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# Environmental and Ecological Screening Report for the Leeuwkuil Sewer Pipeline near Vereeniging, Gauteng Province

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GE39074

*08 April 2020*



## Contact Information

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## *EAP Declaration of Independence*

I, **Katherine Wiles**, in my capacity as a senior environmental consultant, hereby declare that I –

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability;
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.



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**Katherine Wiles** *Cert.Sci.Nat.*  
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April 2020

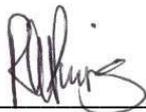
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Date

## *Specialist Declaration of Independence*

I, **Robyn Phillips**, in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
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- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.



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**Robyn Phillips** *Pr.Sci.Nat.*  
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April 2020

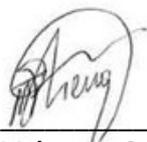
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Date

## *Specialist Declaration of Independence*

I, **Thembela Mshengu**, in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability;
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.



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**Thembela Mshengu** *Cand.Sci.Nat.*  
Junior Specialist  
SACNASP Reg. No. 118006

February 2020

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Date

## *Executive Summary*

GIBB Environmental was appointed to conduct a site visit, environmental screening review, ecological scan and wetland assessment of the site where the installation of a 1.38km gravity sewer main, located in the Leeuwkuil area of Vereeniging, Gauteng, has begun. The project is part of an emergency upgrade of the sewer network in the area, as major sewer leaks are currently polluting the Vaal River. Excavation of the trenches for the pipeline has begun and a section of the pipe has been laid. These activities were conducted prior to an environmental investigation being undertaken. This report therefore comprises a Screening Assessment, overview of the ecological features in the landscape and potential ecological sensitivities surrounding the site.

The purpose of the Screening Assessment is to facilitate the identification of applicable legislated licensing/permitting processes and associated specialist studies that need to be adhered to and/or may be required respectively, in terms of a proposed development. It further facilitates the identification of the potential environmental fatal flaws related to the proposed project.

The study site is located within the Grassland Biome and within the Soweto Highveld Grassland vegetation type. The Soweto Highveld Grassland ecosystem is listed as **Vulnerable** under the national list of threatened terrestrial ecosystems in terms of Section 52 of National Environmental Management: Biodiversity Act (NEMBA; Act 10 of 2004) (DEA, 2011). Any development that involves loss of natural habitat in a listed **Critically Endangered** or **Endangered** ecosystem is likely to require at least a Basic Assessment (BA) in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended) promulgated under the National Environmental Management Act (NEMA; Act 107 of 1998). The need for a BA is therefore not triggered by this terrestrial ecosystem as it is listed as Vulnerable and not Critically Endangered or Endangered. Furthermore, according to the Gauteng C-Plan, none of the proposed sewer line route falls with any CBA and/or ESA areas and no plants of conservation concern are likely to occur in the study area.

According to the National Freshwater Ecosystem Priority Area delineation, no wetlands exist within the 500 m development buffer of the sewer line route. In addition, the lack of wetland characteristics in the soil at the study site, verified by the wetland specialist, confirmed that no natural wetlands occur at the site. Therefore, no Water Use License Application process is advised and therefore a S24G application is not required.

The final recommendations are therefore as follows:

- Consult with GDARD for a land use query to confirm that no additional activities are triggered by the activity;
- GIBB engineers and all relevant stakeholders will also need to commit and ensure that effective mitigation measure are put in place in order to protect areas as well as sensitive environmental receptors as far as possible;
- We recommend that the GIBB engineers work closely with the local councillors and business owners in the area;

- While the excavations within the disturbed grassland does not trigger an Environmental Authorisation, it is recommended that an Environmental Management Programme (EMPr), including Rehabilitation Plan and Alien Vegetation Management plan be implemented on site immediately. Alien vegetation was observed growing on stockpiles, which must be cleared and controlled; and
- It is recommended that an Environmental Control Officer (ECO) be appointed to ensure compliance with above mentioned EMPr.

# Leeuwkuil Sewer Pipeline: Environmental and Ecological Screening Review

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## *Abbreviations*

CBA	Critical Biodiversity Area
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation (previously DWA)
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
GDARD	Gauteng Department of Agriculture and Rural Development
GIS	Geographic Information System
GPAES	Gauteng Protected Area Expansion Strategy
GPEMF	Gauteng Provincial Environmental Management Framework
IBA	Important Bird Area
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NFEPA	National Freshwater Ecosystem Priority Areas
NPAES	National Protected Areas Expansion Strategy
PA	Protected Area
QDGC	Quarter Degree Grid Cell
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks

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# 1 Introduction

## 1.1 Project Description

GIBB Environmental was appointed through the GIBB (Pty) Ltd engineers to conduct a site visit, and environmental screening review and ecological scan of the site where the installation of a 1.38km gravity sewer main, located in the Leeuwkuil area of Vereeniging, Gauteng, has begun. The project is part of an emergency upgrade of the sewer network in the area as major sewer leaks are currently polluting the Vaal River. Excavation of the trenches for the pipeline began in July 2019 and a section of the pipe has already been laid. These activities were conducted prior to an environmental investigation being undertaken. The following report comprises of an Environmental Screening Assessment, an overview of the ecological features in the landscape and potential ecological sensitivities surrounding the site.

## 1.2 Location

This site is situated immediately to the west of the town Vereeniging, next to the Vaal Show Grounds and Boer Concentration Camp Cemetery in the Leeuwkuil area, between the R59 and R28 regional roads. It occurs on the remaining extent of Portion 27 of the Farm Leeuwfontein 113-IR and falls within the Quarter Degree Grid Cell (QDGC) 2627DB. The site occurs within Emfuleni Local Municipality, Sedibeng District, Gauteng Province (Refer to **Figure 1 below**).

## 1.3 Methodology

The scope of work was to conduct a desktop analysis of the environmental and ecological features of the landscape and to identify any potential environmental and ecological sensitivities surrounding the site. This was undertaken using online resources such as SANBI's Biodiversity GIS website (BGIS, 2019), Google Earth Imagery, the Department of Environmental Affairs (DEA) Online Screening Tool and a review of the relevant literature.

A site visit was also undertaken on 4 February 2020 to verify the findings of the desktop analysis and to assess the extent of the works undertaken to date.

The aim of the sensitivity scan was to produce:

- A report summarising the environmental and ecological features in the surrounding landscape; including an identification of applicable legislated licensing/permitting processes and associated specialist studies that need to be adhered to and/or may be required respectively, in terms of a proposed development;
- Maps showing the study area in relation to the ecological features; and
- Highlight potentially sensitive areas surrounding the site and work undertaken to date.

Note: This report is based on desktop analysis and site verification only; no detailed botanical field surveys were undertaken.

