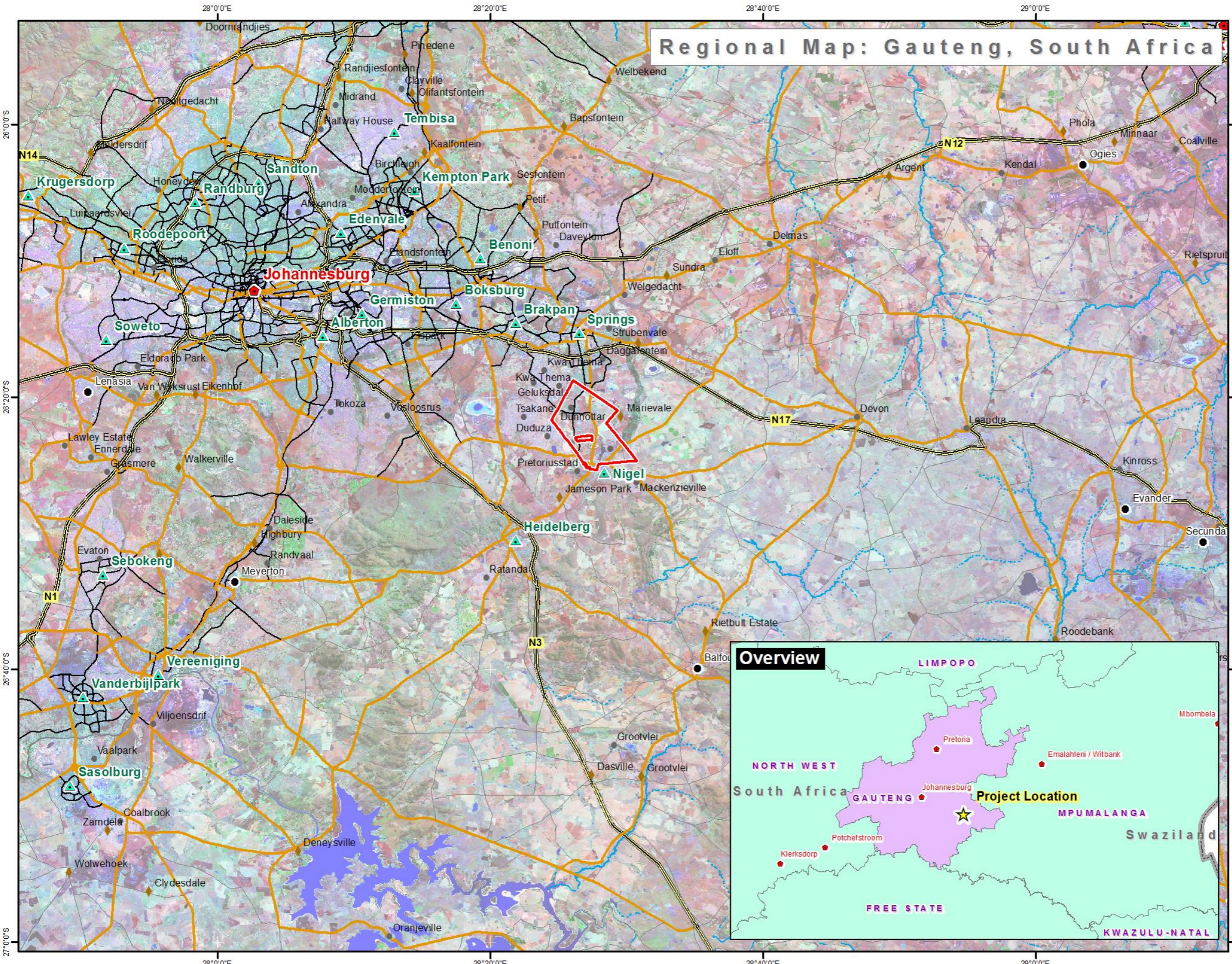


# Regional Map: Gauteng, South Africa



## Legend

- Project Boundary
- ◆ Capital City
- ▲ Major Town
- Secondary Town
- Other Town
- ◆ Settlement
- National Road
- Arterial Road
- Main Road
- Secondary Road
- Rivers**
- Perennial
- Non-Perennial



Project:

## Kwa-Thema to Grundligh Sewage Pipeline



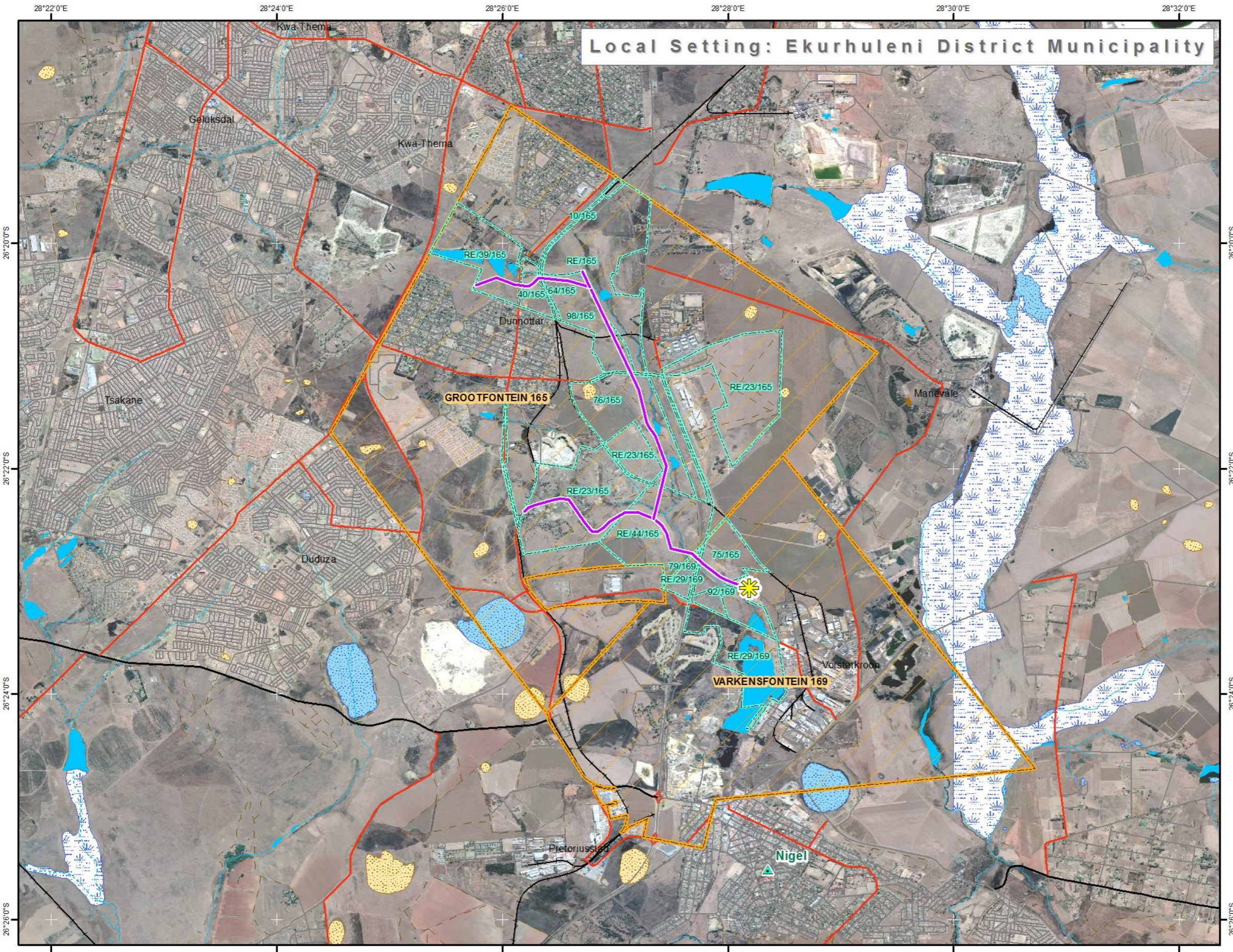
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**Datum:**  
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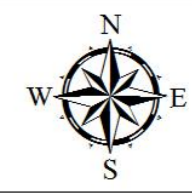
**Date:**  
 24 August 2018  
**Drafted:**  
 C Fourie

Local Setting: Ekurhuleni District Municipality



Legend

- Proposed Pipeline Route
- Grundligh Water Treatment Plant
- Major Town
- Other Town
- Settlement
- Secondary Road
- Main Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Perennial Pan
- Non-Perennial Pan
- Dam
- Wetland
- Farm Portions
- Farms

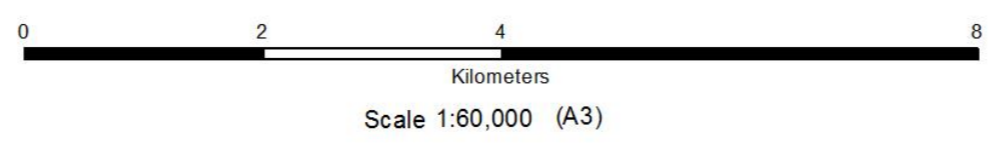


Project:

