Nali
Sustainability Solutions (Pty) Ltd
Environmental and Development Consultants

EIA REPORT

TIMSRAND EXTENSION 1 TOWNSHIP

REMAINING EXTENT OF PORTION 22 (PORTION OF PORTION 4), A PORTION OF PORTION 200 OF THE FARM KNOPJESLAAGTE 385, JR.
AND
HOLDING 23 TIMSRAND AGRICULTURAL HOLDINGS, JR.

REFERENCE: GAUT 002/19-20/E0164

Prepared for:

CENTURY PROPERTY DEVELOPMENTS

JULY 2020

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1.0 INTRODUCTION

According to the Department of Environment, Forestry and Fisheries, the function of the Environmental Impact Report (EIR), is, to help the responsible authority in making informed decisions, the public in understanding the likely impacts of the proposal, and the proponent in managing these impacts. In this regard, the EIR:

1. Documents and communicates, clearly and impartially:
    - the context of the proposed activity;
    - the probable impacts and risks associated with the proposed activity and its alternatives;
    - measures to mitigate and manage negative impacts - and enhance benefits - associated with the proposed activity and its alternatives, and the residual significance of impacts if mitigation measures were to be implemented effectively;
    - the concerns of the interested public, authorities, and the communities affected by the proposal; and
    - the level of confidence in predicting and evaluating impacts, any gaps in knowledge and areas of uncertainty which could substantially influence the findings.
2. Forms the basis for stakeholder review. For this reason, the EIR must use simple language and be easily understood.
3. Forms a sound basis for informed decision-making. In this respect, the EIR should give explicit, reliable and easily understood information to guide the decision-maker. The EIR should enable the decision-maker to decide on an action in the best interests of society and the environment where appropriate, set relevant conditions of authorisation.

This section describes the project and provides background information on the applicant, the proposed activity, details of the Environmental Assessment Practitioner (EAP) and maps out the application process as provided for in the EIA Regulations, 2014.

1.1 Context and background of the application

The applicant, Century Property Developments (Pty) Ltd, proposes to establish an industrial township consisting of 47 erven. The Township will consist of 39 “Industrial 1” erven, four erven will be allocated for access, gate house and roads purposes and will be zoned “Special” and the last four erven will be reserved for “Private Open Space”.

To manage the Environmental Impact Assessment (EIA) application process, the applicant has appointed Nali Sustainability Solutions (NSS) an independent Environmental Assessment Practitioner as required in by the EIA Regulations, 2014.

1.2 The Application Site

1.2.1 Property description

The application site measures approximately 93.8 hectares and is constituted by three properties:

- Remaining extent of portion 22 (Portion of Portion 4) of the farm Knopjeslaagte 385, JR measuring 85.1994ha.
- Holding 23, Timsrand Agricultural Holdings, JR measuring 3.2120 ha and
- A portion of Portion 200 of the farm Knopjeslaagte 385, JR measuring approximately 5.4562ha.

Table 1: SG 21 Digit Code

T	0	J	R	0	0	0	0	0	0	0	0	0	3	8	5	0	0	0	2	2
T	0	J	R	0	0	0	0	0	0	0	0	0	3	8	5	0	0	2	0	0
T	0	J	R	0	0	0	0	0	0	0	0	0	3	8	5	0	0	0	0	0

1.2.2 Site location

The application site is within the south-western reaches of the City of Tshwane Metropolitan Municipality, approximately 24 kilometres south-west of the Pretoria CBD. It is within Region 4 of the city which forms the southern gateway of the City.

The N14 highway is situated directly to the north of the properties between the R511 and R55 interchanges while the R511 (William Nicol Road) connects to Summit road that's located just south of the properties. Further, the site is located between the Mnandi and Du Toits Road routes connecting various small holdings and farms in the area.

At a local level, the site is mostly surrounded by the Timsrand Agricultural Holdings and the Knopjeslaagte Farm areas. The Olievenhoutbosch townships are located to the east of the said properties while the Diepsloot township is located to the west. Fig. 1 shows the locality of the site is, while Table 1 provides the SG 21 Digit Code of the property.