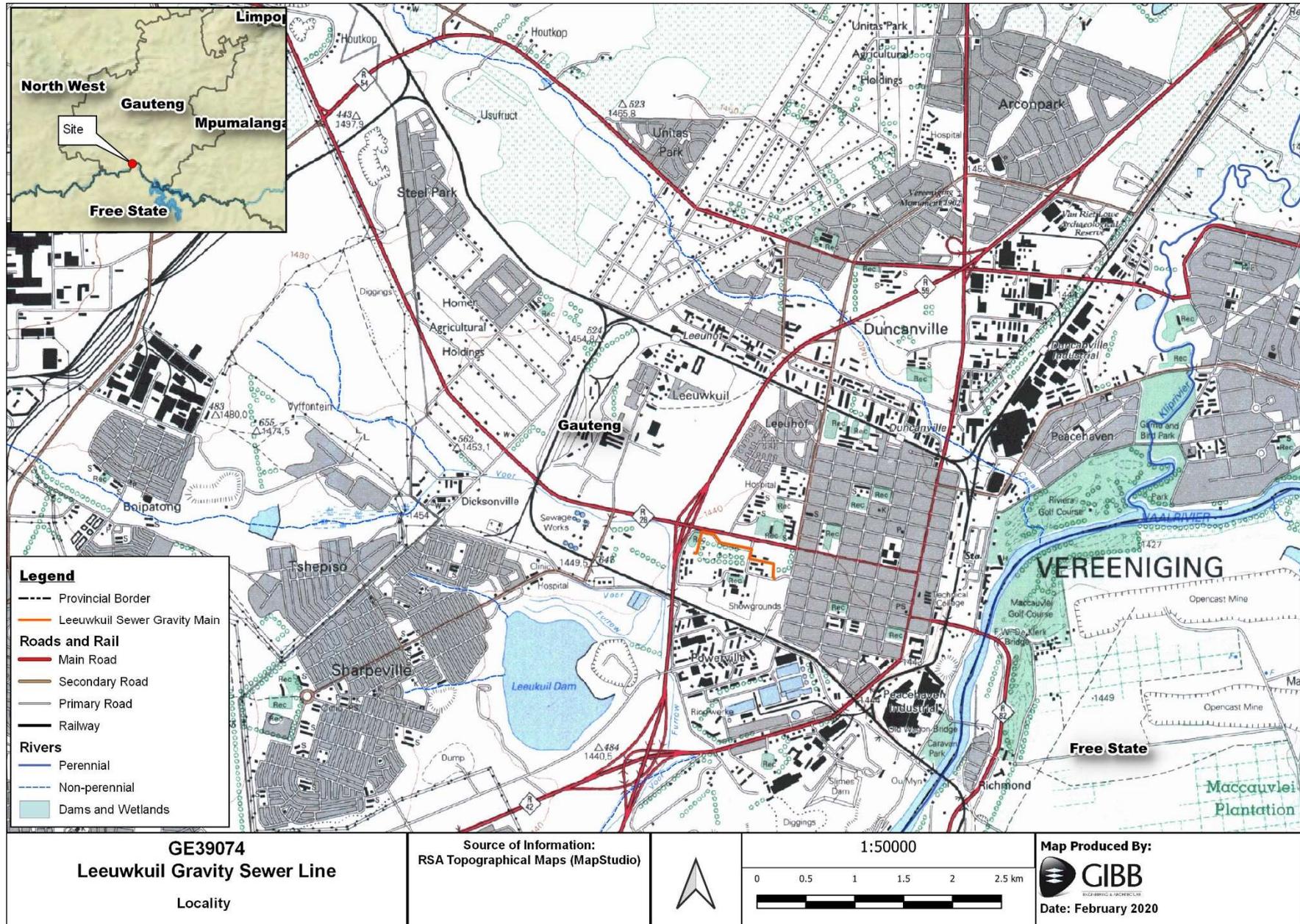


Figure 1: Location of the Leeuwkuil sewer gravity main

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## 2 Biophysical Landscape Features

### 2.1 Regional Vegetation

The study area is located within the Grassland Biome, which is characterised by high summer rainfall and dry winters (Rutherford and Westfall, 1994). Frost during the winter nights and marked diurnal temperature variations are unfavourable for tree growth resulting in the Grassland Biome consisting mainly of grasses and plants with perennial underground storage organs, such as bulbs and tubers (Mucina and Rutherford, 2006). A large number of Rare and Threatened plant species in the summer rainfall regions of South Africa are restricted to high-rainfall grassland, making this the vegetation type in most urgent need of conservation.

The biomes within South Africa are divided into smaller units known as vegetation types. According to Mucina and Rutherford (2012), the study area is located within the **Soweto Highveld Grassland** vegetation type (Refer to **Figure 2** below).

**Soweto Highveld Grassland** occurs in Mpumalanga and Gauteng, and marginally in the Free State and occurs at an altitude of 1420-1760m above sea level. It is characterised by a gently to moderately undulating landscape on the Highveld plateau supporting short to medium, dense, tufted grassland dominated by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In undisturbed areas, the continuous grass cover is occasionally interrupted by small wetlands, drainage lines, ridges and rocky outcrops. It occurs in a cool temperate, summer rainfall region with a mean annual precipitation of around 662mm. The area experiences extremes between maximum summer temperatures and minimum winter temperatures and severe frost occurs frequently in winter. According to Mucina and Rutherford (2006), this vegetation type is classified as Endangered and is hardly protected. Only around 50% of the natural vegetation remains and less than 1% is currently protected.

### 2.2 Listed Terrestrial Ecosystems

The National Environmental Management: Biodiversity Act (NEMBA, Act 10 of 2004) provides for listing threatened or protected ecosystems, in one of four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected (Pr) (DEA, 2011). The main purpose of listing threatened ecosystems is to reduce the rate of ecosystem and species extinction and includes the prevention of further degradation and loss of structure, function and composition of threatened ecosystems. Threatened terrestrial ecosystems identified in the NEMBA were delineated using the following:

- The South African Vegetation Map (Mucina and Rutherford, 2006; SANBI, 2012 [beta update]);
- National forest types (Von Maltitz *et al.*, 2003);
- Priority areas identified in a provincial systematic biodiversity plan (in this case the North West Biodiversity Sector Plan (North West Department of Rural, Environment and Agricultural Development (READ), 2015); or

- High irreplaceability forest patches and clusters identified by the Department of Agriculture, Forestry and Fisheries (DAFF; Berliner, 2005).

Extensive stakeholder engagement and the best available science formed the basis of the criteria used to identify threatened terrestrial ecosystems listed in the NEMBA. The criteria for thresholds for Critically Endangered, Endangered and Vulnerable ecosystems are summarised in **Table 1** below.

**Table 1: Criteria used to identify threatened terrestrial ecosystems (DEA, 2011)**

Criterion	Critically Endangered	Endangered	Vulnerable
<b>A1: Irreversible loss of natural habitat</b>	Remaining natural habitat < biodiversity target	Remaining natural habitat < biodiversity target + 15%	Remaining natural habitat < 60% of original area
<b>A2: Ecosystem degradation and loss of integrity</b>	> 60% of ecosystem significantly degraded	> 40% of ecosystem significantly degraded	> 20% of ecosystem significantly degraded
<b>C: Limited extent and imminent threat</b>	-	Ecosystem extent < 3000ha and imminent threat	Ecosystem extent < 6000ha and imminent threat
<b>D1: Threatened plant species associations</b>	> 80 threatened Red List plant species	> 60 threatened Red List plant species	> 40 threatened Red List plant species
<b>F: Priority areas for meeting explicit biodiversity targets as defined in a systematic biodiversity plan</b>	Very high irreplaceability and high threat	Very high irreplaceability and medium threat	Very high biodiversity and low threat

The implication for land management is that any development situated within listed ecosystems will require the following:

- Planning: linked to the requirement in NEMBA for listed ecosystems to be taken into account in municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs);
- Environmental Authorisation (EA): in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 promulgated under the National Environmental Management Act (NEMA; Act 107 of 1998) as amended in 2017;
- Proactive management: in terms of NEMBA; and
- Monitoring and reporting: in terms of NEMBA.

The EIA Regulations include three lists of activities that require an EA:

- Listing Notice 1: activities that require a Basic Assessment (BA) (R983 of 2014 as amended 7 April 2017);
- Listing Notice 2: activities that require Scoping and Environmental Impact Report (S&EIR) (R984 of 2014 as amended 7 April 2017); and

- 
- Listing Notice 3: activities that require a BA in specific identified geographical areas only (R985 of 2014 as amended 7 April 2017).