**Kwa-Thema to Grundligh Sewage Pipeline**

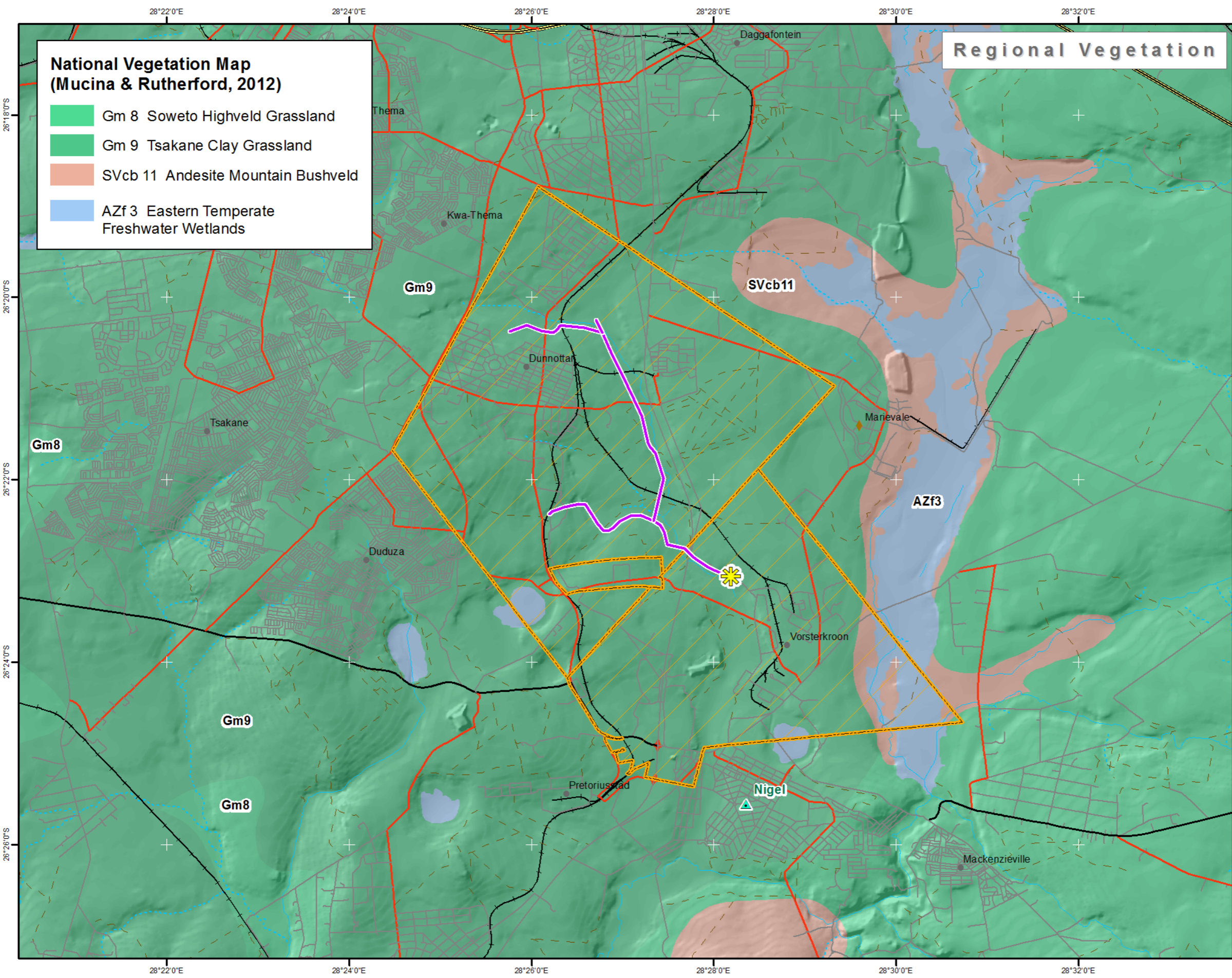
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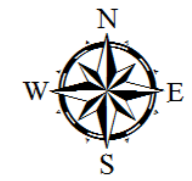
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**Date:**  
 28 August 2018  
**Drafted:**  
 C Fourie



**Legend**

- Proposed Pipeline Route
- Grundligh Water Treatment Plant
- Major Town
- Other Town
- Settlement
- National Road
- Secondary Road
- Main Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Farms



Project:

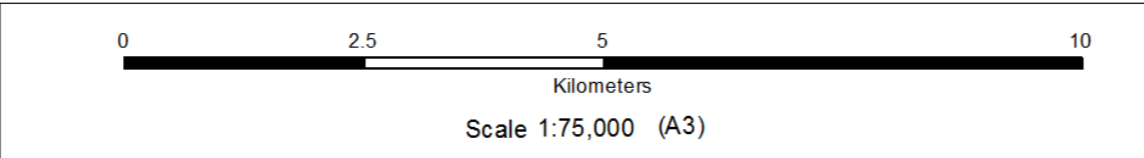
**Kwa-Thema to Grundligh Sewage Pipeline**

Client:

Muny Consultants

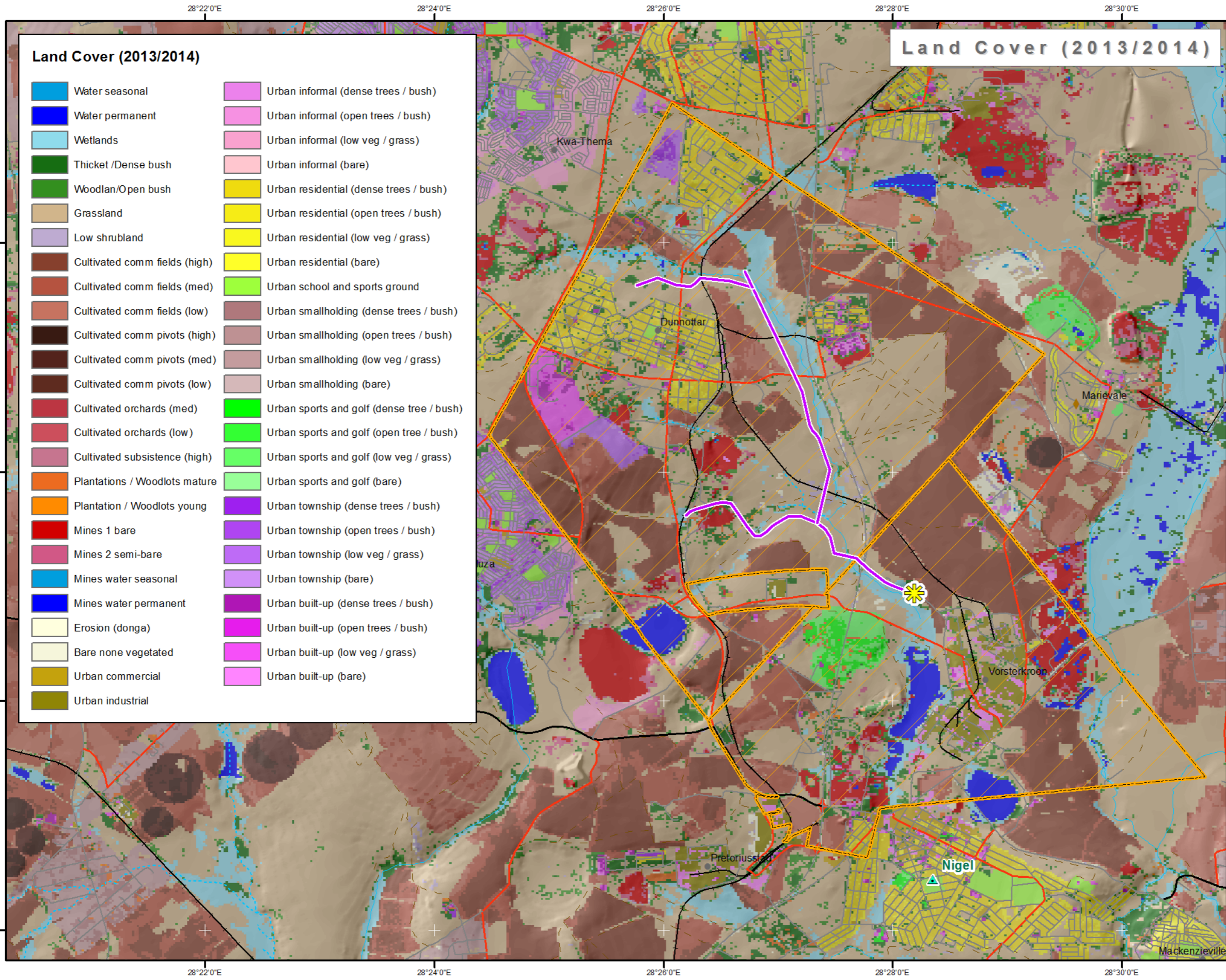
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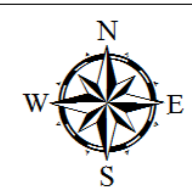


**Coordinate System:**  
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**Unit:** Degree

**Date:**  
28 August 2018  
**Drafted:**  
C Fourie



- Legend**
- Proposed Pipeline Route
  - Grundligh Water Treatment Plant
  - Major Town
  - Other Town
  - Settlement
  - Secondary Road
  - Main Road
  - Arterial Road
  - Track
  - Railway
  - Perennial River
  - Non-Perennial River
  - Farms