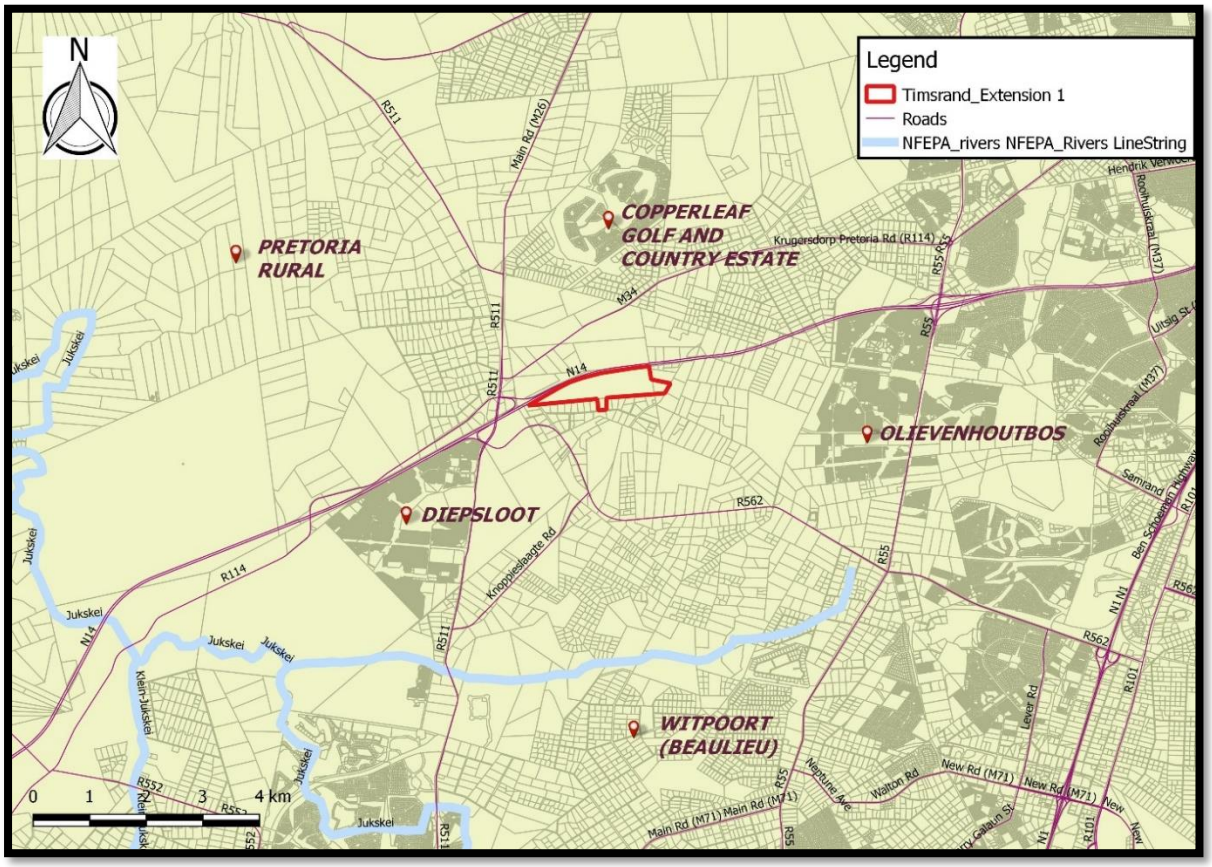


Figure 1: Locality Map

1.2.3 Land uses and zoning of the site and surrounding properties

In terms of the Tshwane Town Planning Scheme, 2008 (revised in 2014), the site is zoned "Undetermined". The Remainder of Portion 331 of the farm Knopjeslaagte, 385, JR (Just north of the N14 highway) has recently been rezoned for "Industrial 1" purposes. Holding 14 of the Timsrand Agricultural Holdings has been rezoned from "Undetermined" to "Special". The majority of properties are currently zoned "Undetermined". The remaining extent of Portion 22 of the farm Knopjeslaagte 385, JR is currently vacant. Holding 23, Timsrand Agricultural Holdings, JR is vacant with the majority of the property being affected by a wetland. The portion to be used for the proposed township (on

Portion 200) is currently vacant. However, a dwelling house and vegetable gardens are present on the southern point of the property. The proposed development will not affect these uses.

Portion 914 of the farm Knopjeslaagte 385, JR is currently being used for hangers for a private airport. The remainder of Portion 331 north of the N14 highway recently rezoned for "Industrial 1" purposes is currently in the construction phase with, roads and infrastructure having been developed. Holdings 158 and 157 of Laezonia Agricultural Holdings, north west of the site have recently been invaded and some informal housing structures constructed. Holdings 1, 2 and 3 of Timsrand Agricultural Holdings, located to the south are currently vacant.