Activity 12 in Listing Notice 3 relates to the clearance of 300 square metres (0.03ha) or more of vegetation, which will trigger a BA within any **Critically Endangered** or **Endangered** ecosystem listed in terms of Section 52 of NEMBA. This means any development that involves loss of natural habitat in a listed Critically Endangered or Endangered ecosystem is likely to require at least a BA in terms of the EIA regulations. It is important to note that while the original extent of each listed ecosystem has been mapped, a Basic Assessment Report (BAR) in terms of the EIA regulations is triggered only when remaining natural habitat within each ecosystem is threatened. A BAR is not required where natural habitat has already been irreversibly lost in listed ecosystems.

The Leeuwkuil sewer line route falls within the Soweto Highveld Grassland ecosystem, which is listed as **Vulnerable** under the national list of threatened terrestrial ecosystem in terms of Section 52 of NEMBA (DEA, 2011) under criterion A1 Biome: Grassland (**Figure 3**). The need for a BA is therefore not triggered by this terrestrial ecosystem.

### 2.3 The Gauteng Biodiversity Conservation Plan

The Gauteng Biodiversity Conservation Plan (C-Plan) was started in 2000 and the aim was to revise this plan at least every five years. The small size of Gauteng province made it feasible to conduct extensive biodiversity surveys that aimed to provide the information on spatial occurrence of biodiversity, which was necessary for conservation planning. Updated in 2011 and released in 2012, C-Plan 3.3 is based on the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability (GDARD, 2014).

C-Plan 3 represents priority areas for biodiversity conservation in the Gauteng province. Knowledge of the distribution of biodiversity, as well as the conservation status of species, facilitates the assessment of threats to biodiversity within the planning region, which is constantly changing, especially in Gauteng where development is taking place at a rapid rate (GDARD, 2014).

The main purposes of the C-Plan 3.3 are:

- To serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- To inform protected area expansion and biodiversity stewardship programmes within the province; and
- To serve as a basis for development of Bioregional Plans in municipalities within the province.

Gauteng C-Plan 3.3 includes Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) that will be used as input into the National Bioregional Plan:

- 
- CBAs are areas that contain Irreplaceable, Important and Protected Areas all merged together into one layer. These areas are known to support important biodiversity; and
  - ESAs are areas that support biodiversity and have landscape features that are essential for the maintenance and generation of biodiversity in sensitive areas and that require sensitive management. Spatial surrogates included dolomite, rivers, wetlands, pans, corridors for climate change and species migration, ridges and low cost areas for Johannesburg and Tshwane.

Activity 12 in Listing Notice 3 of the 2014 EIA Regulations as amended, relates to the clearance of 300 square metres (0.03ha) or more of vegetation, which will trigger a BA within critical biodiversity areas identified in bioregional plans. This means any development that involves loss of natural habitat in a CBA is likely to require at least a BA in terms of the EIA regulations

According to the Gauteng C-Plan, the route of the Leeuwkuil pipeline does not fall within any CBA and/or ESA areas. Refer to **Figure 4** below.

#### 2.4 GPEMF / GPAES / NPAES

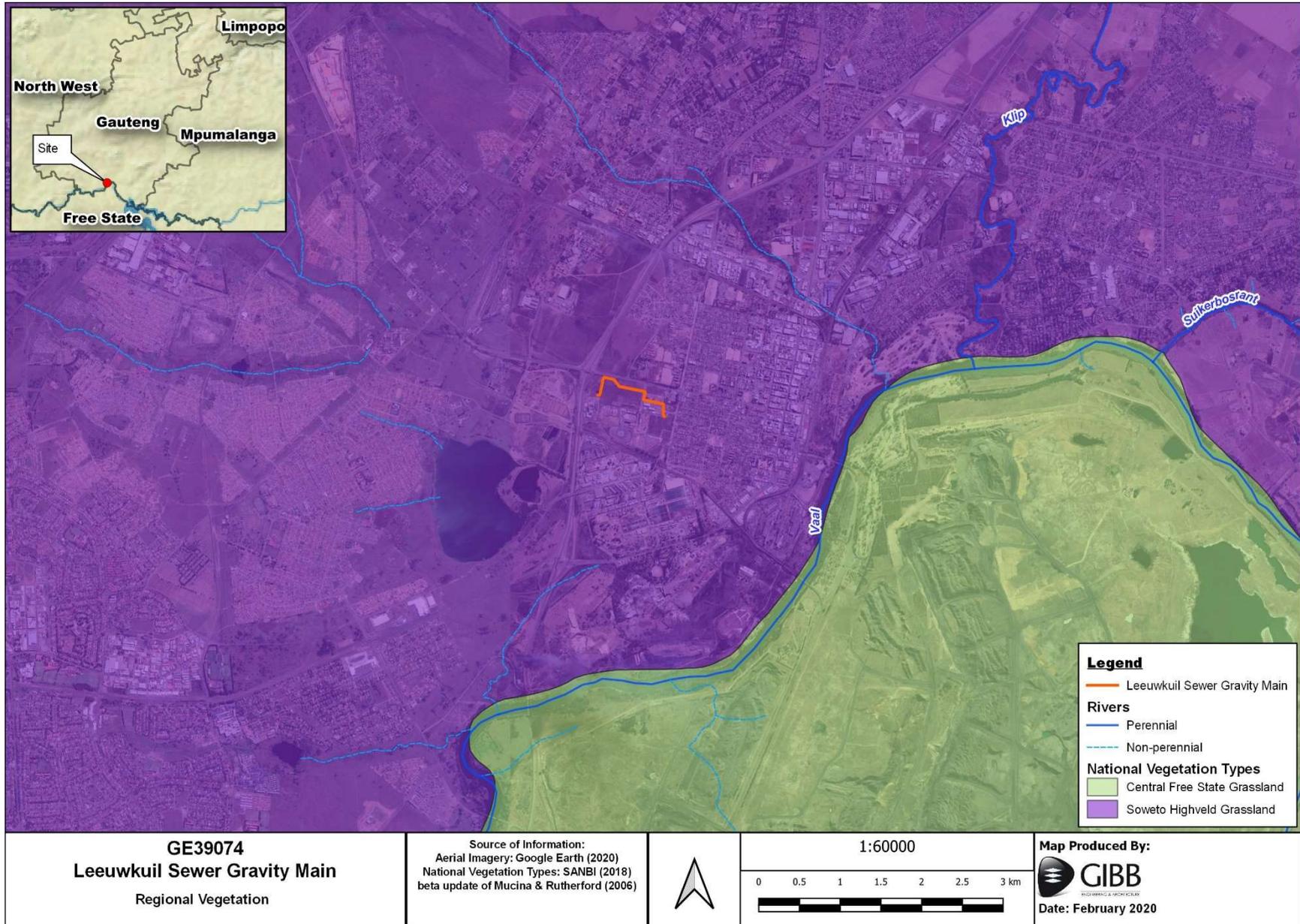
According to the Gauteng Provincial Environmental Management Framework (GPEMF) Standard of 2018 (DEA, 2018), the site falls within Zone 1 – Urban Development Zone, which indicates that certain listed activities are excluded from the requirement to obtain an environmental authorisation. Refer to Section 4 for more details.

In addition, no formally protected areas or priority areas in terms of the National Protected Areas Expansion Strategy (NPAES; DEA, 2016) or the Gauteng Protected Areas Expansion Strategy (GPAES; SANBI and GDARD, 2013) fall within the vicinity of the site.

