



27 February 2019

Chief Engineer: Water Services Planning

City of Ekurhuleni

P O Box 215

BOKSBURG

1460

Attention: Mr. Lubabalo Matakane

Dear Sir,

PROPOSED HOUSING DEVELOPMENT ON A PART OF A PORTION OF PORTION 20 OF THE FARM VLAKFONTEIN 130-IR (LANGAVILLE X12) - BRAKPAN: ASSESSMENT OF IMPACT ON SEWER SYSTEM AND REQUIRED WORKS

As requested by MDCC (Pty) Ltd we have investigated the capacity of the sewer system to drain the proposed development located on the abovementioned property and comment as follows:

1. EXTENT OF DEVELOPMENT

As indicated in the information provided to us, the proposed development will comprise of the following land use distribution:

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Directors: Z Mayet, JJ Streicher, HA Baartman, MS Mokgosi

Land use	Number of stands/units	Total site area (ha)	% of Township
Residential 2	782	11.13	35.92
Residential 4	619	7.74	24.98
Community Facility	3	0.37	1.19
Public Open Space	8	2.93	9.45
Roads	-	8.82	28.46
Total	-	30.99	100

The location and layout of existing sewer services in the vicinity of the site are indicated in Figure A included herewith. The current sewer drainage areas of the area under discussion are indicated in Figure B. We confirm that the site is located within the urban development boundary, as defined in the 2010/2011 Metropolitan Spatial Development Framework (MSDF).

We furthermore confirm that provision was made for the proposed development in the South East sewer master plan. The development's anticipated sewage flow (as calculated below) correlates well with the future sewage flow that was allowed for in the master plan. Therefore, no updating of the master plan will be required.

2. SEWER SYSTEM

2.1 Sewage flow:

The total water demand and resulting sewage flow for the proposed development is estimated as follows:

Description	Unit	Qty	Unit demand (kL/day)	Total (kL/day)
Residential 2	No.	782	0.51	398.8
Residential 4	No.	619	0.51	315.7
Community Facility	ha	0.37	12.75	4.7
SUB-TOTAL				719.2 kL/day
PLUS UAW (15% OF TOTAL AADD)				126.9 kL/day
TOTAL AVERAGE DEMAND (AADD)				846.2 kL/day
AVERAGE DAILY DRY WEATHER SEWAGE FLOW (ADDWF)				550.0 kL/d
PEAK DAILY DRY WEATHER SEWAGE FLOW				12.7 L/s

The unit water demand for each unit of development was combined with a unique sewer unit hydrograph for the specific land use (derived over history for the flow pattern of similar types of developments) and yielded a peak dry weather sewage flow of approximately 12.7 L/s for the development.

2.2 Existing Sewer Services, Proposed Connection Points and Proposed Upgrading

Drainage areas (See Figure B)

The proposed development does not fall within any of the existing Ekurhuleni sewer drainage areas. However, the development can be incorporated into the area draining directly under gravity to the CE Grundlingh WWTP.

Certain changes in sewer drainage area boundaries are foreseen between the current- and future drainage scenarios that will affect the proposed development. These changes entail the ultimate phasing out of the CE Grundlingh WWTP by means of a new gravity sewer draining into the Bickley WWTP drainage area. ERWAT is also currently considering the alternative of

retaining the CE Grundlingh WWTP, capping the plant at its full design capacity and bypassing all additional sewage flow down the future planned gravity bulk outfall sewer towards the Bickley WWTP.

The exact timeline as to when the above boundary changes will commence is unknown at this stage.

Sewage pump station capacities

No existing or future planned municipal sewage pump stations are affected by the proposed development.

Main outfall sewers

Existing main outfall sewers:

With the incorporation of the additional sewage flow from the proposed development into the existing system, none of the effected downstream outfall sewers will experience spare capacities below the minimum requirement of 30%. However, the portion of 300Ø Kwa Thema to Grundlingh bulk outfall sewer, downstream of the point of diameter reduction from 375Ø to 300Ø, will experience spare capacities close to the minimum requirement of 30%. We therefore recommend the implementation of masterplan items MP – GR2.6 and GR2.8 be prioritized for upgrading in the short to medium term.