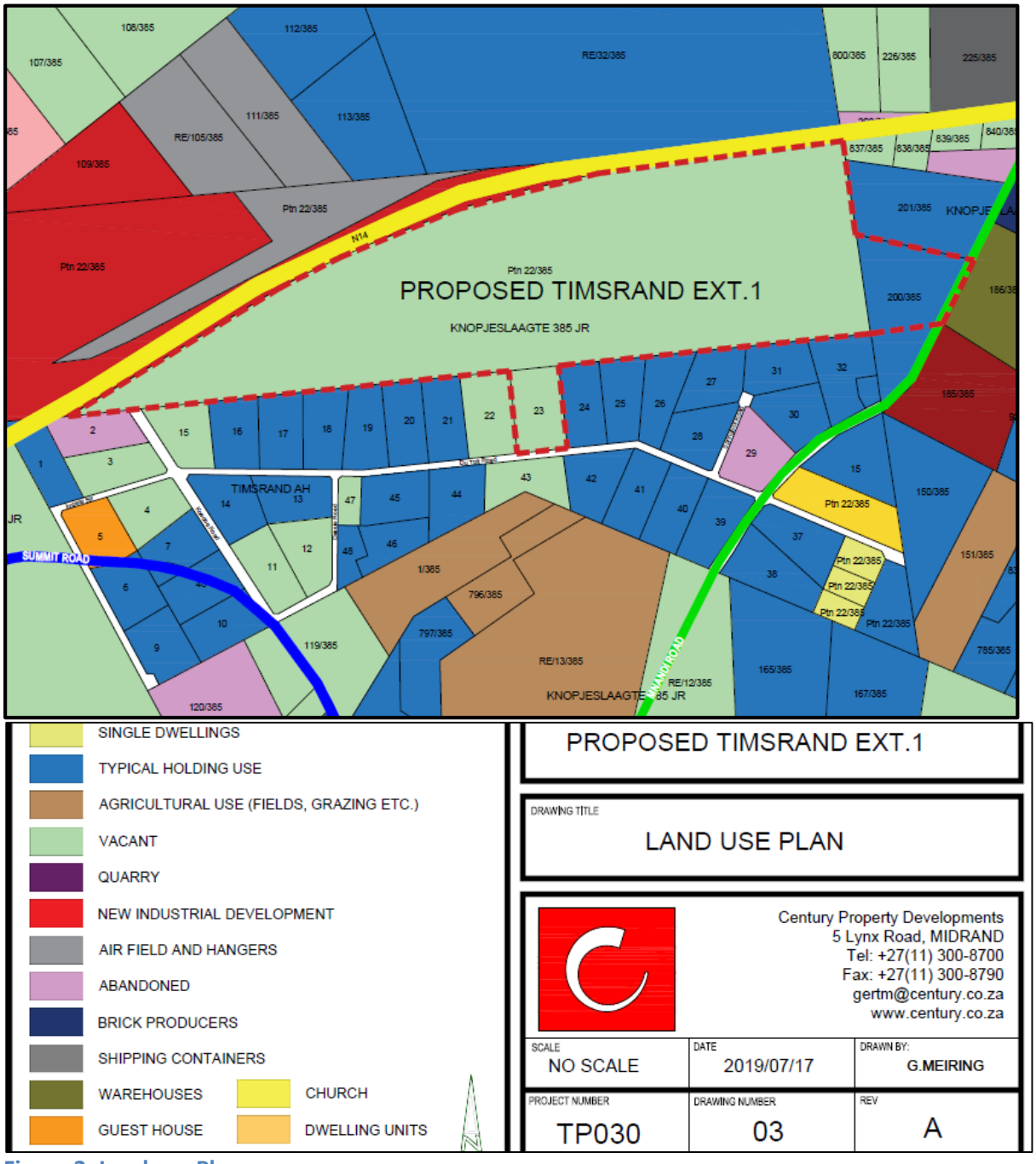


Figure 2: Land use Plan

Holding 15 Timsrand Agricultural Holdings located to the south of the site is owned by the provincial government and is currently vacant. Holding 16, Timsrand Agricultural Holdings located to the south of the relevant properties is currently utilized for agricultural, residential and business uses. No single use can be focused on. Holdings 17 to 21, Timsrand Agricultural Holdings are currently being used as typical small holdings with uses ranging from residential to small and medium farming practices. Farm animals and crops were observed on some of the properties. Holding 22, Timsrand Agricultural Holdings is currently vacant and affected by a stream. Holdings 24 to 28 and 30 to 32 are currently being used as typical small holdings with uses ranging from residential to small and medium farming practices. Farm animals and crops were observed on some of the properties. Holding 29, Timsrand Agricultural Holding used to be a Guest Lodge known as "Le Farm Lodge". However, the property has been abandoned and the buildings vandalised.

The remaining portion of Portion 200 of the farm Knopjeslaagte 385, JR directly north of the subject properties is currently used for residential purposes and vegetable gardens. Portion 201 of the farm Knopjeslaagte 385, JR just to the east of the subject properties is currently being used as a nursery with a dwelling unit. Portion 186 of the farm Knopjeslaagte 385, JR is currently being used for a mushroom farm known as Highveld Mushrooms located across Knopjeslaagte Road to the east of the site. Portion 800 and the remaining portion of portion 226 (Knopjeslaagte 385, JR) are currently being utilised as a nursery known as Mnandi Nursery. These properties are located just north of the N14 Freeway in close proximity of the proposed township. Holding 5, Timsrand Agricultural Holding is currently being utilised as a guest house known as "Dream Valley Accommodation". Portion 225 (Knopjeslaagte 385, JR) is currently being utilised as a church with a temporary tent-like structure. Along Summit Road to the south of the site, the Good News Johannesburg Church is located on Holding 6, Timsrand Agricultural Holdings. Holdings 33, 37 and 38, Timsrand Agricultural Holdings are currently being utilised for light industrial purposes with construction orientated businesses such as tools, plant equipment and shade netting.

1.3 Details of the applicant

Table 2: Details of the applicant

Aspect	Details
Applicant	Century Property Developments (Pty) Ltd
Representative	Harm Schreurs
Designation	Manager- Development
Physical address	5 Lynx Road, Treesbank, Midrand
Postal address	PO Box 70406, Bryanston, 2021
Telephone	011 300 8700
Email address	harm@century.co.za

1.4 Details of the EAP

To ensure full compliance with the EIA Regulations (2014) promulgated under section 24 (5) of the National Environmental Management Act, 1998 NEMA (Act No. 107 of 1998) (NEMA), Century Property Developments appointed Nali Sustainability Solutions (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to manage the EIA application process.

Table 3: Details of the EAP

Aspect	Details
Name	Nali Sustainability Solutions (Pty) Ltd
Lead EAP	Mr Pirate Ncube
Physical Address	65 Country Club Drive, Irene Farm Villages, Centurion

Postal Address	P Bag X1, Stand 1829, Irene Farm Villages, Centurion, 0045
Contact details	Tel: 0824517120; Fax: 086 694 1178, Email: ncube.nali@gmail.com
Expertise/experience	More than 27 years' experience in spatial planning, land use and environmental management. Experienced in Strategic Environmental Assessments, Environmental Impact Assessments and reviews, development of Environmental Management Frameworks and Plans, conducting Environmental Compliance Monitoring and Reporting. Served/s in various decision-making bodies including the DFA Tribunal, Environmental Advisory Committee, MEC Appeals Advisory Panel. Qualified Town Planner with master's in Real Estate and MBA.

1.5 Overview of the application process

The environmental assessment process will be undertaken in two phases namely:

- **Environmental Scoping Process** which includes the notification of the process and commissioning of specialists' studies. This particular report details the outcome of this process; and
- **The Environmental Impact Assessment phase** resulting in the EIAR as well as an Environmental Management Programme (EMPr). The EMPr will be compiled based on the findings of the Environmental Impact Assessment and will provide mitigation and management measures for the planning and construction phase of the proposed project.

PRELIMINARY PHASE
- Prepare and submit Application Form to GDARD -
- Prepare Background Information Document (BID)
- Prepare TOR for the required Specialist studies
- Appointment of specialist to conduct studies
- Identification of I&AP

SCOPING PHASE
- Prepare Scoping Report
- Conduct specialist studies
- Advertise and make available for comments
- Maintain a Register of I&AP
- Compile Comments and Response Report & circulate
- Compile and submit Final Scoping Report for decision.

GDARD ACCEPTANCE OF SCOPING REPORT

IMPACT ASSESSMENT PHASE
- Further Specialist Studies
- Compile Draft EIAR
- Compile Draft Environ. Management Programme
- Release Draft EIAR for public and authorities comment
- Prepare Issues and Responses Report
- Prepare Final EIR and make available to RI&AP
- Submit Final EIAR to GDARD for decision.