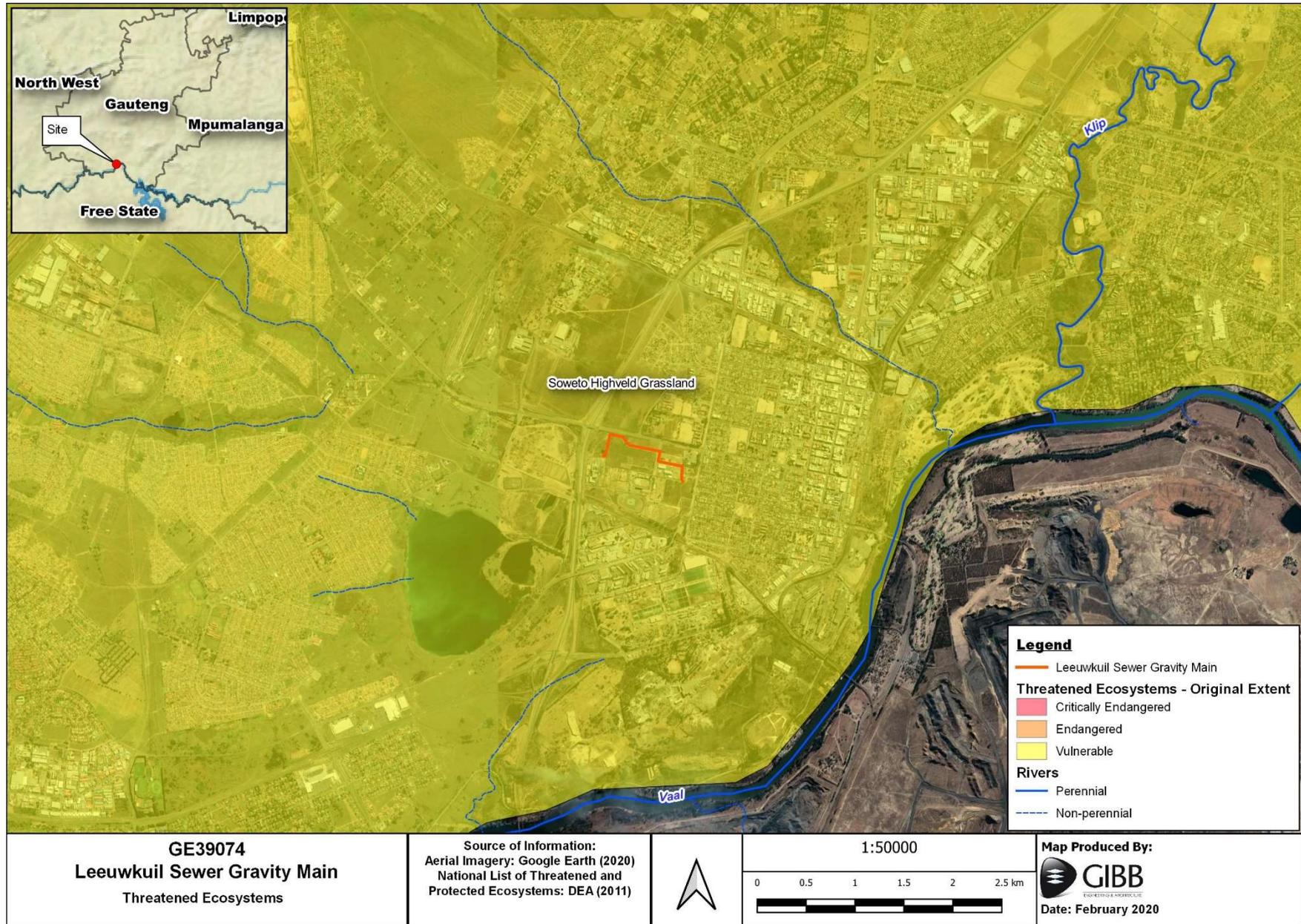
#### 2.5 National Freshwater Ecosystem Priority Areas

National Freshwater Ecosystem Priority Areas (NFEPA) project represents a multi-partner project that aims to (1) identify Freshwater Ecosystem Priority Areas (or FEPAs) to meet national biodiversity goals for freshwater ecosystems, and (2) develop a basis for enabling effective implementation of measures to protect FEPAs, including free-flowing rivers (Nel *et al.*, 2011). Organisations involved in the project include the Council for Scientific and Industrial Research (CSIR), South African National Biodiversity Institute (SANBI), Water Research Commission (WRC), Department of Water Affairs (DWA; now Department of Water and Sanitation, DWS), Department of Environmental Affairs (DEA), Worldwide Fund for Nature (WWF), South African Institute of Aquatic Biodiversity (SAIAB) and South African National Parks (SANParks). The project uses systematic biodiversity planning to identify priorities for conserving South Africa's freshwater biodiversity within the context of equitable social and economic development. The NFEPA products should be implemented to influence land and water resource decision-making processes (Driver *et al.*, 2012).

As per the NFEPA delineation of fresh water ecosystems, the Leeuwkuil sewer line route does not have any recorded wetlands within 500m or watercourses around it (**Figure 5**).