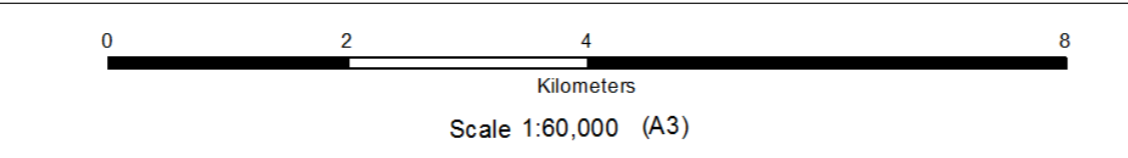
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## Kwa-Thema to Grundligh Sewage Pipeline

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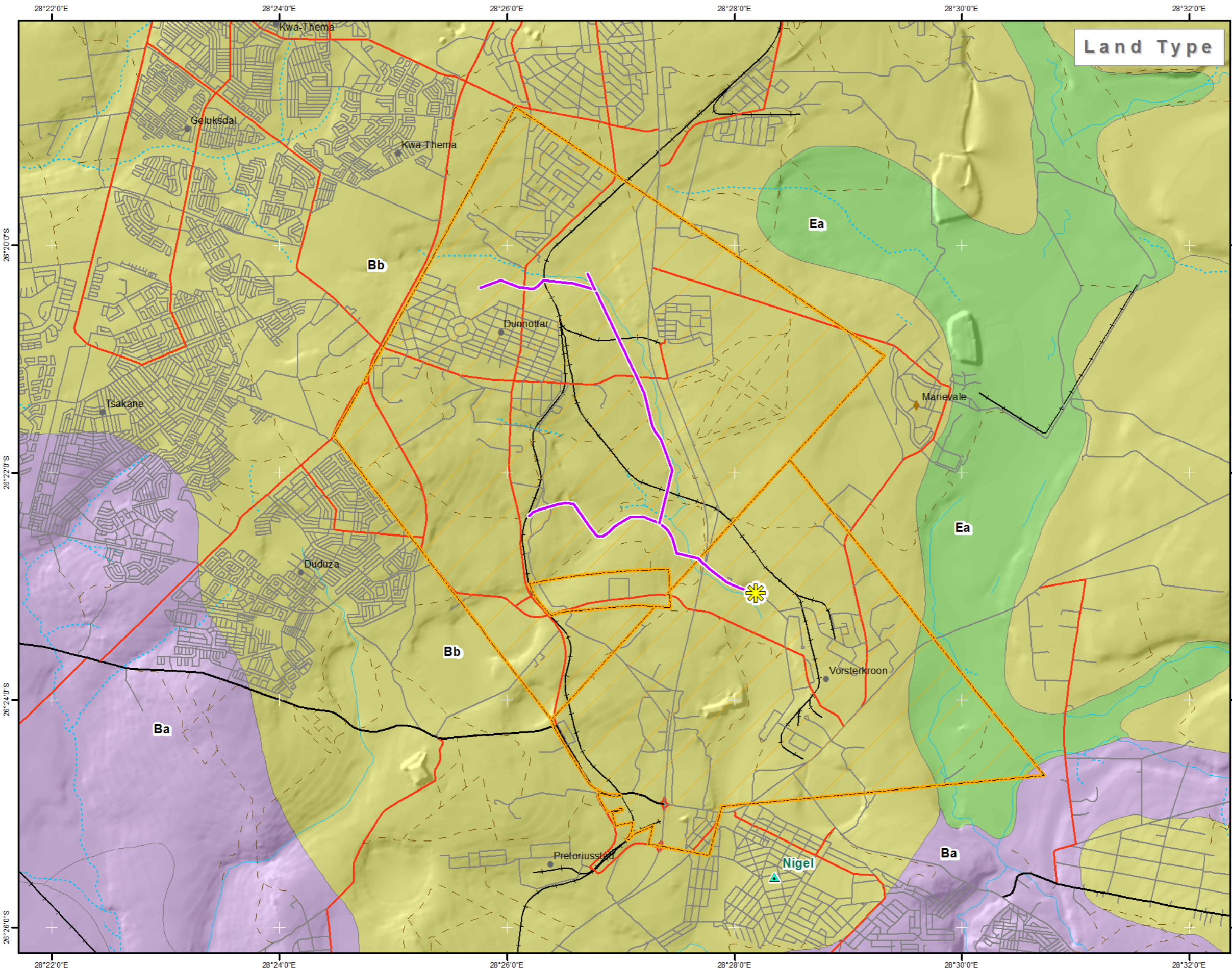
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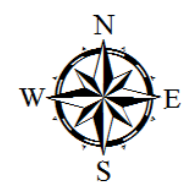
**Date:**  
 28 August 2018  
**Drafted:**  
 C Fourie



Land Type

### Legend

- Proposed Pipeline Route
- Grundligh Water Treatment Plant
- Major Town
- Other Town
- Settlement
- Secondary Road
- Main Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Farms
- Land Type**
- Ba
- Bb
- Ea



Project:

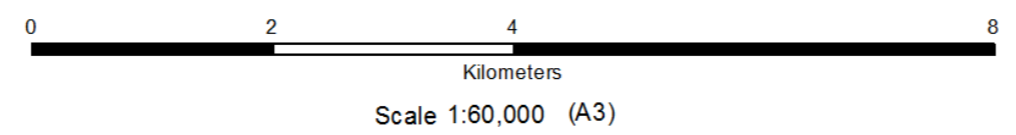
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Client:



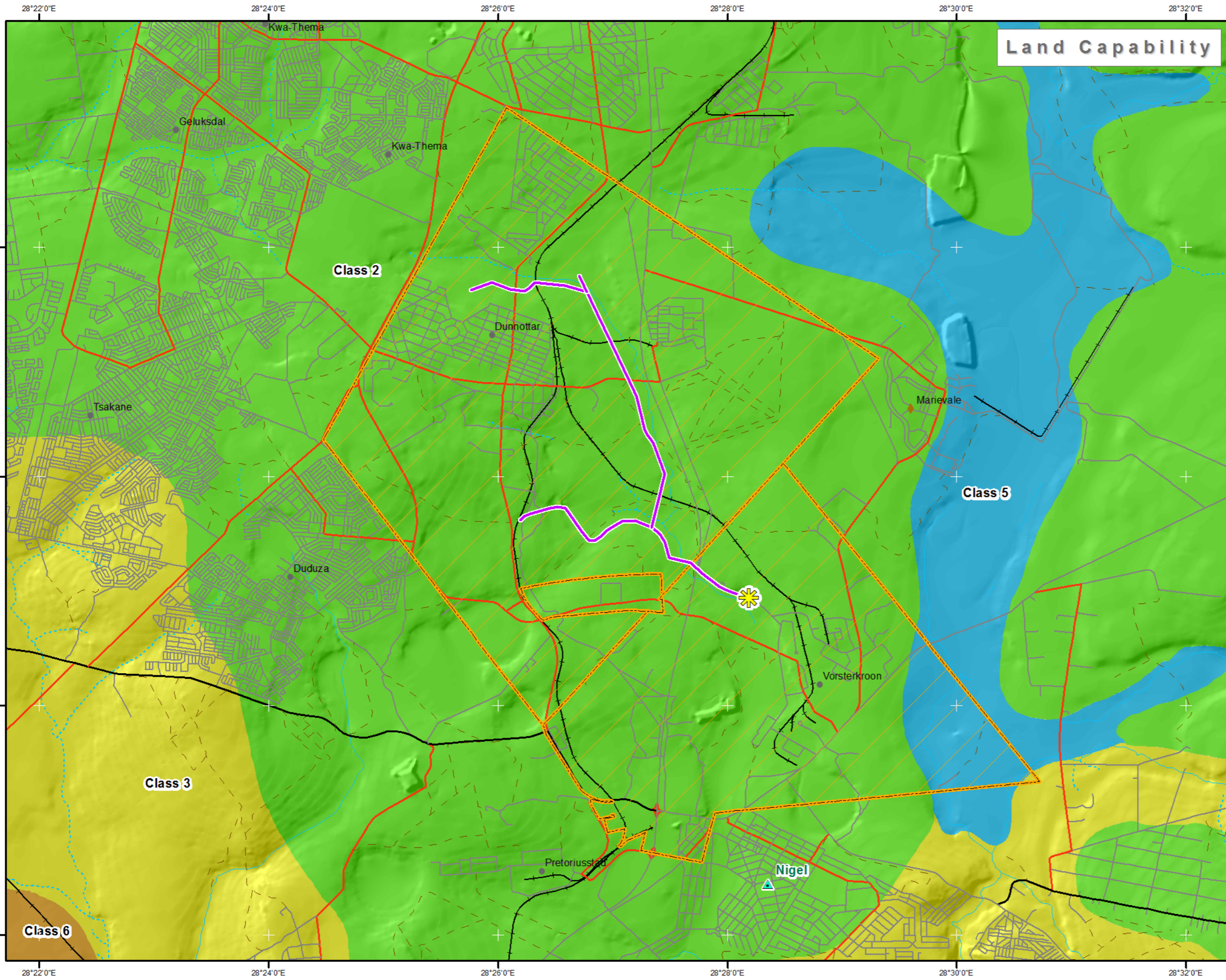
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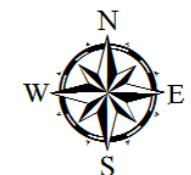
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**Unit:** Degree

**Date:**  
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**Drafted:**  
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### Legend