DECISION ON APPLICATION

APPEAL PROCESS

1.6 Objectives of the Scoping Process

The scoping process will, through a consultative process:

a) Identify the relevant policies and legislation relevant to the activity;
b) Motivate the need and desirability of the proposed activity;
c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
d) Identify and confirm the preferred site through a site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
e) Identify the key issues to be addressed in the assessment phase;
f) Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of consultations to be undertaken; and
g) Identify suitable measures to avoid, manage or mitigate impacts and to determine the extent of the residual risks that need to be managed and monitored.

1.7 Environmental Impact Assessment Report Phase

The EIR phase follows the acceptance and approval of the Scoping Report (SR) and Plan of Study for EIA). The SR was approved on 21 January 2020 subject to specified conditions (refer to Appendix 5).

1.7.1 Objectives of the EIA phase

As per the Regulations, the objective of the environmental impact assessment process is to, through a consultative process-

- determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- determine the--
    - nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    - degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated;
- identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- identify suitable measures to avoid, manage or mitigate identified impacts; and identify residual risks that need to be managed and monitored.

1.7.2 Contents on the EIR

As per the requirements of Appendix 3 of GN R.982 National Environmental Management Act (107/1988: Environmental Impact Regulations, 2014, the EIR contains the following:

a) Details and the expertise of the EAP, including curriculum vitae;
b) Location of the activity;
c) A plan which locates the proposed activities applied for as well as the associated structures and infrastructure at an appropriate scale;
d) A description of the scope of the proposed activity;
e) A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;
f) A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;
g) A motivation for the preferred development footprint within the approved site;
h) A full description of the process followed to reach the proposed development footprint within the approved site, including:

- Details of the development footprint considered;
- Details of the public participation process undertaken in terms of regulation 41;
- A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were addressed;
- The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical and biological, social, economic, heritage and cultural aspects;
- The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
- The methodology used in determining and ranking the nature, significance, consequence, extent, duration and probability of environmental impacts and risks;
- Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected;
- The possible mitigation measures that could be applied and level of residual risk;
- A concluding statement indicating the preferred alternative development location within the approved site;

i) A full description of the process undertaken to identify, assess and rank the impacts of the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity;

j) An assessment of each identified and potentially significant impact and risk

k) A summary of the findings and recommendations of specialist report complying with appendix 6 of these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

l) An environmental impact statement;

m) All information required by the competent authority.

2.0 PROJECT DETAILS

This section provides details of the proposed activity and associated infrastructure as well as motivation for the proposed development.

2.1 Details of the proposed activity

The proposed activity, entails establishment of an Industrial township, consisting of the uses listed in the below.

Table 4: Development controls

ERVEN	NO OF ERVEN	USE ZONE	AREA (ha)	DENSITY / BULK STAND SIZES
1-38	38	"Industrial 1"	67,6427	Business Building; Cafeteria; Car Wash; Commercial Use; Industry; Light Industry; Parking Garage; Parking Site; Place of Refreshment; Retail Industry; Shop; Motor Showrooms. 60% coverage and height of 20 metres.
39-42	4	"Special"	7,0127	Access, Access Control, Private Roads, Gate House, Security, Municipal and/or Private Services (Civils and Electrical) and Landscaping Purposes. 10-40% Coverage, 3 storeys.
43-46	4	"Private Open Space"	19, 1218	

As part of the application process, the graves located on the western portion of the site are proposed to be retained on site, properly protected and landscaped in order to blend with the proposed development.

2.2 Proposed Layout Plan

The proposed layout has been guided by the development constraints and opportunities presented by the site. Included among these is the shape of the land, nature of adjacent land uses, the need for efficiency in land allocation in relation to infrastructure services, specialist recommendations, the wetland areas, areas of ecological sensitivity and geological constraints, as well as future roads. However, the Environmental Impact Assessment (EIA) and associated specialists' studies will inform the final layout.

Several iterations took place in the development of the layout, see different versions below. The final layout took into account the various factors including environment, engineering services, roads and their designs, access configuration and other related economic considerations. The different configurations were evaluated resulting in in the options below that were considered most feasible.

