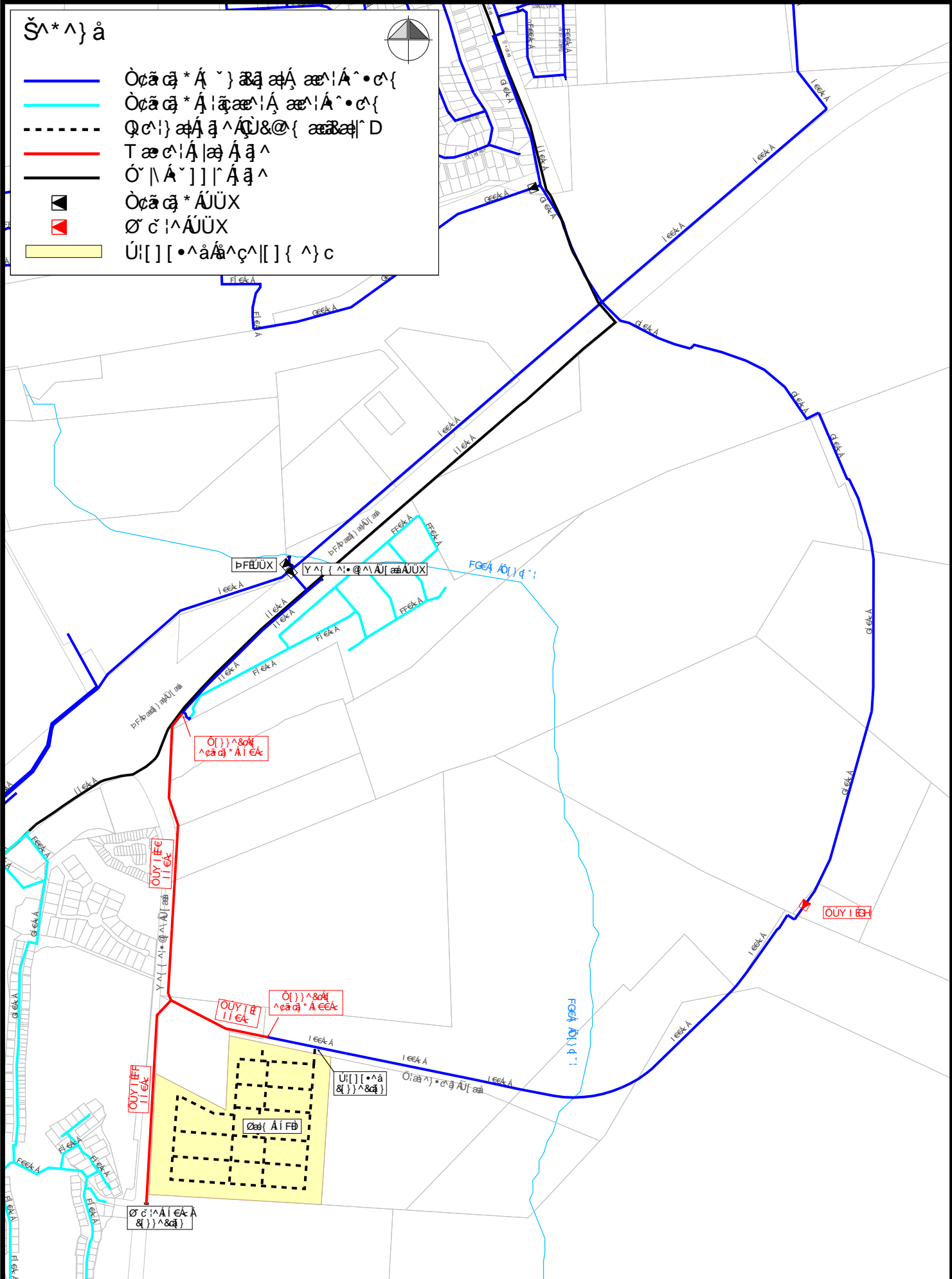
**GENERAL NOTES FROM DRAKENSTEIN MUNICIPALITY ATTACHED TO GLS SERVICES REPORT**

1. The GLS report is a services capacity report and the costs estimated in this report are only approximate values applicable at the time of the study.
2. Should the development be approved by Council the approval will be linked to certain development conditions. These conditions will be the official conditions applicable to the project and will take precedence over this report. Once approval is granted, Council will enter into a formal services agreement with the developer.
3. Costs for network upgrades, etc. As mentioned in the GLS report could change from time to time due to escalation, new tariff structures, additional requirements etc.
4. The Developer may be liable to pay a Development Contribution as per Council policy. The value payable will be calculated using Drakenstein Municipality's Development Contribution Calculator.
5. The Development Contribution monies are calculated according to the approved Council Policy at the time of payment.