**Figure 2: The sewer pipeline site in relation to national vegetation types**



**Figure 3: The Leeuwkuil sewer line route in relation to national threatened ecosystems**

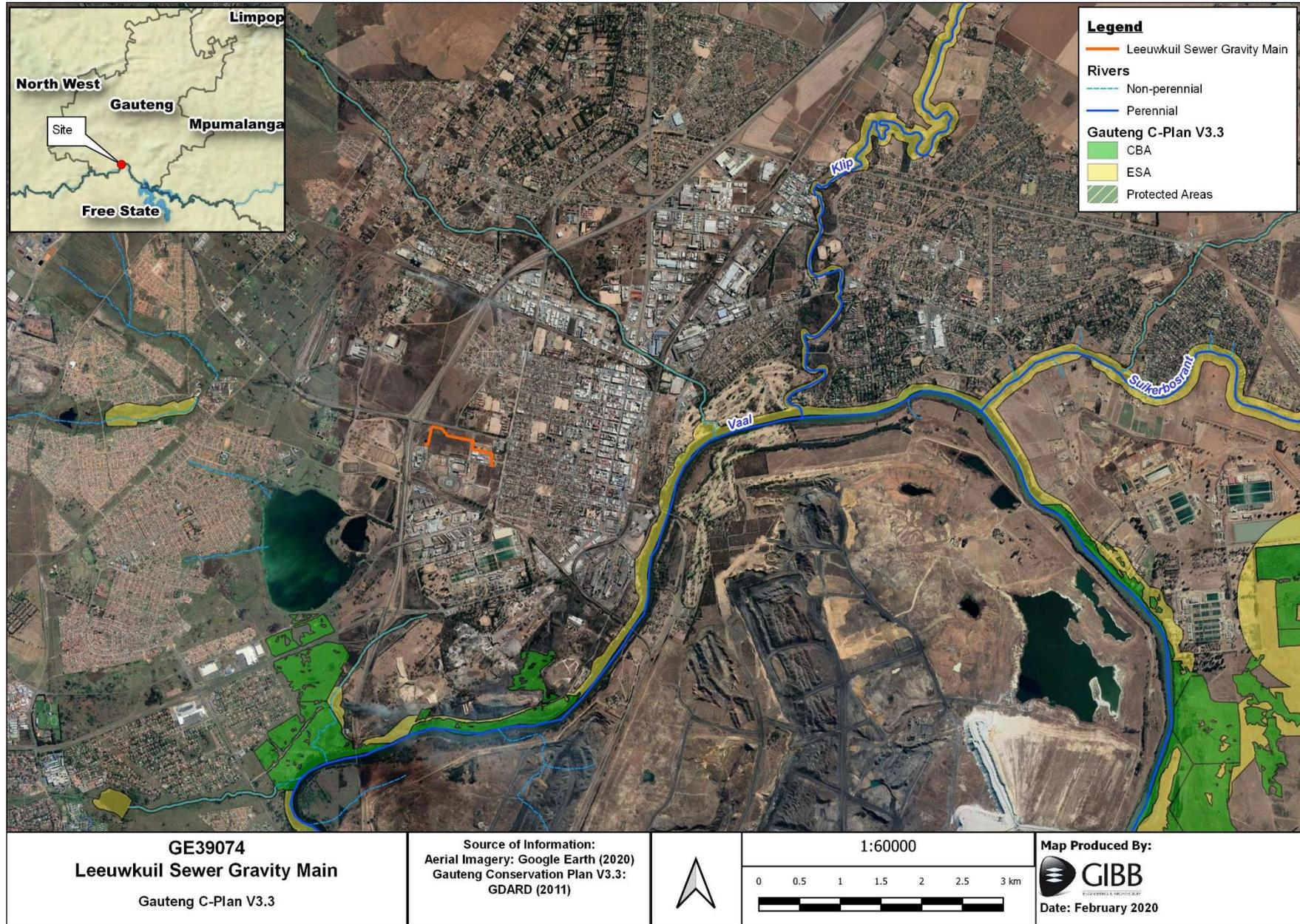
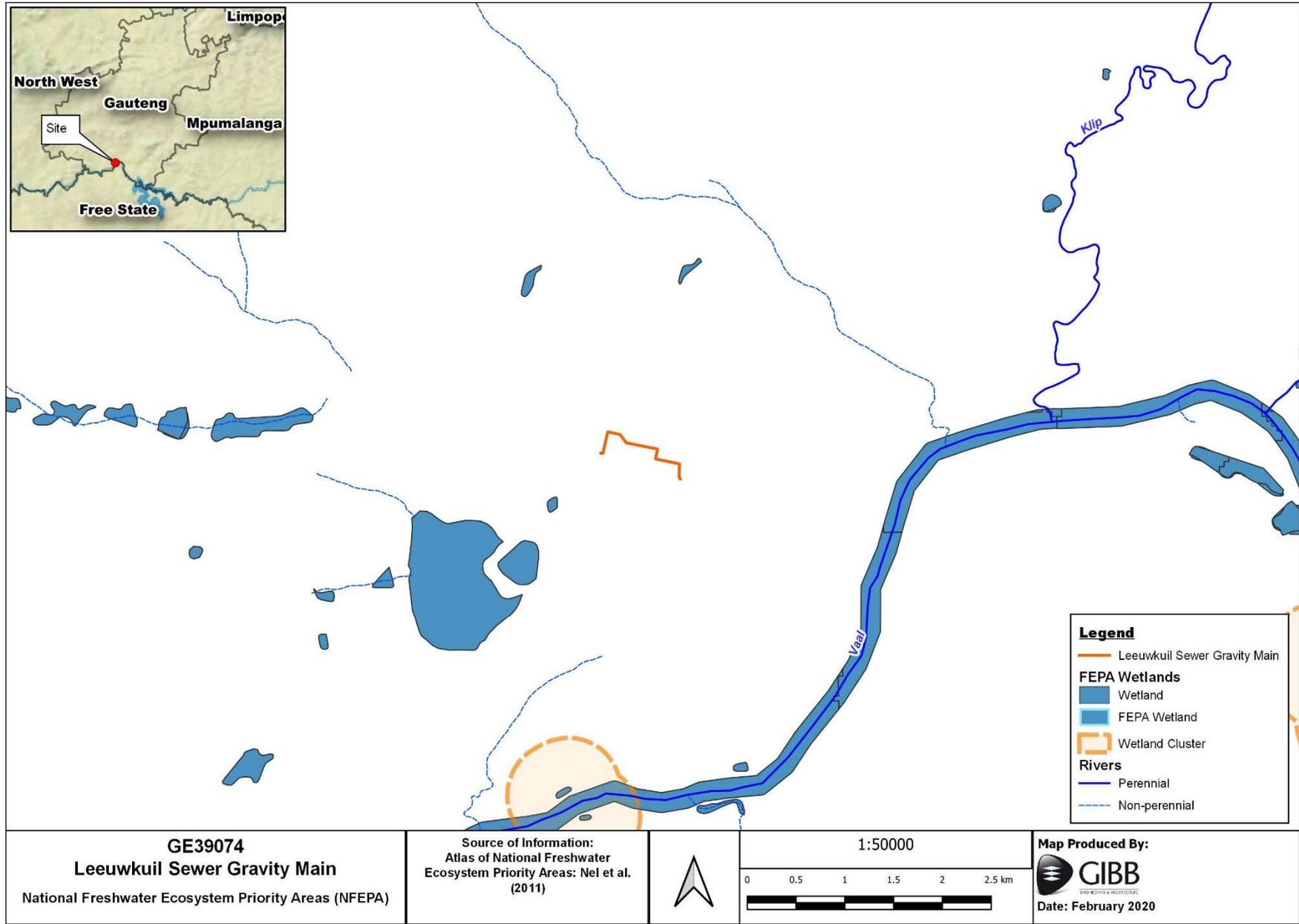


Figure 4: The Leeuwkuil proposed sewer line route in relation to the Gauteng C-Plan



**Figure 5: The proposed sewer line route in relation to National Freshwater Ecosystem Priority Areas**

### 3 Site Verification

#### 3.1 Study site overview

The study area exists in a largely modified/transformed, urban landscape comprising industry, settlement, roads, and alien vegetation, with little natural vegetation present. The few remaining natural open spaces in the broader landscape were comprised of patches of disturbed grassland, the Leeuwkuil Dam to the south-west, and the Vaal River and associated tributaries to the east (**Figure 6** below).

#### 3.2 Ecological features found on site

Being within an urban area, the majority of the site was disturbed and irreversibly modified by roads, settlement, industrial areas, the Vaal Show Grounds, and a cemetery. Little natural vegetation was observed and most areas were invaded with alien vegetation. Trenching on the site had already been undertaken and the pipe installed in some areas.

Natural vegetation that had been affected by the trenching on site included a small portion of disturbed grassland (~3.5ha) between the R28 and Nic Botha Street (Refer to **Photograph 1; Figure 7** below). This disturbed grassland comprised of some species representative of the Soweto Highveld Grassland vegetation type, with the dominant grass species being *Themeda triandra*. Other grass species included *Digitaria eriantha*, *Eragrostis* spp., *Andropogon appendiculatus*, *Aristida congesta*, and *Setaria sphacelata* occurring. Common grasses indicative of disturbed sites such as *Cynodon dactylon*, *Sporobolus africanus*, and *Melinis repens* also occurred.



**Photograph 1: Disturbed grassland dominated by *Themeda triandra*, affected by the trench excavations on site**

The patch of grassland also included some herbaceous species such as *Justicia anagalloides*, *Berkheya* spp., *Helichrysum* spp., and *Gomphocarpus fruticosus*. Alien species observed included *Verbena aristigera*, *V. bonariensis*, *Lantana montevidensis*, and *Pennisetum clandestinum*, while alien trees such as *Eucalyptus* sp. and *Acacia mearnsii* lined the road side. According to historical Google Earth imagery, it is evident that the patch of grass had been disturbed in the past by human activity such as construction of the adjacent roads, footpaths, vehicle access, and mowing.