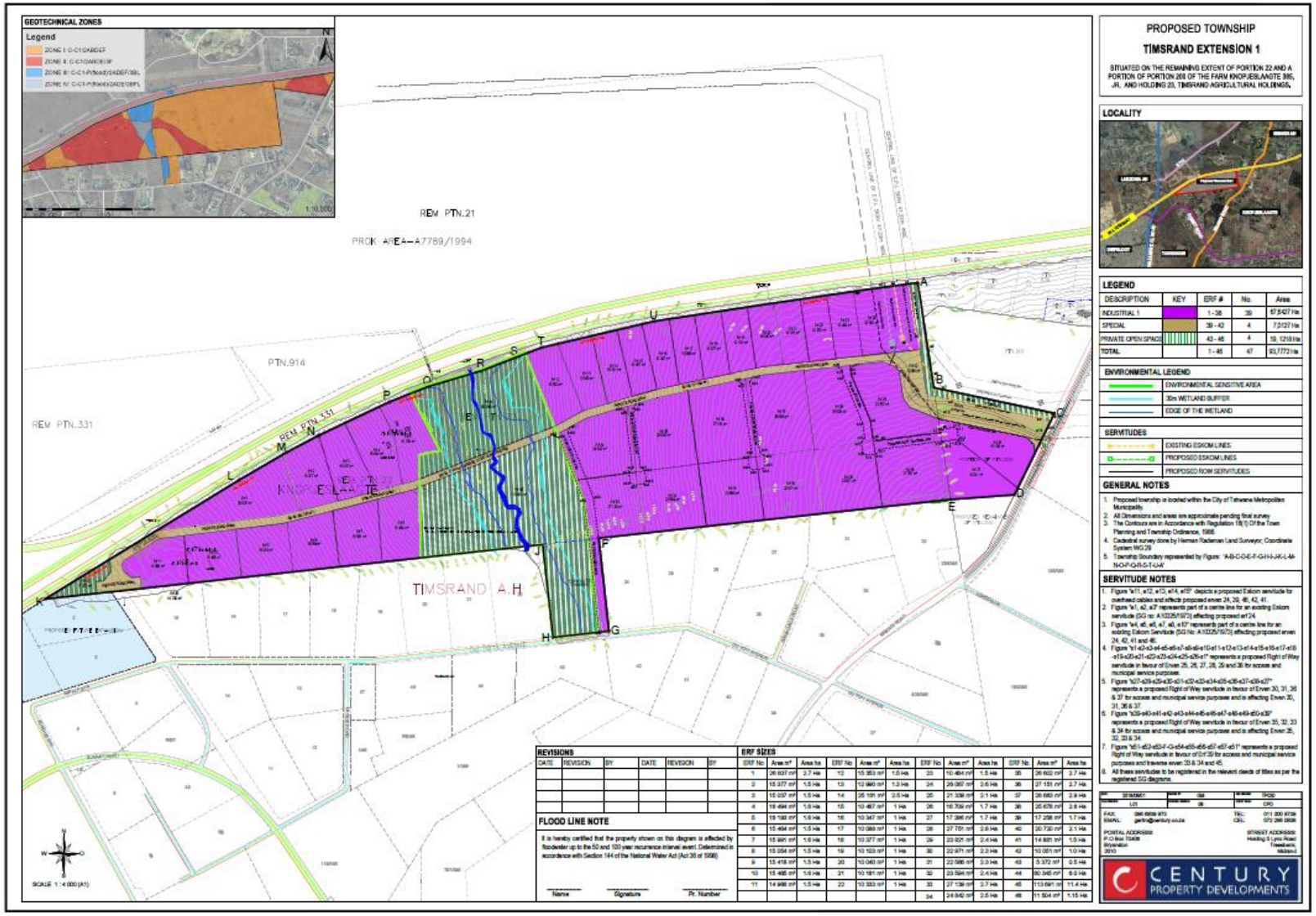


Figure 3: Proposed layout

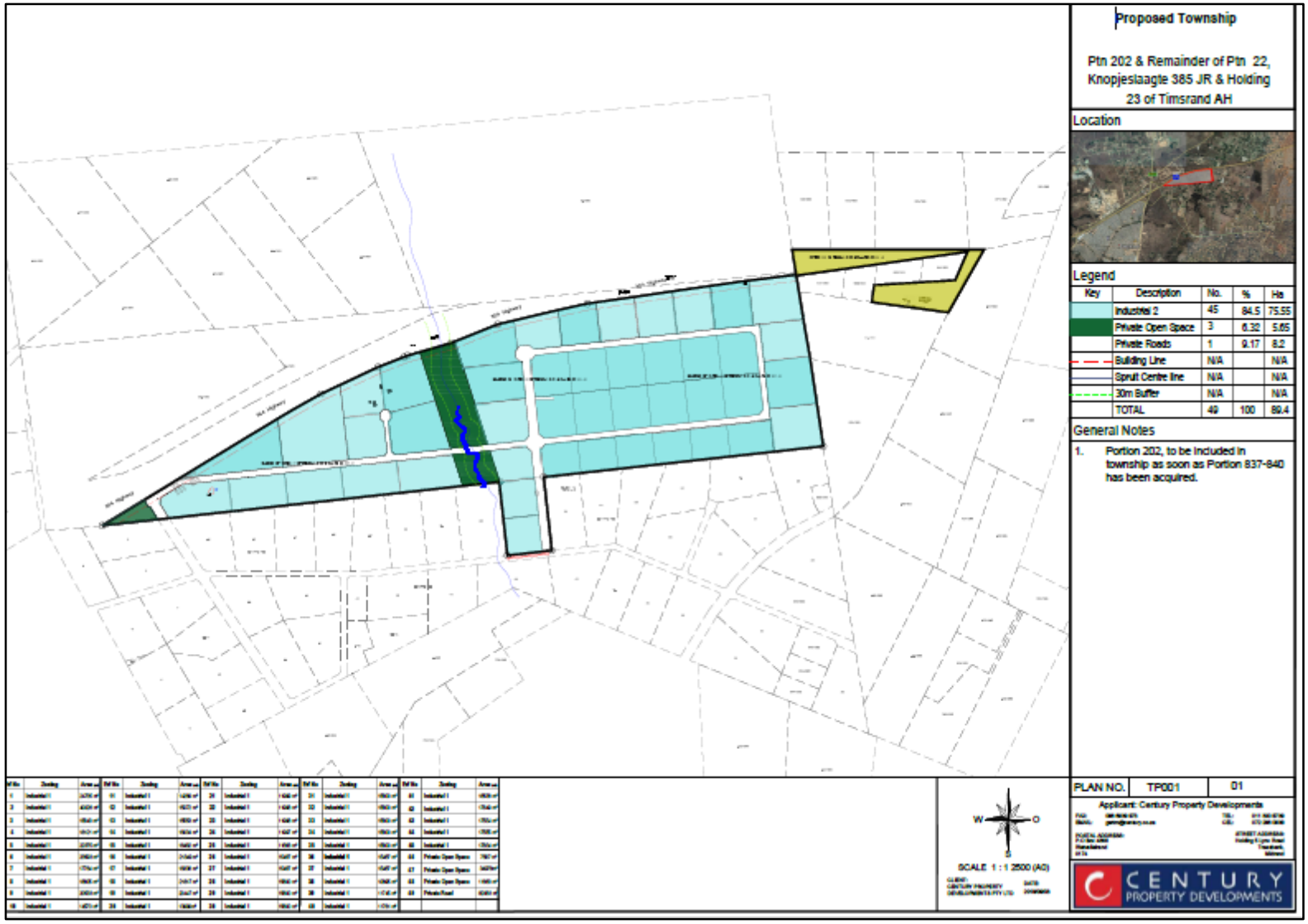


Figure 4: Layout Alternative 2

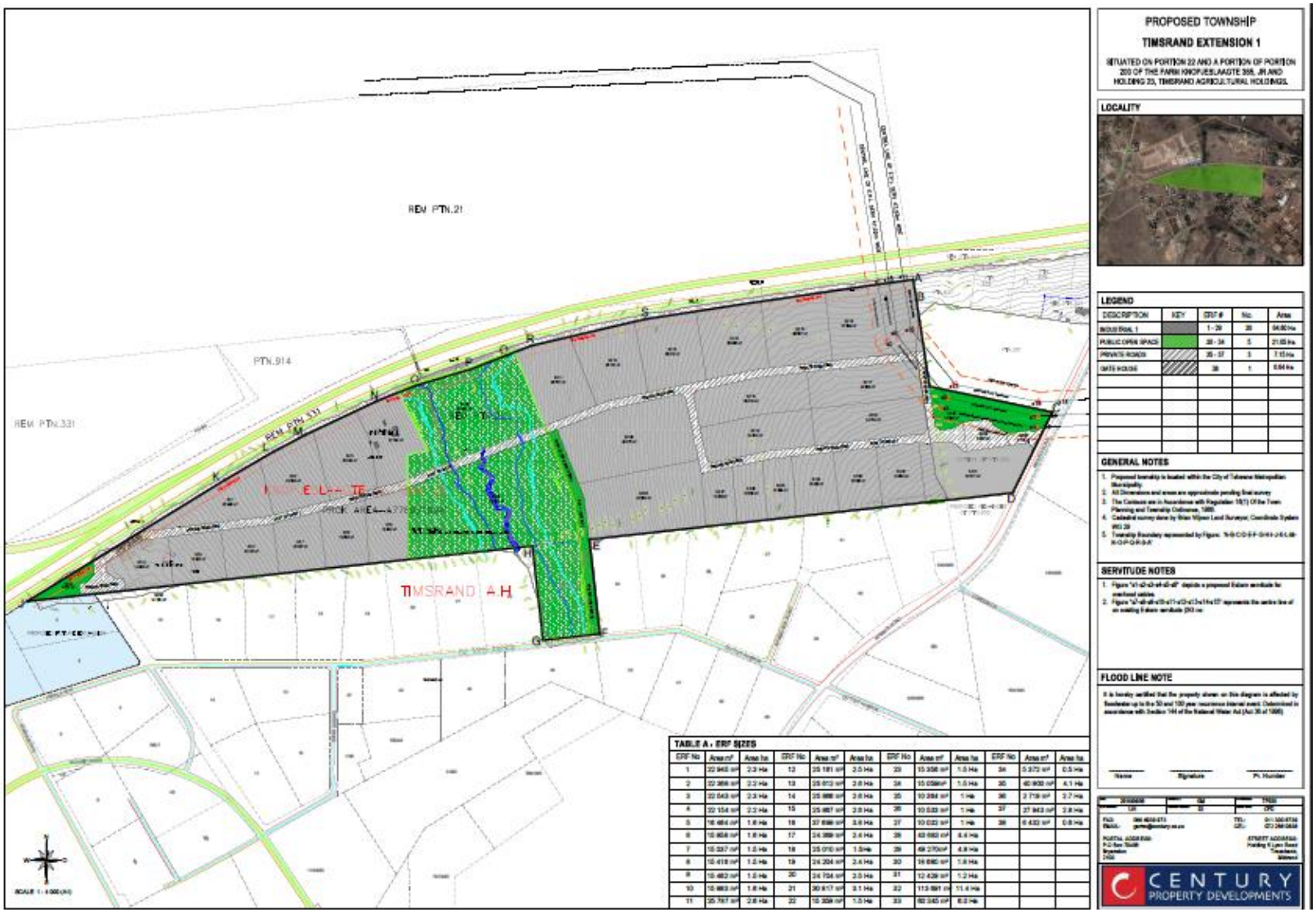


Figure 5: Layout Alternative 3

2.3 Infrastructure services

2.3.1 Roads and Stormwater

2.3.1.1 Existing Road Network

WSP Group Africa (Pty) Ltd were appointed to conduct a Traffic Impact Assessment (TIA) in support of the proposed development. The TIA was prepared in accordance with the requirements of the South African Traffic Impact and Site Traffic Assessment Manual (COTO, 2012), the Tshwane Town-Planning Scheme, 2008, as well as other relevant guidelines. According to the study, a number of roads in the vicinity will be impacted upon by the proposed development. These include:

- **R511 –** The R511 falls under the jurisdiction of the Gauteng Province Department of Roads and Transport (GPDRT). It is classified as a Class 2 Major arterial and serves as a mobility road to/ from the development sites. The road exists as a single lane per direction, to a dual carriageway with up to two lanes per direction.
- **R114 -** The R114 falls under the jurisdiction of the GPDRT. It is classified as a Class 3 Minor arterial and serves as a mobility road to/ from the development site. The road exists as a single lane per direction.
- **Boundary Road/Mnandi Road-** Boundary Road falls under the jurisdiction of the GPDRT. It is classified as a Class 3 Minor arterial and serves as a mobility road to/ from the development sites. The road exists as a single lane per direction.
- **Summit Road-** Summit Road falls under the jurisdiction of the City of Tshwane Metropolitan Municipality. It is classified as a Class 4 Collector street and serves as an access road to/ from the Timsrand Extension 2. The road exists as a single lane per direction.
- **Du Toit Road-** Du Toit Road falls under the jurisdiction of the City of Tshwane Metropolitan Municipality. It is classified as a Class 4 Collector street and serves as an activity road to/ from the development sites.