6. The Development Contribution monies are payable before the approval of the building plan certificate or final approval of the subdivision for the transfer of units will be issued, as applicable for the type of development.
7. Where servitudes are required, all the costs and arrangements therefore will be for the developer's account.
8. The developer will be solely responsible for the cost of the link services as identified in the GLS report. The developer will also be responsible for the costs of upgrading to the minimum requirements of the services as identified in the GLS report. These costs may however be off-set against the Development Contribution monies payable
9. If the developer is requested to provide bridging finance for the development, the outstanding amount will be repaid within a five year period at an interest rate determined by the Head: Finance of Drakenstein Municipality.
10. The above conditions are subject to any approved Council policies, which may be amended from time to time.

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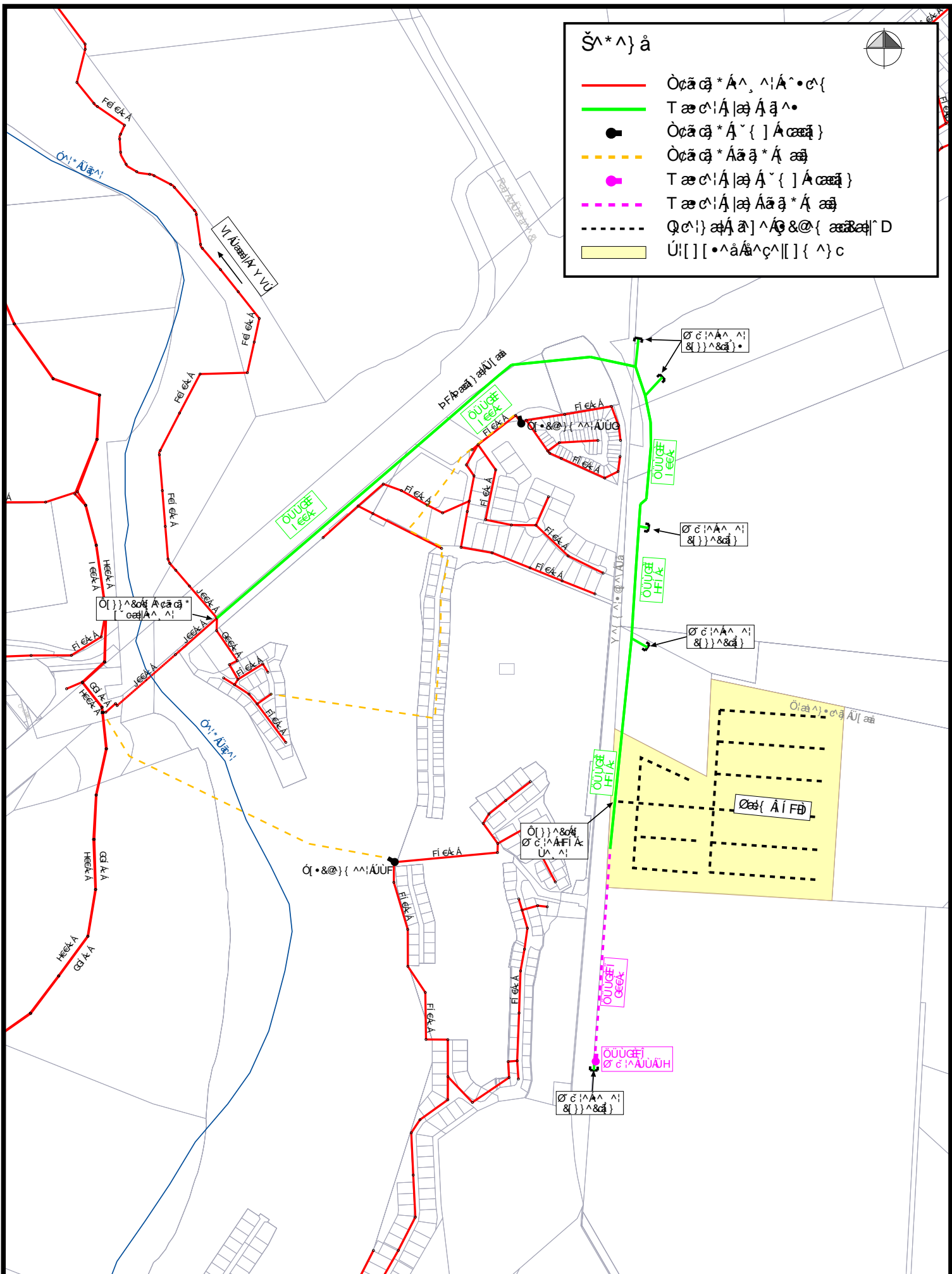


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