- Proposed Pipeline Route
  - Grundligh Water Treatment Plant
  - Major Town
  - Other Town
  - Settlement
  - Secondary Road
  - Main Road
  - Arterial Road
  - Track
  - Railway
  - Perennial River
  - Non-Perennial River
  - Farms
- Land Capability**
- Class 2 - Intense Cultivation
  - Class 3 - Moderate Cultivation
  - Class 5 - Wetland
  - Class 6 - Moderate Grazing



Project:

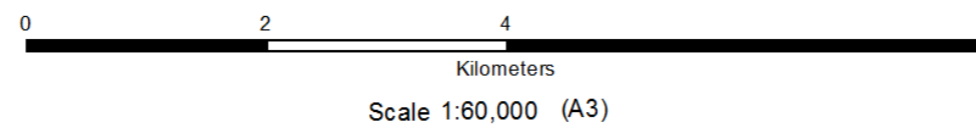
## Kwa-Thema to Grundligh Sewage Pipeline

Client:



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**Drafted:**  
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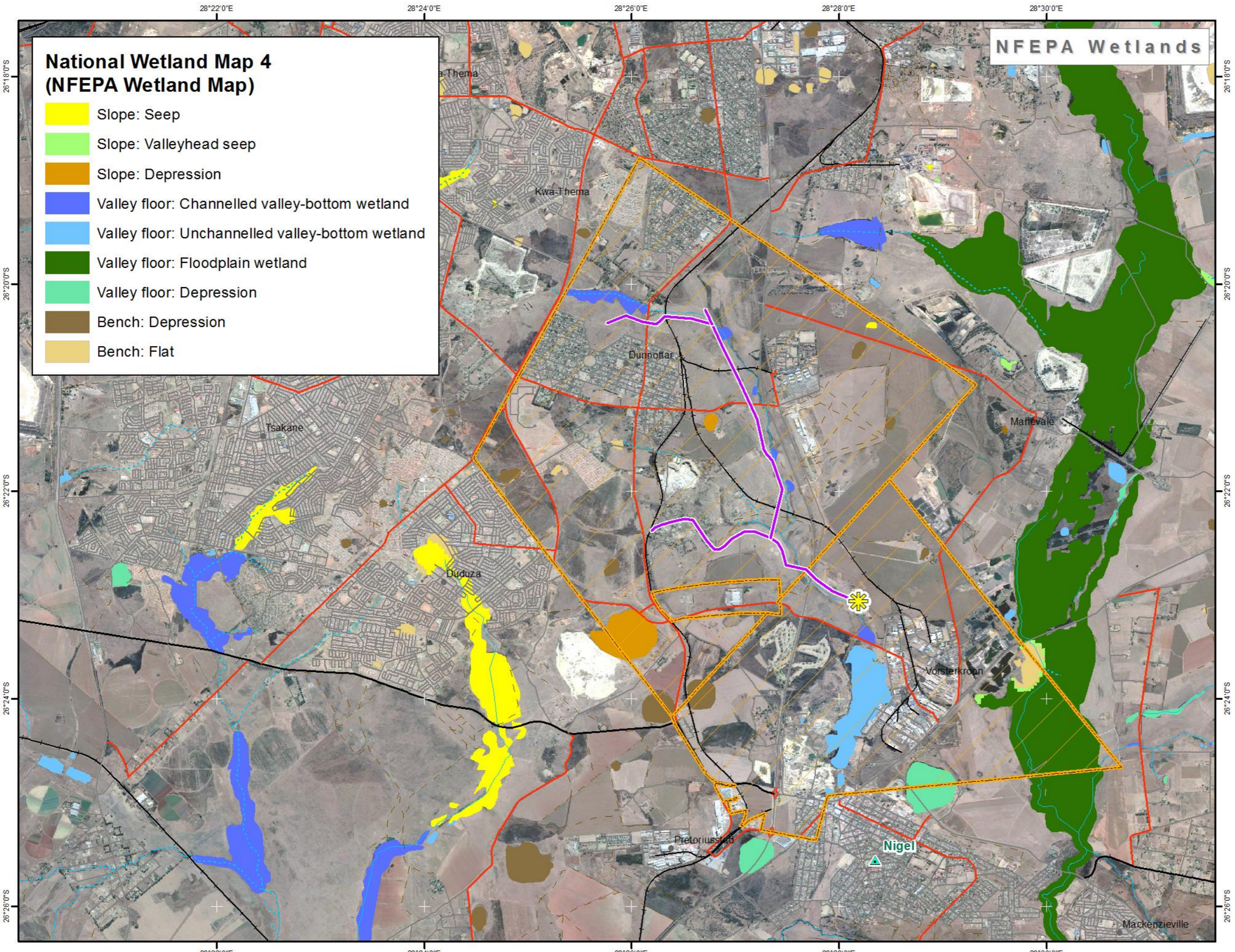
### National Wetland Map 4 (NFEPA Wetland Map)

- Slope: Seep
- Slope: Valleyhead seep
- Slope: Depression
- Valley floor: Channelled valley-bottom wetland
- Valley floor: Unchannelled valley-bottom wetland
- Valley floor: Floodplain wetland
- Valley floor: Depression
- Bench: Depression
- Bench: Flat

### NFEPA Wetlands

### Legend

- Proposed Pipeline Route
- Grundligh Water Treatment Plant
- Major Town
- Other Town
- Settlement
- Secondary Road
- Main Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Farms



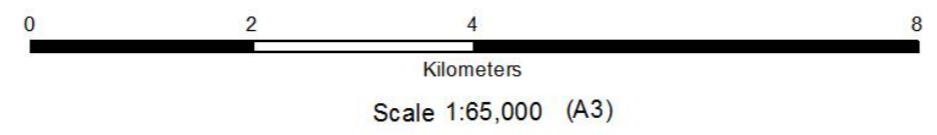
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## Kwa-Thema to Grundligh Sewage Pipeline

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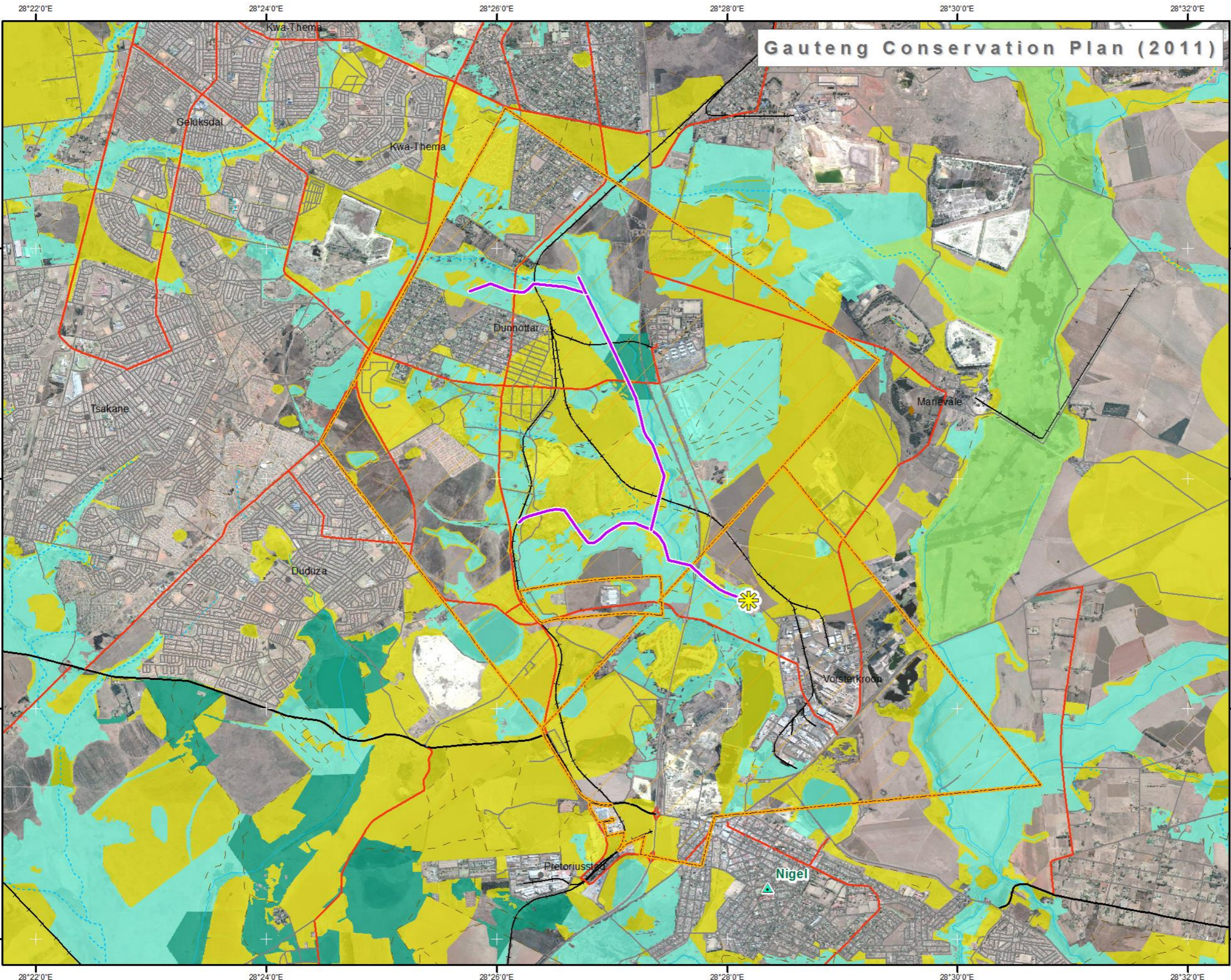