Figure 6: Existing Road Network

2.3.1.2 Proposed Roads Upgrades

The following roads upgrades are proposed in the area.

- **R114 and Boundary Road**
  The following upgrades are proposed for **2024** background traffic:
  - Traffic signals;
  - A 95 meter and 150 meter right turn lanes on the west approach;
  - A 150 additional exit lane on the west;
  - A 90 meter right turn lane on the south approach;
  - A physical island on the south; and
  - Widening of the physical island on the east for an additional approach lane.

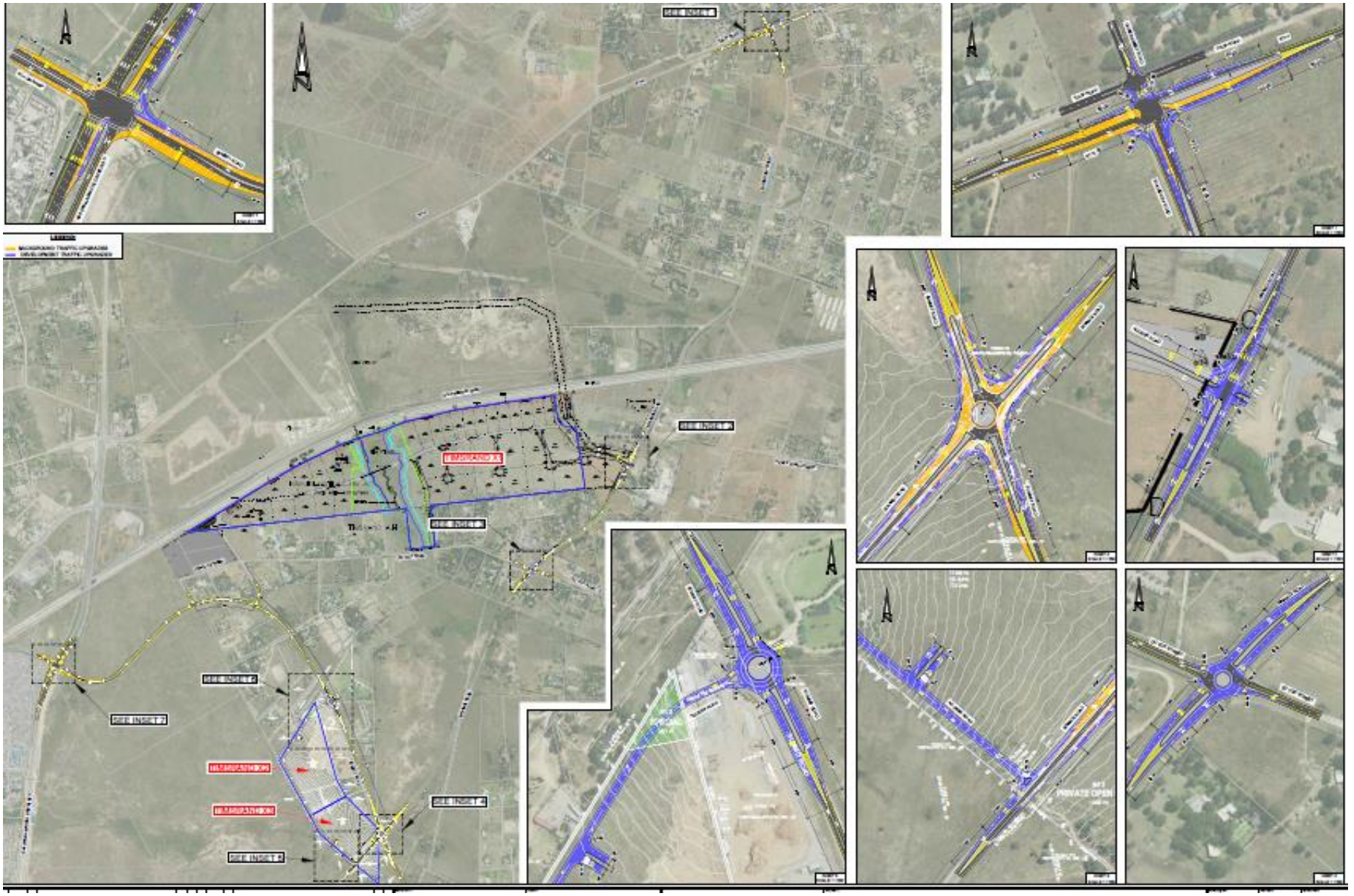
  The following upgrades are proposed for **Phase 1-3** development (Timsrand Ext 1. and Extension 2):
  - Slip lane on the south approach;
  - A 180 meter right turn lane on the south approach;
  - An 80-meter additional exit lane on the south;
  - A 140-meter slip lane on the east approach;
  - A 120-meter additional exit lane on the east; and
  - A 60 meter shared through and left lane on the north approach, with physical-island and widening for the exit lane.

- **Mnandi Road and Du Toit Road**
  The following upgrades are proposed for **Phase 1** development:
  - A 20-meter diameter traffic circle with 5.5-meter circulating lane.
  - The following upgrades are proposed for **Phase 2-3** development:
  - Second circulating lane;
  - A 120 approach and 60-meter exit lane on the south; and
  - A 120 approach and exit lane on the north.

- **Summit Road and Mnandi Road**
  The following upgrades are proposed for **2019** background traffic:
  - A 30-meter diameter traffic circle with two circulating lanes (9.1 meter wide);
  - A 100-meter approach lane on the west approach; and
  - A 120-meter approach lane on the east approach.
  - The following upgrades are proposed for **2024** background traffic:
  - A 100-meter exit lane on the west;
  - A 120-meter approach and exit lane on the south;
  - A 160-meter exit lane on the east; and
  - A 120-meter approach and exit lane on the north.