On the eastern end of the pipeline route, excavations were taking place within a wet area that appeared to support vegetation characteristic of wetlands. The soil was very moist and species such as *Typha capensis*, *Cyperus* spp., and *Phragmites australis* occurred (Refer to **Photograph 2**). As no natural water courses occur nearby, the presence of storm water channels in this area suggest that the wet area was artificially created by water accumulating (Refer to **Figure 7** below). This assumption was verified by a wetland specialist (refer to Wetland Report in Appendix A) due to the lack of wetland characteristics in the soil.

The reeds supported wetland nesting birds such as warblers, weavers, and bishops. The nearby stormwater channels contained standing water and also supported reeds, bulrushes, and sedges (Refer to **Photographs 3 and 4** below). Water fowl such as teals, ducks, herons, and lapwings were observed in and around this area.



**Photograph 2: Wet area identified onsite, potentially artificially created by storm water accumulation**



**Photograph 3: Stormwater channel supporting reeds**



**Photograph 4: Stormwater channel supporting reeds**

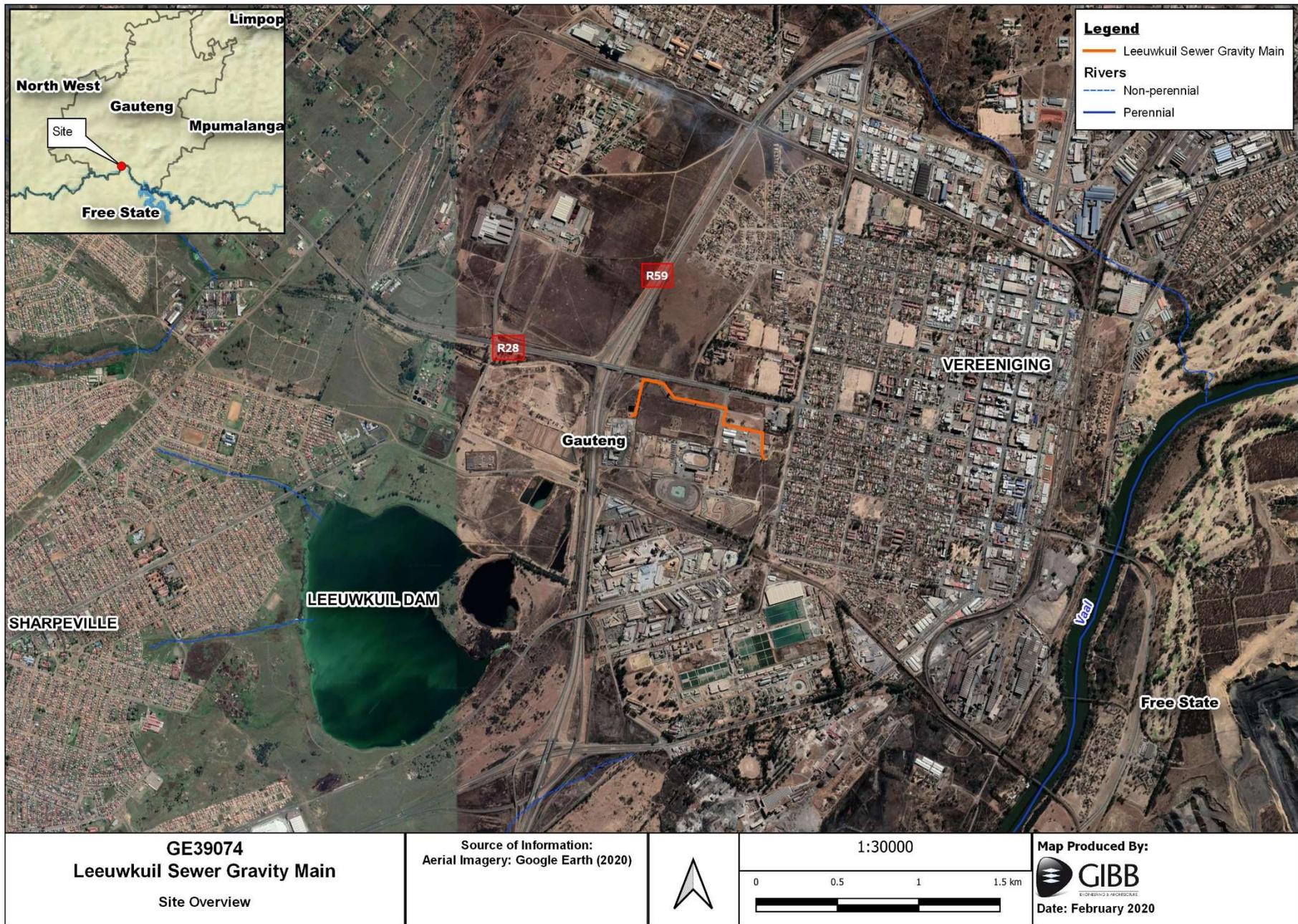
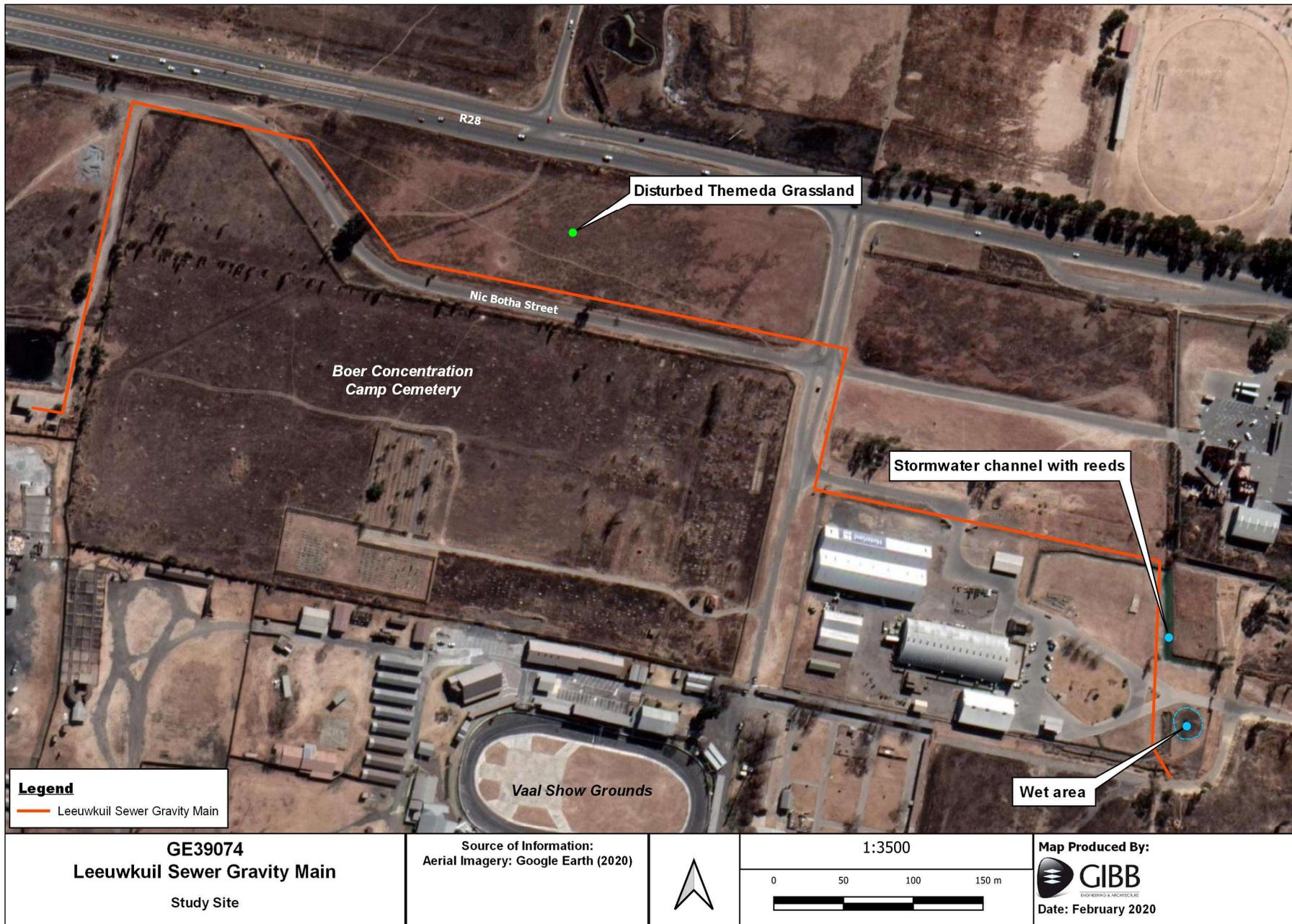