The City of Ekurhuleni has appointed a consultant to conduct the feasibility study and preliminary design of masterplan project MP – GR2, the upgrading of the Kwa Thema to Grundlingh bulk outfall sewers. The abovementioned upgrading is not a requirement for the proposed development to proceed.

Future planned main outfall sewers:

No future planned main outfall sewers are required for the development to proceed.

Network sewer pipes and connection to existing system

The recommended connection point to the existing sewer system is to the existing 315Ø sewer near the intersection of the Dunnottar-Springs Road and Wentzel Street, at position A as indicated in Figure A.

The following collector sewers are required to adequately drain the proposed development, as well as future developments draining via the proposed collector sewer, as indicated in Figure A:

- Approximately 200 m of 250Ø sewer pipe draining from the low point of the proposed development site across the M63 to the east
- Approximately 1 000 m of 250Ø sewer pipe routed parallel to the K136.10 road servitude in a south easterly direction*
- Approximately 500 m of 315Ø sewer pipe routed parallel to the K136.10 road servitude and crossing the Dunnottar-Springs Road to the connection point at position A*

With the above connection in place we confirm that none of the affected network sewers downstream of the development will experience a decrease in spare capacity to below the minimum requirement of 30% spare capacity.

Due to the cadastral layout and the general topography of the area provision has to be made for any further future developments to drain through the site, at positions B and C as indicated in Figure A. Further provision for the draining of future developments is required on the 250/315Ø collector sewer connecting the proposed development to the existing system. (Refer to Figure A)

** Note: Routing of pipelines in K-route road reserves, parallel to the road, is avoided as far as possible. However, in certain circumstances the requirement of pipe parallel to the road is unavoidable, in which case we propose that the City of Ekurhuleni register a servitude in the stands which border the road reserve. Should this not be possible due to built-up stands, an alternative can be investigated. Furthermore, the pipe routing as indicated in Figure A is not final and subject to change at the discretion of the detail design consultants.*

Wastewater treatment plants

CE Grundlingh WWTP:

The CE Grundlingh WWTP currently has a treatment capacity of 5 ML/day. The current measured dry weather inflow into the plant is approximately 3 ML/day with the current measured wet weather inflow reaching volumes of up to 4 ML/day. Therefore the plant has sufficient spare capacity available to accommodate the additional flow.

3. DEVELOPER CONTRIBUTIONS TO CONSTRUCTION / UPGRADING OF INFRASTRUCTURE

GLS hereby confirms that any contributions of the developer to the required construction of infrastructure and/or the upgrading of the existing infrastructure, whether it be in the form of a cash contribution, or in the form of constructing sections of new infrastructure, is a matter to be discussed and agreed upon between the developer and the City of Ekurhuleni (CoE).

4. SUMMARY RECOMMENDATIONS

In summary we comment as follows:

- The proposed development does not fall within any of the existing Ekurhuleni sewer drainage zones, however, the proposed development can be incorporated into the area draining directly under gravity to the CE Grundlingh WWTP
- No upgrading to any network- or bulk outfall sewers or sewage pump stations is required for the development to proceed
- The recommended connection point to the existing sewer system is to the existing 315Ø sewer near the intersection of the Dunnottar-Springs Road and Wentzel Street, at position A as indicated in Figure A, via the proposed collector sewers of 250/315Ø as detailed in the report above
- Due to the cadastral layout and the general topography of the area provision has to be made for any further future developments to drain through the site, at position B and C as indicated in Figure A. Further provision for the draining of future developments is required on the 250/315Ø collector sewer connecting the proposed development to the existing system. (Refer to Figure A)

We trust you will find the above sufficient in terms of your request. Should you have any further queries, please do not hesitate to contact us. The contact person regarding the above is Mark Hoppe.