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**Drafted:**  
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**Gauteng Conservation Plan (2011)**

**Legend**

- Proposed Pipeline Route
  - Grundligh Water Treatment Plant
  - Major Town
  - Other Town
  - Settlement
  - Secondary Road
  - Main Road
  - Arterial Road
  - Track
  - Railway
  - Perennial River
  - Non-Perennial River
  - Farms
- Conservation Plan (2011)**
- Protected Area
  - Irreplaceable Area
  - Important Area
  - Ecological Support Area



Project:

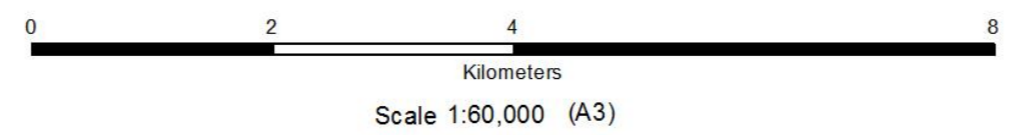
**Kwa-Thema to Grundligh Sewage Pipeline**

Client:



**DISCLAIMER**

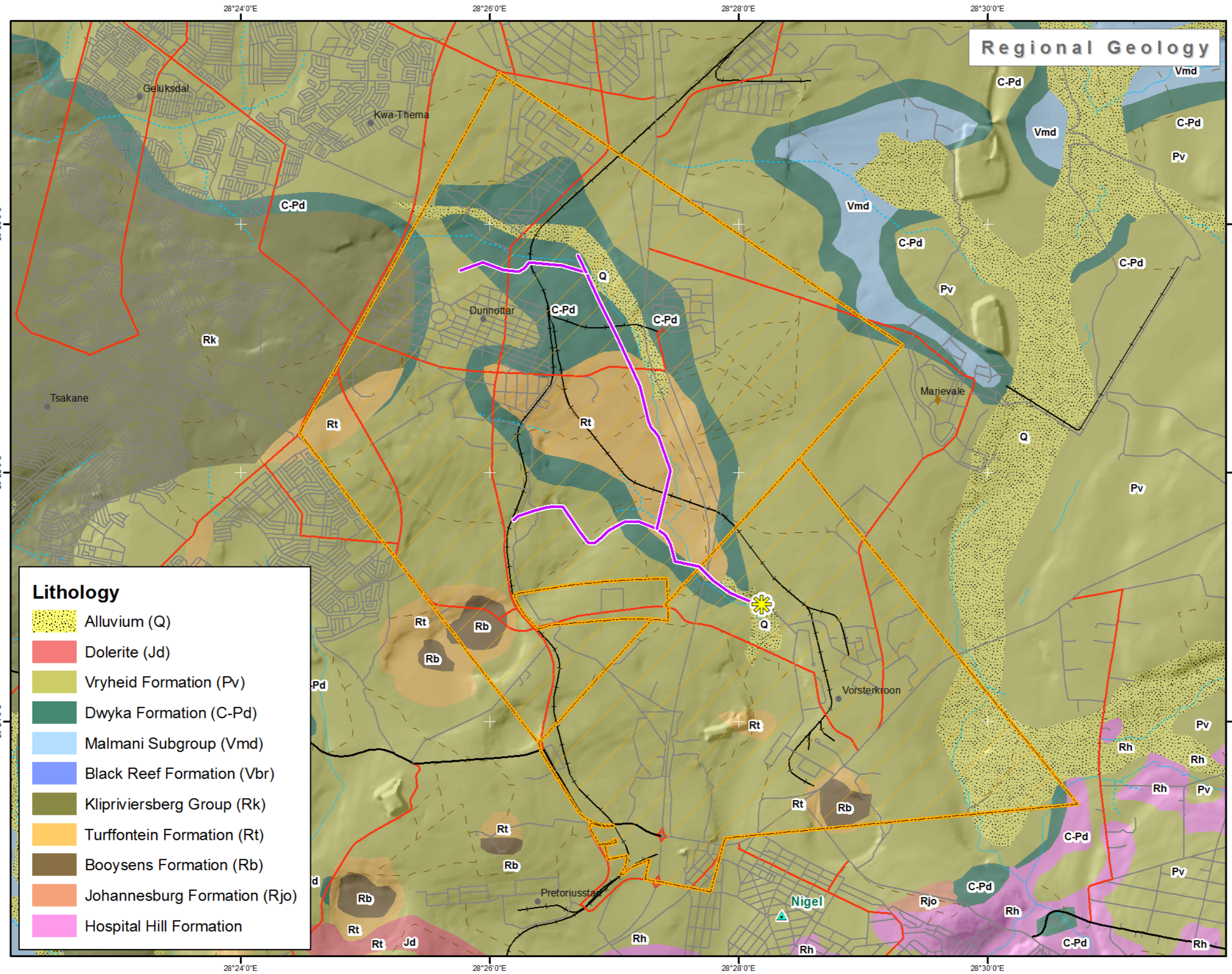
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**Date:**  
28 August 2018  
**Drafted:**  
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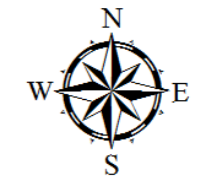
**Regional Geology**

**Legend**

- Proposed Pipeline Route
- Grundligh Water Treatment Plant
- Major Town
- Other Town
- Settlement
- Secondary Road
- Main Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Farms

**Lithology**

- Alluvium (Q)
- Dolerite (Jd)
- Vryheid Formation (Pv)
- Dwyka Formation (C-Pd)
- Malmani Subgroup (Vmd)
- Black Reef Formation (Vbr)
- Klipriviersberg Group (Rk)
- Turffontein Formation (Rt)
- Booyens Formation (Rb)
- Johannesburg Formation (Rjo)
- Hospital Hill Formation



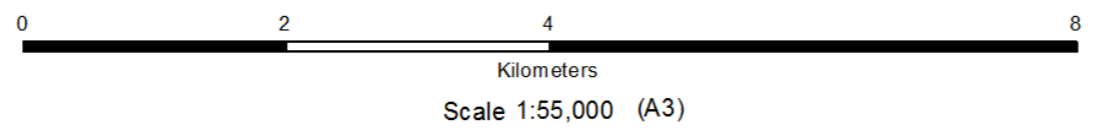
Project:

**Kwa-Thema to Grundligh Sewage Pipeline**

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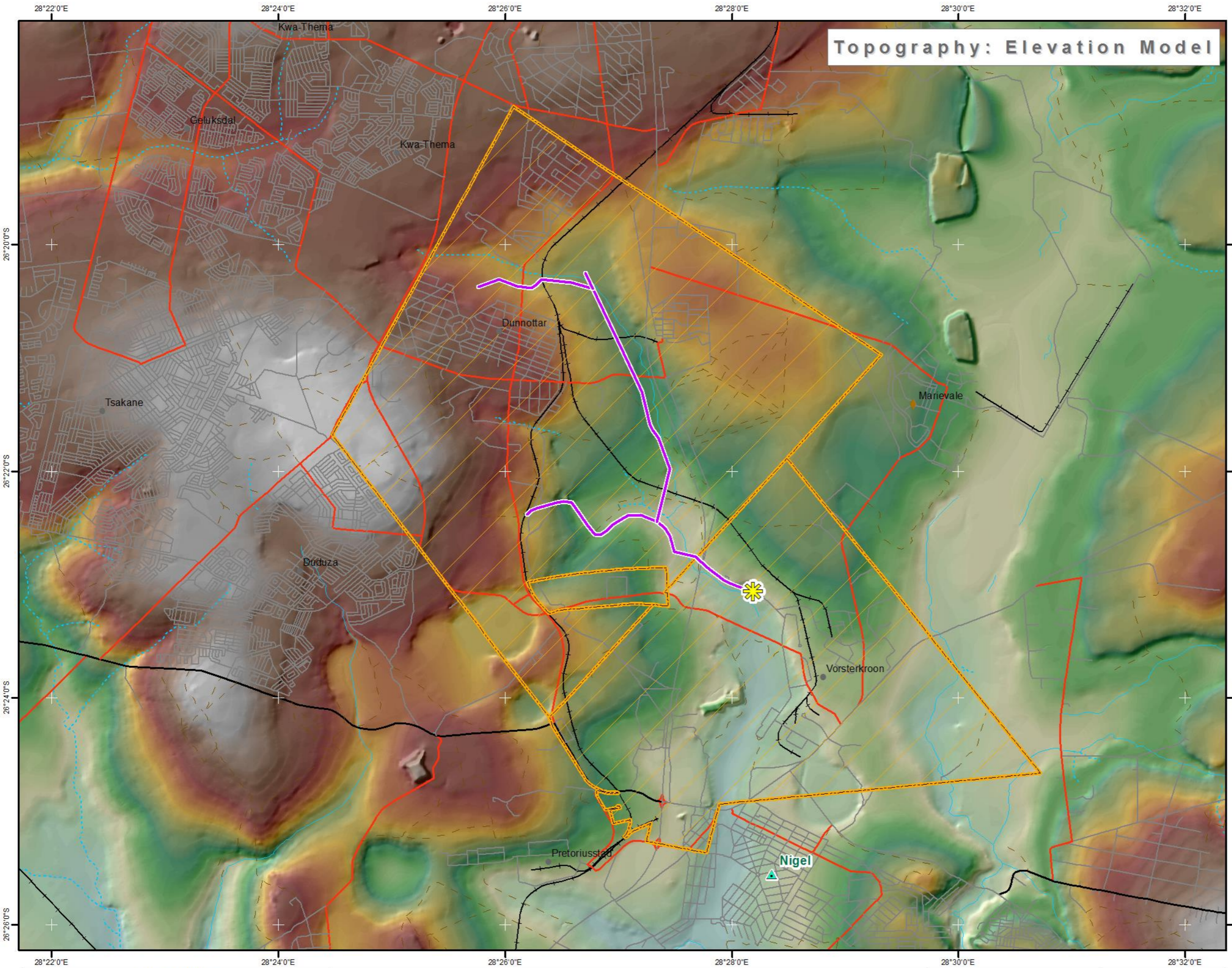