Figure 6: Aerial overview of the study area



**Figure 7: Aerial close-up the site**

### 3.3 Plants of conservation concern

According to the GDARD database (GDARD pers. comm., 2020) no populations of Red or Orange List plant taxa have been recorded on the actual study site or in the near vicinity of the study site. However the following Red/Orange List plant taxon has been recorded within 5km of the study site:

- *Kniphofia typhoides*

This is a terrestrial species is found in low lying wetlands and seasonally wet areas in climax *Themeda triandra* grasslands on heavy black clay soils. It tends to disappear from degraded grasslands (von Staden and Victor, 2005). Due to the disturbed nature of the site, it is unlikely that this species occurs in the study area.

Furthermore, the following additional Red/Orange List plant taxa have been recorded in the QDGC in which the study site is situated:

- *Boophane disticha*
- *Cineraria austrotransvaalensis*
- *Crinum bulbispermum*
- *Delospermum macellum*
- *Gnaphalium nelsonii*
- *Hypoxis hemerocallidea*
- *Kniphofia typhoides*
- *Lithops lesliei* subsp. *lesliei*

The majority of the pipeline route is situated in disturbed areas comprising secondary vegetation. It is therefore unlikely that any of the above mentioned species occur on the site.

## 4 Review of Applicable Legislation & Authorisation Processes

Understanding the requirements of the environmental regulations and legislation, and the limitations they impose on development, is vital for the proposed project. The project team assessed the relevant environmental legislation, conservation, biodiversity and sustainable development guiding principles. This section, therefore, includes a review of the legislation and policy guidelines identified as pertinent to environmental screening for the proposed project. The proposed project has been screened against the requirements of the following legislation:

- The National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) as amended, and its associated Environmental Impact Assessment (EIA) Regulations, 2014 (as amended); and
- The National Water Act, 1998 (NWA) (Act No. 36 of 1998) and the associated General Authorisation in terms of Section 39 of the NWA for water uses as defined in Section 21(c) or Section 21(i), 2016.

### 4.1 Results of the Legislative Screening: NEMA

The Listed Activities, as listed in terms of the NEMA, which are potentially triggered by the proposed development, are set out and discussed in **Table 2** below. Please note, **red** has been used to indicate Listed Activities that are confirmed to be triggered and therefore require an application for EA; **orange** has been used to indicate Listed Activities that are potentially triggered, and which require further investigation to confirm the need for EA; and **green** has been used to indicate Listed Activities that have been confirmed as not triggered, and therefore do not require an EA.

**Table 2: Listed Activities potentially triggered by the proposed development**

NOTICE	LISTED ACTIVITY	DISCUSSION
GN R 983	<p><b>10</b> —  <i>The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes —</i></p> <p>(i) <i>with an internal diameter of 0,36 metres or more; or</i></p> <p>(ii) <i>with a peak throughput of 120 litres per second or more;</i></p> <p><i>excluding where —</i></p> <p>(a) <i>such infrastructure is for the bulk</i></p>	<p><b>The proposed Leeuwkuil sewer pipeline (1.38km in length) will require the development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes.</b></p> <p><b>The proposed development has been confirmed as falling within an urban area, and as such, this listed</b></p>

NOTICE	LISTED ACTIVITY	DISCUSSION
	<p><i>transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or</i></p> <p><i>(b) where such development will occur within an urban area.</i></p>	<p><b>activity will not be triggered.</b></p>
	<p><b>12 –</b>  <i>The development of—</i></p> <p><i>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development setback; or</i></p> <p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding—</i></p> <p><i>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</i></p> <p><i>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</i></p> <p><i>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</i></p> <p><i>(dd) where such development occurs within an urban area;</i></p> <p><i>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or</i></p> <p><i>(ff) the development of temporary</i></p>	<p><b>The proposed Leeuwkuil sewer pipeline (1.38km in length) will require the development of infrastructure or structures with a physical footprint of 100 square metres or more.</b></p> <p><b>From the site visit, it was evident that the development may occur within 32 m of the edge of watercourse (artificial wetland).</b></p> <p><b>However, the proposed development has been confirmed as falling within an urban area, and as such, this listed activity will not be triggered.</b></p>

NOTICE	LISTED ACTIVITY	DISCUSSION
	<p><i>infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</i></p>	
	<p><b>19 –</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <ul style="list-style-type: none"> <li><i>(a) will occur behind a development setback;</i></li> <li><i>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</i></li> <li><i>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</i></li> <li><i>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</i></li> <li><i>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</i></li> </ul>	<p>From the wetland assessment carried out (refer to Appendix A), the wet area of interest identified during the environmental screening process was verified to not be a wetland. It was determined that this area was temporarily saturated and can sustain hydrophytic vegetation species due to the extensive excavation creating a small depression in which water pooled after heavy rainfall, coupled with surrounding trenches filled with storm water allowing for interflow of water into this area. This area however, was ultimately determined to not be a wetland due to the lack of wetland characteristics present in the soil. Therefore this activity is no longer applicable.</p>
GN R 983	<p><b>27 –</b> <i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</i></p> <ul style="list-style-type: none"> <li><i>(i) the undertaking of a linear activity; or</i></li> <li><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></li> </ul>	<p>The proposed placing of the sewer pipeline resulted in the clearance of some indigenous vegetation.</p> <p>However this activity is not triggered since linear activities are excluded and also it is not anticipated that more than 1 hectare of indigenous vegetation will be cleared.</p>
GN R 985	<p><b>12 –</b> <i>The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes</i></p>	<p>Although the activity will result in the clearance of vegetation, the Soweto Highveld Grassland ecosystem is listed as Vulnerable under the national list of</p>