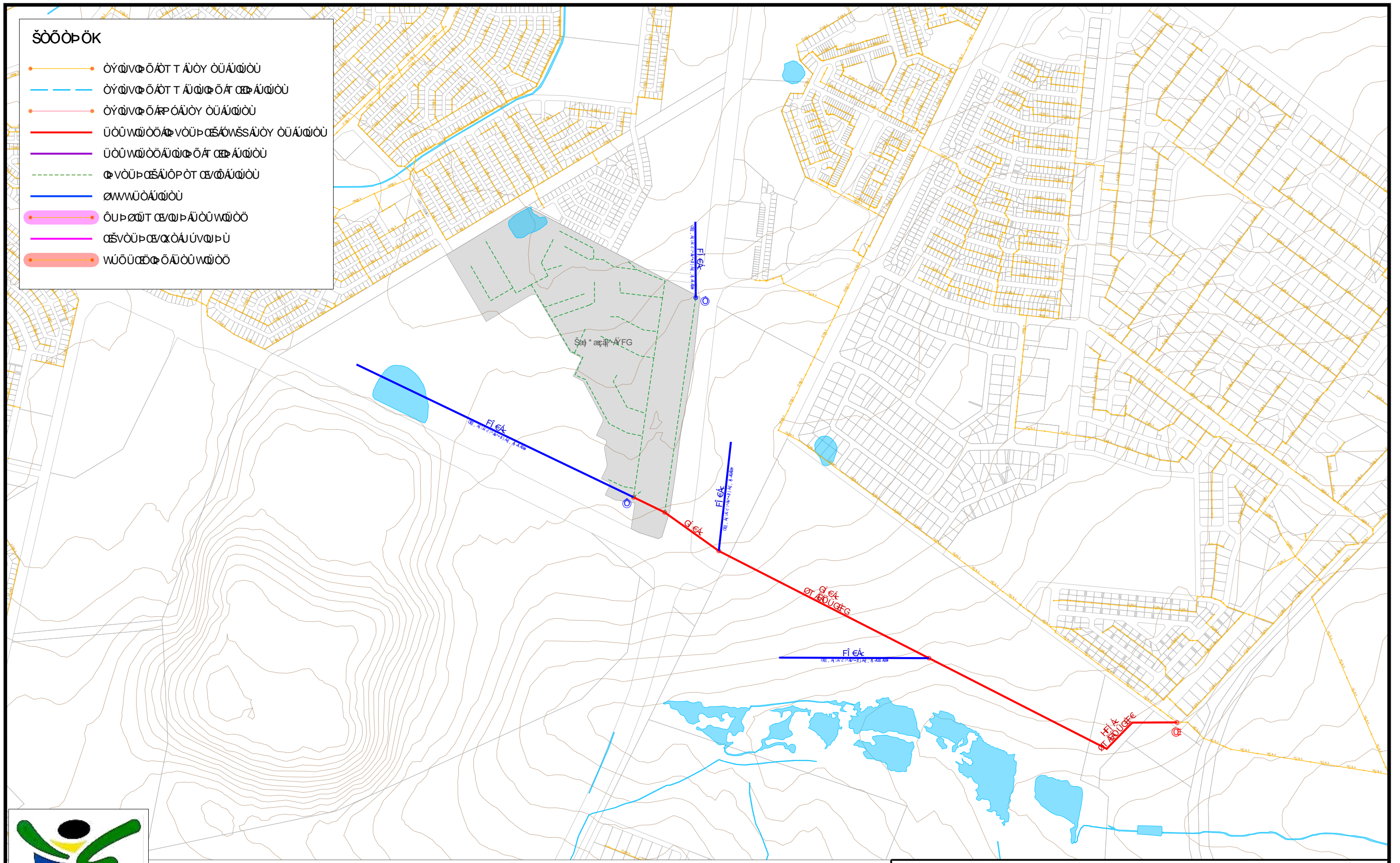
Yours sincerely,
GLS CONSULTING



Per: JL (LOUIS) STRIJDOM

ΣΧΕΔΙΟ

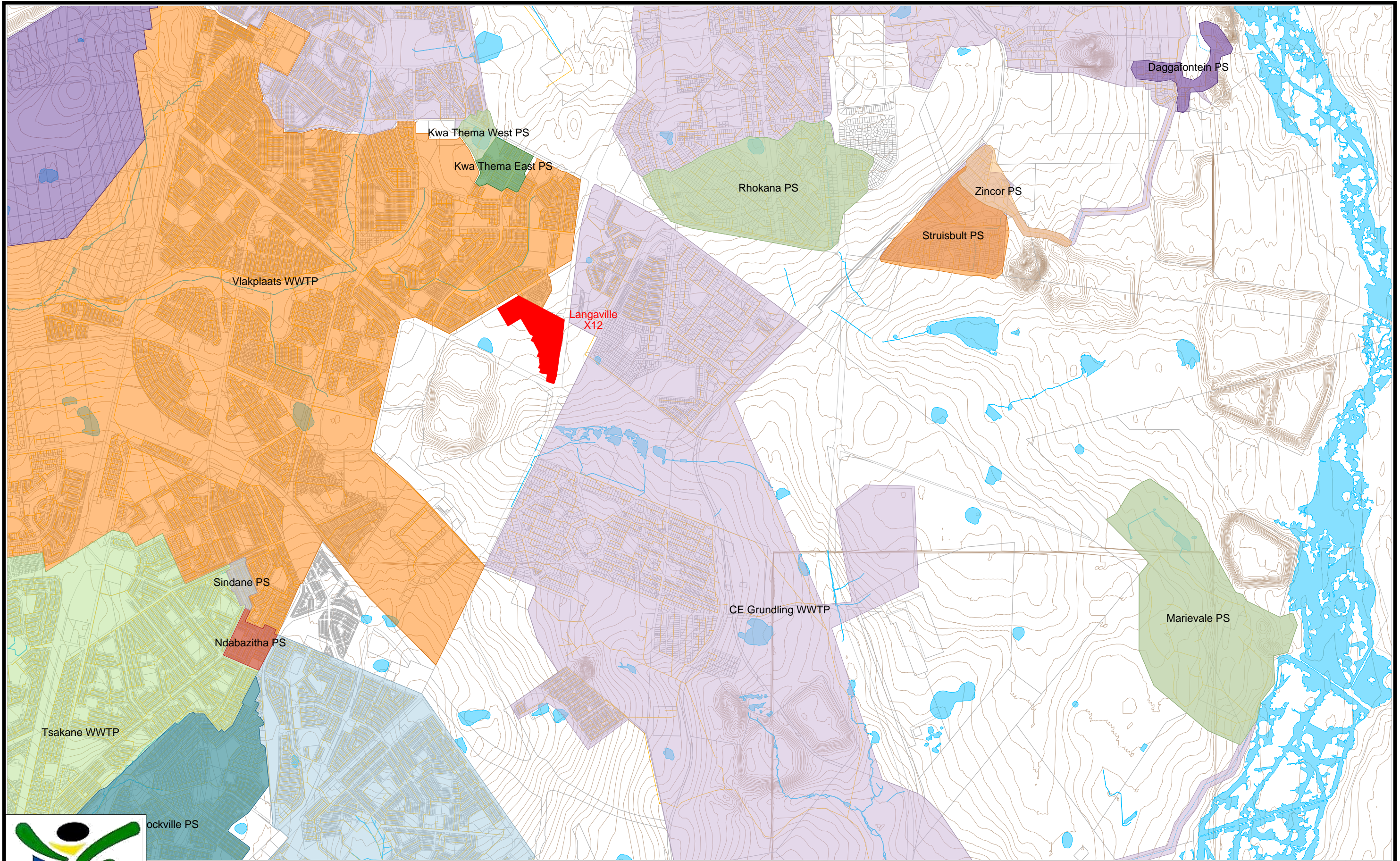
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 Ad Hoc Sewer Capacity Investigation
 Langaville X12 - Brakpan



Figure B
 Layout and location of existing sewer
 drainage areas