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**Legend**

- Proposed Pipeline Route
  - Grundligh Water Treatment Plant
  - Major Town
  - Other Town
  - Settlement
  - Secondary Road
  - Main Road
  - Arterial Road
  - Track
  - Railway
  - Perennial River
  - Non-Perennial River
  - Farms
- Digital Elevation Model**  
(Metres Above Mean Sea Level)
- High : 1661.83
  - Low : 1538.1



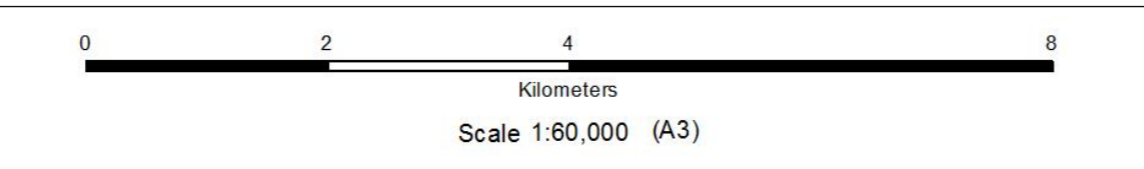
Project:

**Kwa-Thema to Grundligh Sewage Pipeline**

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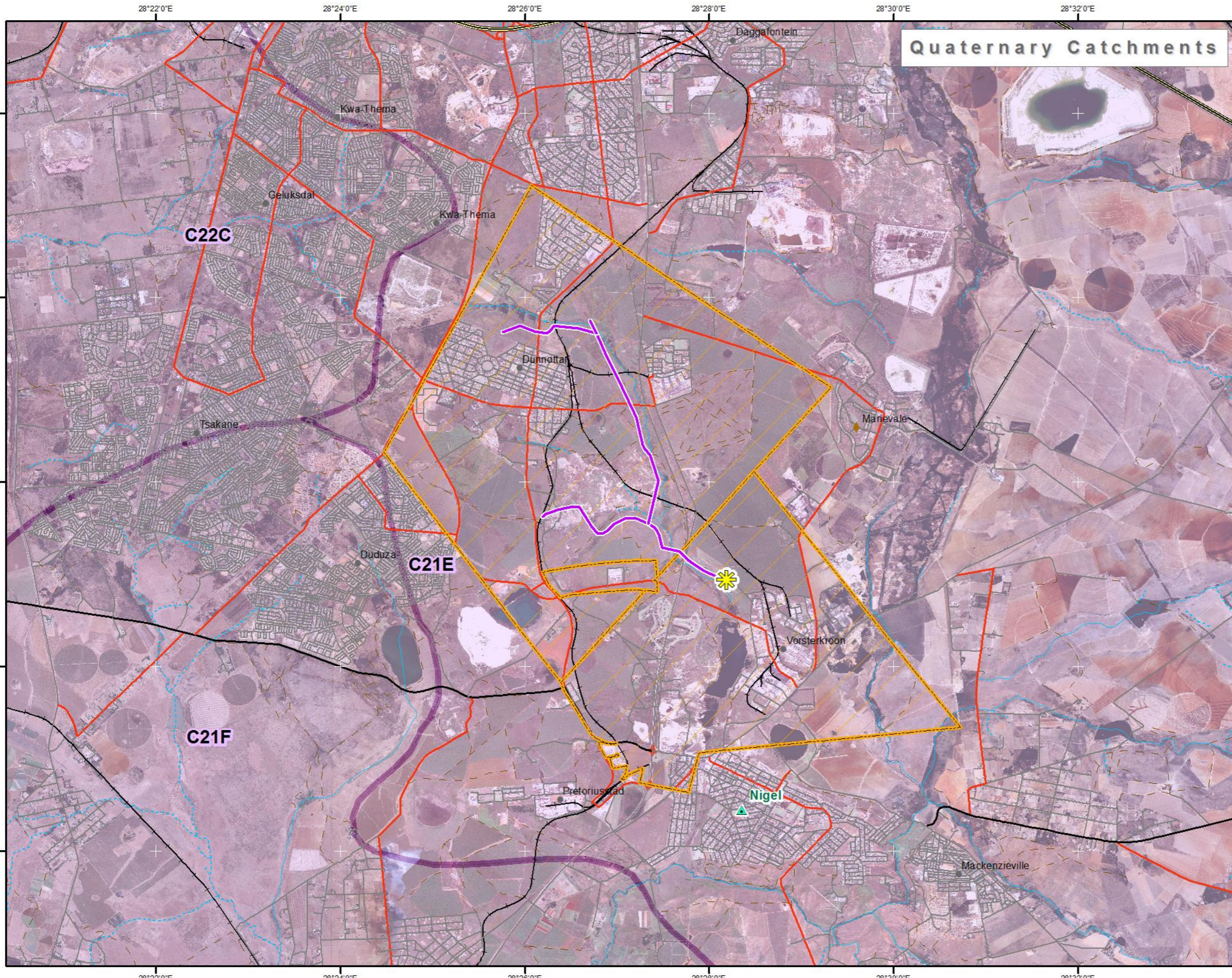


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**Quaternary Catchments**

**Legend**

-  Proposed Pipeline Route
-  Grundligh Water Treatment Plant
-  Major Town
-  Other Town
-  Settlement
-  National Road
-  Secondary Road
-  Main Road
-  Arterial Road
-  Track
-  Railway
-  Perennial River
-  Non-Perennial River
-  Farms
-  Quaternary Catchments



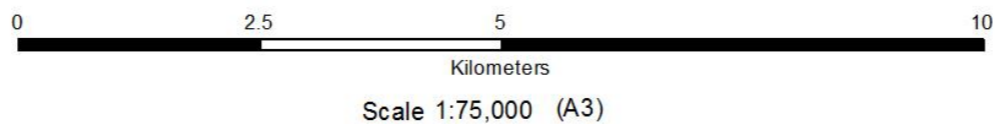
Project:

**Kwa-Thema to Grundligh Sewage Pipeline**

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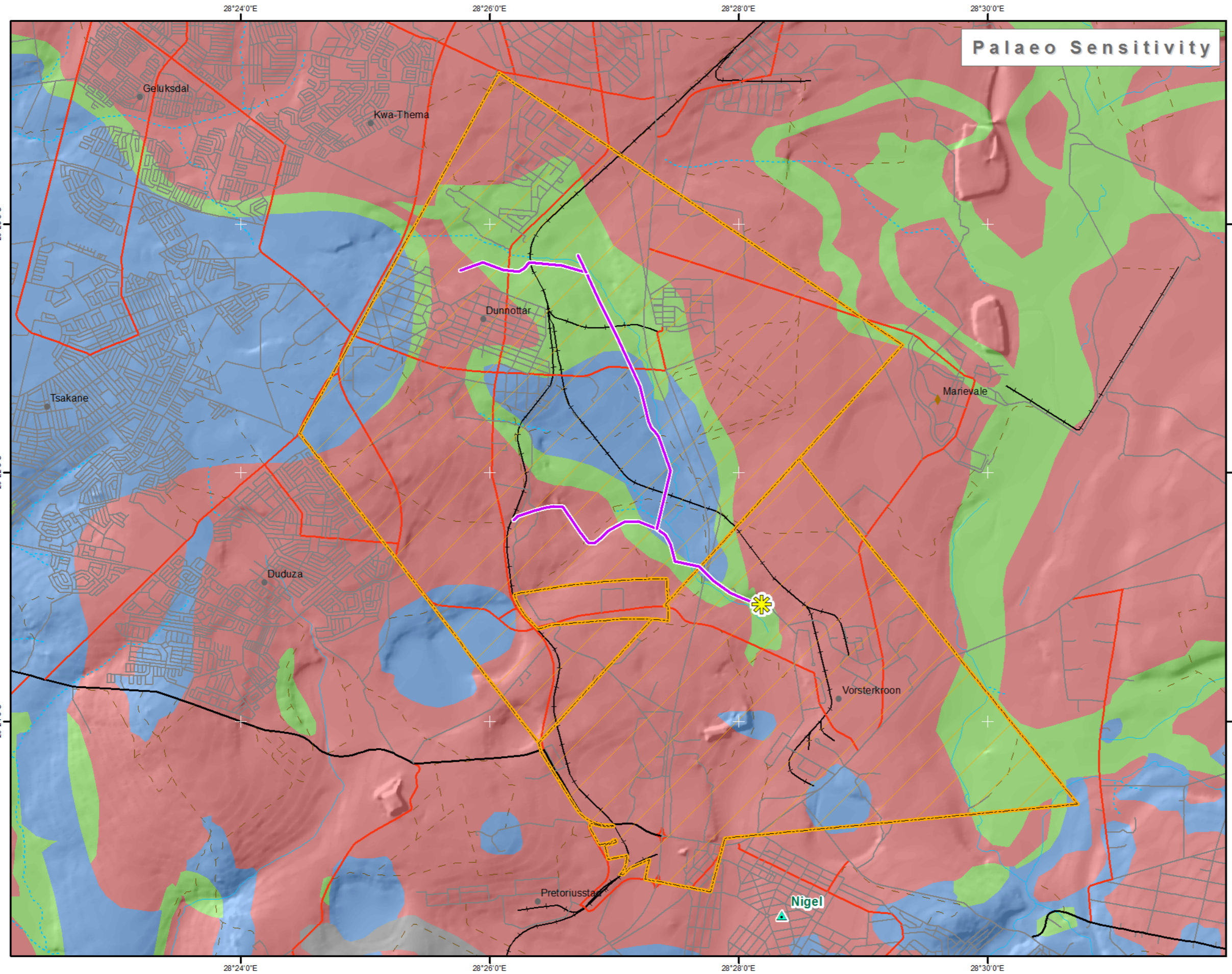