NOTICE	LISTED ACTIVITY	DISCUSSION
	<p><i>undertaken in accordance with a maintenance management plan</i></p> <p>(c) <i>Gauteng</i></p> <p>(i) <i>Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</i></p> <p>(ii) <i>Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or</i></p> <p>(iii) <i>On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</i></p>	<p><b>threatened terrestrial ecosystems in terms of Section 52 of NEMBA (DEA, 2011) under criterion A1 Biome: Grassland.</b></p> <p><b>This activity relates to the clearance of 300 square metres (0.03ha) or more of vegetation within any <u>Critically Endangered or Endangered ecosystem</u> listed in terms of Section 52 of NEMBA. The need for a BA is therefore not triggered by this terrestrial ecosystem.</b></p> <p><b>Furthermore, according to the Gauteng C-Plan, none of the proposed sewer line route falls with any CBA and/or ESA areas and no plants of conservation concern are likely to occur in the study area.</b></p>
GN R 985	<p><b>14 –</b></p> <p><i>The development of –</i></p> <p>(ii) <i>infrastructure or structures with a physical footprint of 10 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p>(a) <i>within a watercourse;</i></p> <p>(b) <i>in front of a development setback; or</i></p> <p>(c) <i>if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p><i>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</i></p> <p>(c) <i>Gauteng</i></p> <p>(i) <i>A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p>(ii) <i>National Protected Area</i></p>	<p><b>From the wetland assessment carried out (refer to Appendix A), the wet area of interest identified during the environmental screening process was verified to not be a wetland/watercourse. It was determined that this area was temporarily saturated and can sustain hydrophytic vegetation species due to the extensive excavation creating a small depression in which water pooled after heavy rainfall, coupled with surrounding trenches filled with storm water allowing for interflow of water into this area. This area was determined to not be a wetland due to the lack of wetland characteristics present in the soil. Therefore this activity is no longer applicable.</b></p>

NOTICE	LISTED ACTIVITY	DISCUSSION
	<p><i>Expansion Strategy Focus Areas;</i></p> <p><i>(iii) Gauteng Protected Area Expansion Priority Areas;</i></p> <p><i>(iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</i></p> <p><i>(v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</i></p> <p><i>(vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</i></p> <p><i>(vii) Sites or areas identified in terms of an international convention;</i></p> <p><i>(viii) Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</i></p> <p><i>(ix) Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</i></p> <p><i>(x) Sites zoned for conservation use or public open space or equivalent zoning.</i></p>	

The Screening Assessment indicates that the proposed development does not trigger activities listed in the EIA Regulations, 2014 (as amended), therefore an application for EA is not required. The following is recommended to be undertaken in order to confirm this:

1. Landuse query to be submitted to GDARD.

## 4.2 Results of the Legislative Screening: NWA

Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) lists activities which are defined as Water Uses. Undertaking of a listed water use requires that an application for authorisation be made to the Department of Human Settlements, Water and Sanitation (DHSWS).

Water uses which may be applicable to the proposed development include:

- c. *Impeding or diverting the flow of water in a watercourse; and / or*
- i. *Altering the bed, banks, course or characteristics of a watercourse.*

### 4.2.1 Impeding or Diverting Water

The following definitions, as described in GN 509 of 26 August 2016, apply:

**Impeding** – *means to, in any manner, hinder or obstruct the instream flow of water, temporarily or permanently, but excludes the damming of flow so as to cause storage of water;*

**Diverting** – *means to, in any manner, cause the instream flow of water to be rerouted, temporarily or permanently;*

From the desktop information available, it appeared that no watercourses occur on the proposed development site. According to the National Freshwater Ecosystem Priority Area delineation, no wetlands exist within the 500 m development buffer of the sewer line route. An area supporting wetland vegetation was however observed on site at the time of the site visit. While the presence of storm water infrastructure suggests that this may be an artificial wet area, wetland habitat had established, which in turn supported wetland fauna such as birds.

Subsequent to the site visit, a wetland specialist has verified this wet area to not be a natural wetland. It was determined that this area is temporarily saturated and can sustain hydrophytic vegetation species due to the extensive excavations creating a small depression in which water pools after heavy rainfall, coupled with surrounding trenches filled with storm water allowing for interflow of water into this area. This area was ultimately determined to not be a wetland due to the lack of wetland characteristics present in the soil.

Based on this understanding, as well as the above-listed definitions, it is the opinion of GIBB that the proposed project does not engage in a S21(c) water use.

### 4.2.2 Altering the Bed, Banks, Course or Characteristics of a Watercourse

The following definitions, as described in GN 509 of 26 August 2016, apply:

**Characteristics of a watercourse** – *means the resource quality of a watercourse, within the extent of a watercourse;*

**Extent of a watercourse – means:**

- (a) The outer edge of the 1 in 100-year flood line and / or the delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; and*
- (b) Wetlands and pans: the delineated boundary (outer temporary zone) of any wetland or pan.*

**Regulated area of a watercourse – for section 21(c) or (i) water uses, means:**

- (a) The outer edge of the 1 in 100-year flood line and / or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;*
- (b) In the absence of a determined 1 in 100-year flood line or riparian area, the area within 100 m from the edge of a watercourse, where the edge of a watercourse is the first identifiable annual bank fill flood bench (subject to compliance with Section 144 of the Act); or*
- (c) A 500-m radius from the delineated boundary (extent) of any wetland or pan.*

The wetland specialist verified that there are no wetlands on site. It was determined that the 'wet area' area is temporarily saturated and can sustain hydrophytic vegetation species due to the extensive excavation occurring in the area, creating a small depression in which water pools after heavy rainfall, coupled with surrounding trenches filled with storm water allowing for interflow of water into this area. This area was ultimately determined to not be a wetland due to the lack of wetland characteristics present in the soil.

#### **4.2.3 Water Use Authorisation**

The Screening Assessment indicates that the proposed development will not trigger the need for a WUL.

## 5 Conclusion and Recommendations

The Environmental and Ecological Screening Assessment has provided an overview of the study area and highlights areas of environmental concern. The project team and all relevant stakeholders will need to ensure that effective mitigation measures are put in place in order to protect all sensitive environmental and social receptors going forward.

The study site is located within the Grassland Biome, and specifically within the Soweto Highveld Grassland vegetation type. Soweto Highveld Grassland occurs in Mpumalanga and Gauteng, and marginally in the Free State. According to Mucina and Rutherford (2006), this vegetation type is classified as Endangered and is hardly protected. The Soweto Highveld Grassland ecosystem is however listed as **Vulnerable** under the national list of threatened terrestrial ecosystems in terms of Section 52 of NEMBA (DEA, 2011) under criterion A1 Biome: Grassland.

Activity 12 in Listing Notice 3 relates to the clearance of 300 square metres (0.03ha) or more of vegetation, which will trigger a BA within any **Critically Endangered** or **Endangered** ecosystem listed in terms of Section 52 of NEMBA. This means any development that involves loss of natural habitat in a listed Critically Endangered or Endangered ecosystem is likely to require at least a BA in terms of the EIA regulations. The need for a BA is therefore not triggered by this terrestrial ecosystem. Furthermore, according to the Gauteng C-Plan, none of the proposed sewer line route falls with any CBA and/or ESA areas and no plants of conservation concern are likely to occur in the study area.

According to the National Freshwater Ecosystem Priority Area delineation and as verified by a wetland specialist, no wetlands exist within the 500 m development buffer of the sewer line route.

The final recommendations are therefore as follows:

- Consult with GDARD for a land use query to confirm that no additional activities are triggered by the activity;
- GIBB engineers and all relevant stakeholders will also need to commit and ensure that effective mitigation measure are put in place in order to protect areas as well as sensitive environmental receptors as far as possible;
- We recommend that the GIBB engineers work closely with the local councillors and business owners in the area;
- While the excavations within the disturbed grassland do not trigger an Environmental Authorisation, it is recommended that an Environmental Management Programme (EMPr), including Rehabilitation Plan and Alien Vegetation Management plan be implemented on site immediately. Alien vegetation was observed growing on stockpiles, which must be cleared and controlled; and
- It is recommended that an Environmental Control Officer (ECO) be appointed to ensure compliance with the EMPr.

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