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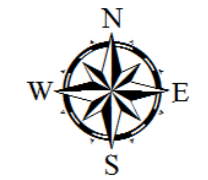
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### Legend

- Proposed Pipeline Route
  - Grundligh Water Treatment Plant
  - Major Town
  - Other Town
  - Settlement
  - Secondary Road
  - Main Road
  - Arterial Road
  - Track
  - Railway
  - Perennial River
  - Non-Perennial River
  - Farms
- Palaeo Sensitivity**
- Very High
  - Moderate
  - Low
  - Insignificant / Zero

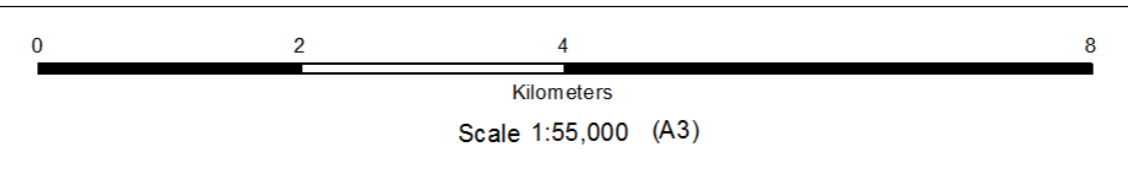


Project:

## Kwa-Thema to Grundligh Sewage Pipeline



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### Local NFEPA Wetlands

### Legend

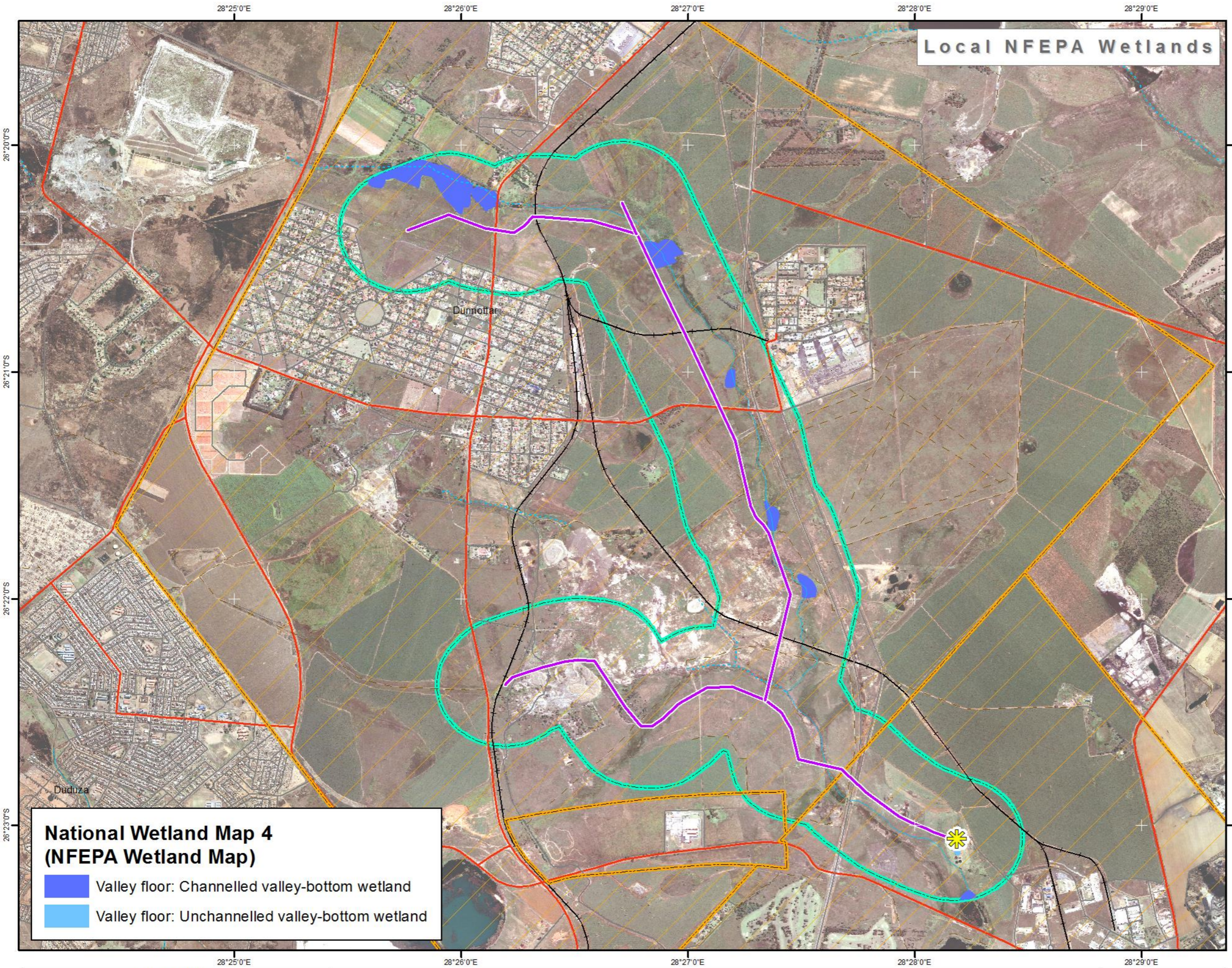
-  Proposed Pipeline Route
-  Grundligh Water Treatment Plant
-  Other Town
-  Secondary Road
-  Arterial Road
-  Track
-  Railway
-  Perennial River
-  Non-Perennial River
-  Farms
-  500m Buffer





Project:

## Kwa-Thema to Grundligh Sewage Pipeline

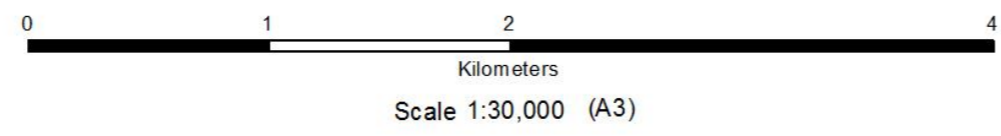
Client:



**National Wetland Map 4 (NFEPA Wetland Map)**

-  Valley floor: Channelled valley-bottom wetland
-  Valley floor: Unchannelled valley-bottom wetland

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 30 August 2018  
**Drafted:**  
 C Fourie



### Legend

- Proposed Pipeline Route
- Wetland Crossings
- Grundligh Water Treatment Plant
- Other Town
- Secondary Road
- Arterial Road
- Track
- Railway
- Perennial River
- Non-Perennial River
- Farms
- 32m Wetland Buffer



Project:

## Kwa-Thema to Grundligh Sewage Pipeline



### National Wetland Map 4 (NFEPA Wetland Map)

- Valley floor: Channelled valley-bottom wetland
- Valley floor: Unchannelled valley-bottom wetland









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**Datum:**  
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**Unit:** Degree

**Date:**  
 30 August 2018  
**Drafted:**  
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### Composite Map

- Legend**
-  Proposed Pipeline Route
  -  Grundligh Water Treatment Plant
  -  Other Town
  -  Secondary Road
  -  Arterial Road
  -  Track
  -  Railway
  -  Perennial River
  -  Non-Perennial River
  -  Farms




**Sensitive Areas**

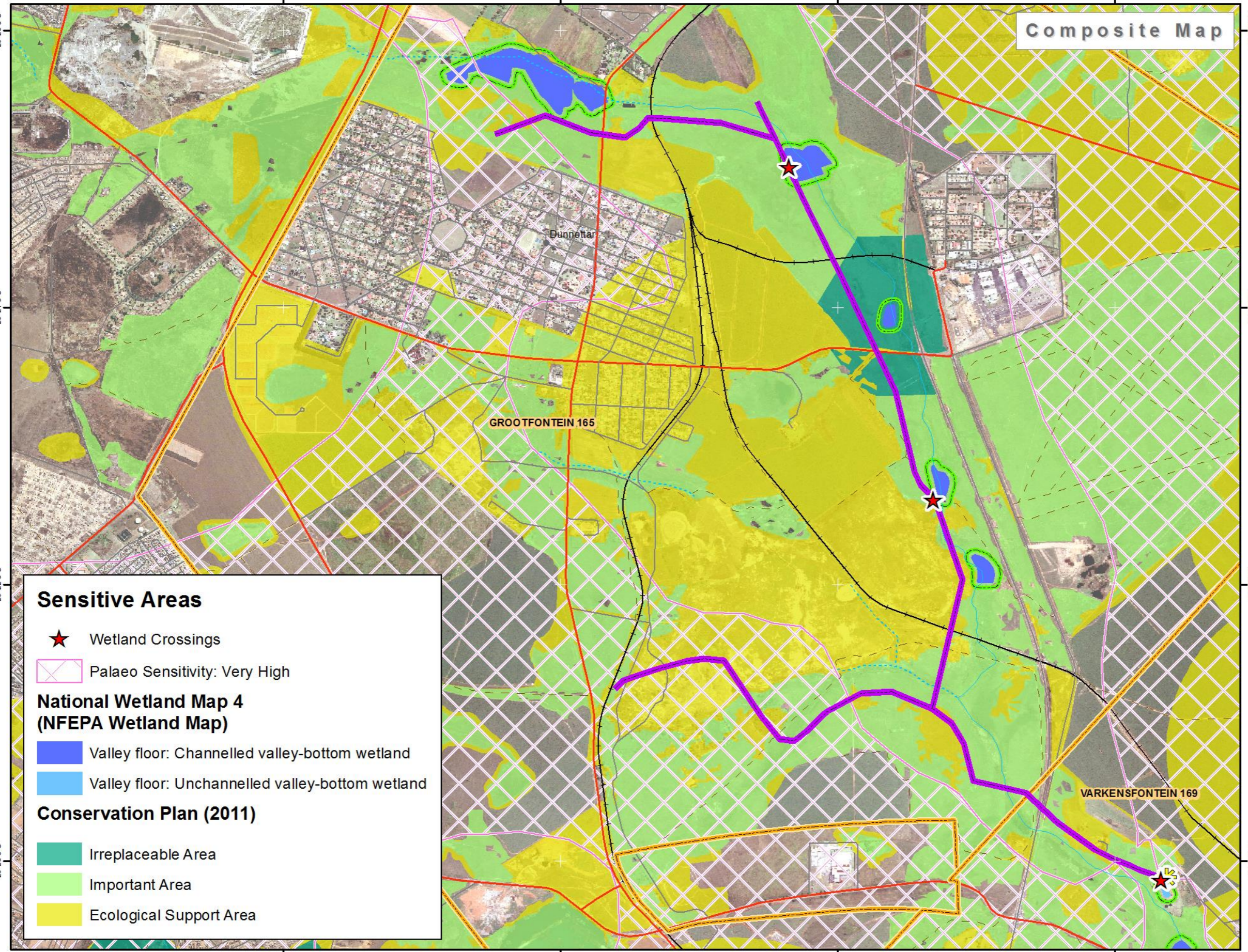
-  Wetland Crossings
-  Palaeo Sensitivity: Very High

**National Wetland Map 4 (NFEPA Wetland Map)**

-  Valley floor: Channelled valley-bottom wetland
-  Valley floor: Unchannelled valley-bottom wetland

**Conservation Plan (2011)**

-  Irreplaceable Area
-  Important Area
-  Ecological Support Area

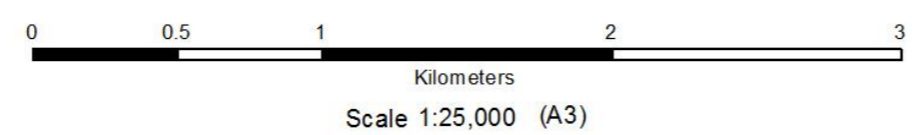


Project:

**Kwa-Thema to Grundligh Sewage Pipeline**

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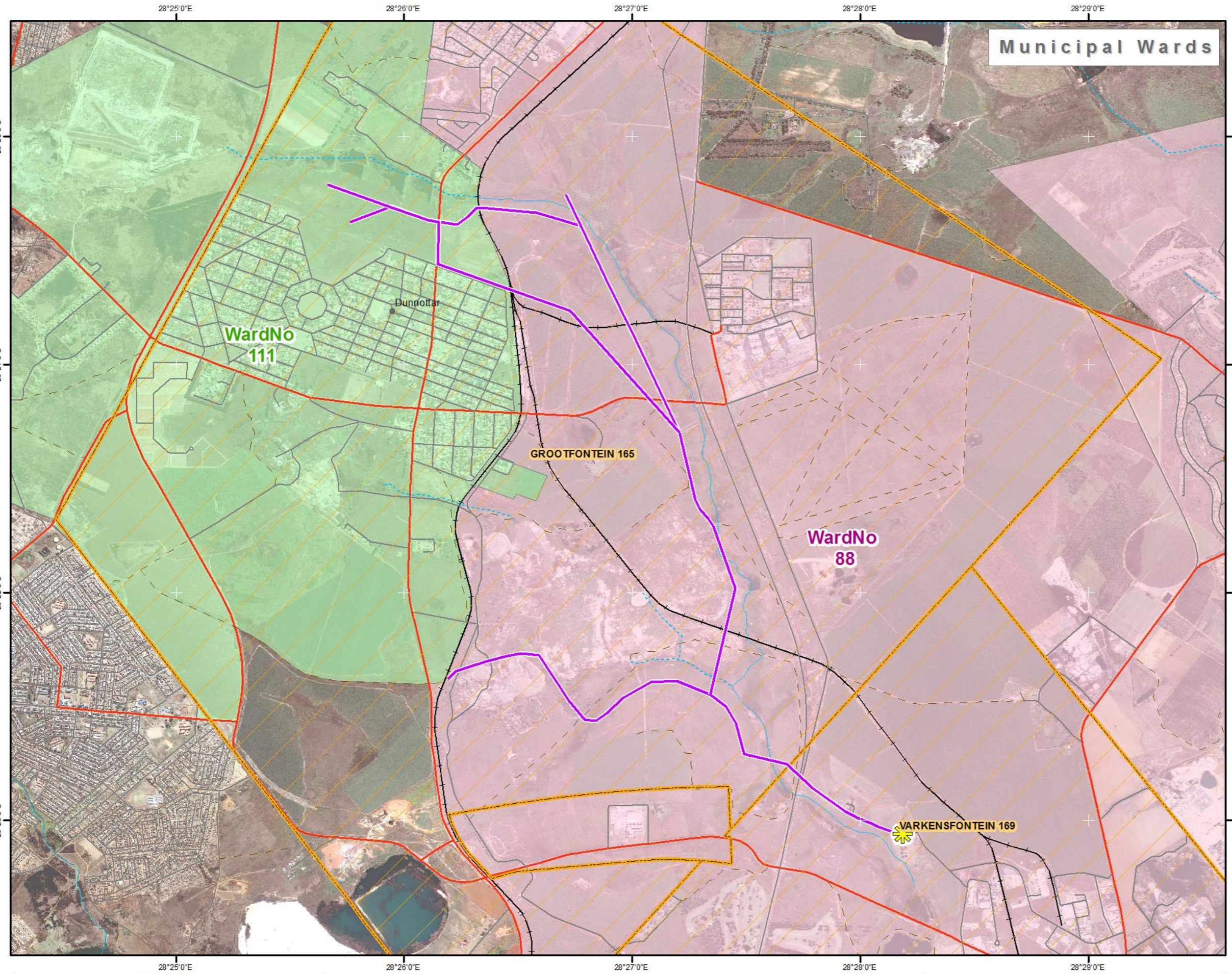
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**Date:**  
5 September 2018  
**Drafted:**  
C Fourie





**Municipal Wards**

**Legend**

-  Proposed Pipeline Route
  -  Grundlingh Water Treatment Plant
  -  Other Town
  -  Settlement
- Municipal Wards Affected**
- WardNo
-  88 (11.10 km)
  -  111 (2.83 km)
-  Secondary Road
  -  Arterial Road
  -  Track
  -  Railway
  -  Perennial River
  -  Non-Perennial River
  -  Farms



Project:

**Kwa-Thema to Grundlingh Sewage Pipeline**

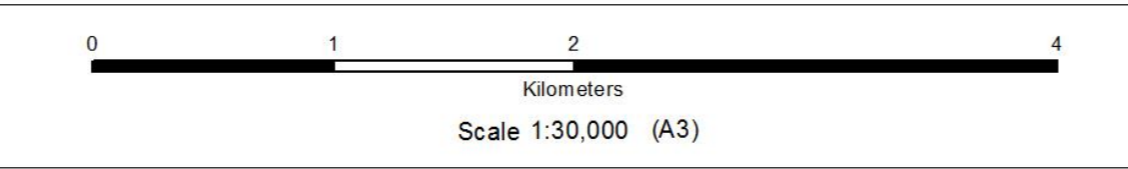
Client:



Muny Consultants

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**Datum:**  
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**Unit:** Degree

**Date:**  
19 October 2018  
**Drafted:**  
C Fourie