  The following upgrades are proposed for **Phase 1-3** development:
  - A 60-meter slip lane on the north, south and east approaches; and
  - A 50-meter slip lane on the west.

- **R511 and Summit Road**
  The following upgrades are proposed for **2019** background traffic:
  - A 60-meter approach and exit lane on the west;
  - A 90 meter right turn lane on the south approach;
  - A 120-meter slip lane and through lane on the east approach; and
  - An additional exit lane on the east to from the intersection to where the lanes become double.
  - A 60 meter right turn on the north approach proposed for **2024** background traffic.
  - An additional 50-meter approach lane on the south approach for **Phase 1-3** development; and
  - A 90-meter low angle slip lane on the north approach, with a 60-meter exit lane on the east.



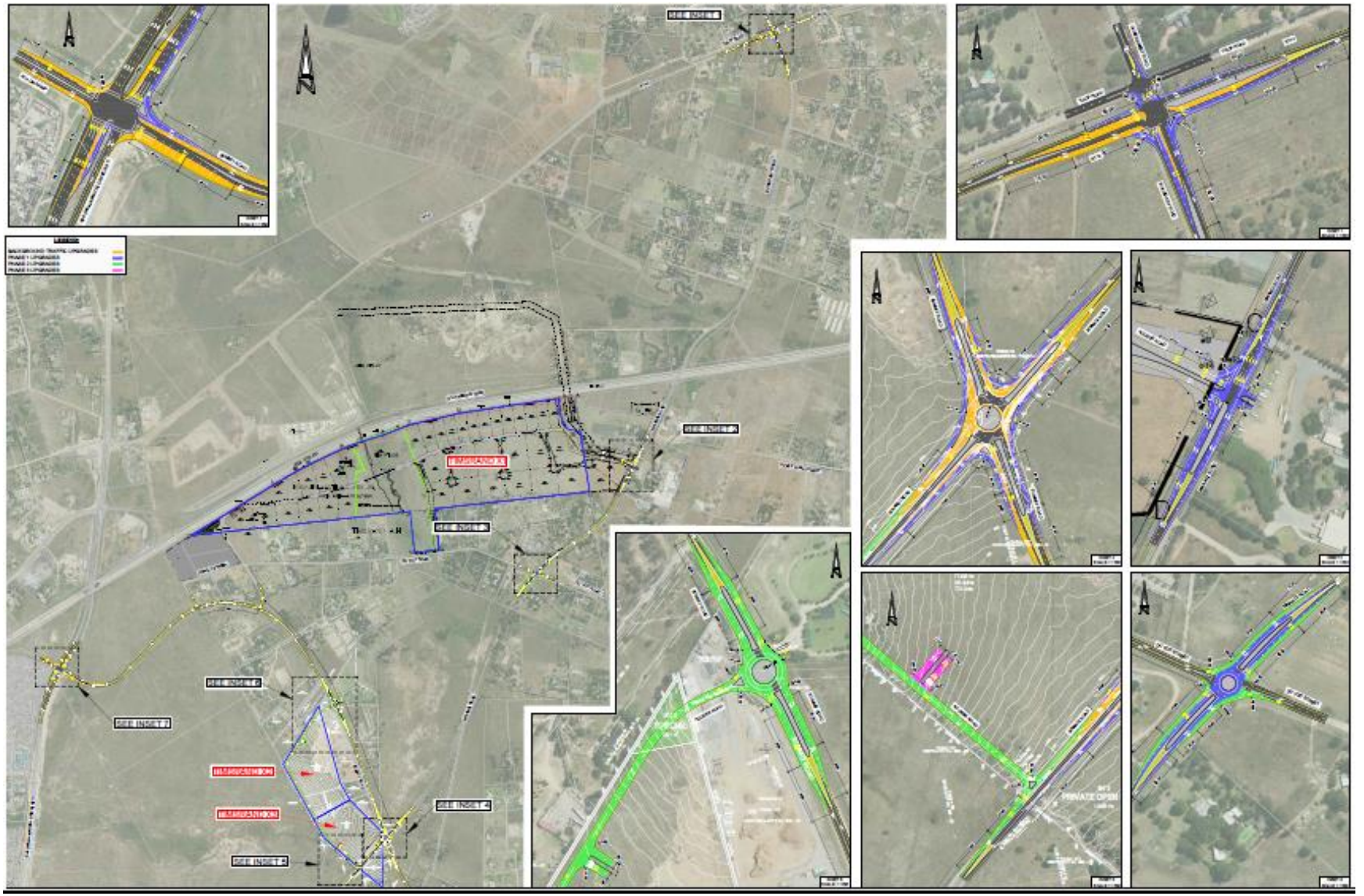


Figure 7: Proposed Roads Upgrades

2.3.1.3 Access to the Township

The main access to the township will be taken off Mnandi Road. According to the TIA, this access will include:

- Traffic signals;
- A 120-meter slip lane and a 60-meter exit lane on the south;
- A 60-meter shared through and left lane on the north approach;
- A 120-meter through lane on the north approach; and
- Two entry/exit lanes and a 30-meter low angle slip lane with a 60-meter exit lane on the north.

In addition to the above, a 20-meter diameter traffic circle with 5.5-meter circulating lane is proposed off Du Toit Road. This will be upgradable to a second circulating lane. Also on the western portion of the township, an internal road ends at a cul-de-sac linking the township to Koedoe Street. The proposal is to build a 2nd gatehouse and connect the township to Summit Road via Koedoe Street.

Although investigations were made to consider access via Koedoe Street, it was concluded that that because of the design consideration, land ownership and costs involved, this, as the primary access to the township, was not feasible.

2.3.2 Stormwater System

2.3.2.1 Existing Stormwater System

The site is intersected midway by the Swartbooi River. The tributary flows in a northern direction and drains towards the N14. There are three (3) culverts under the N14 that conveys the water across to the north of the N14. The culverts were measured at 1No 3800x3800 and 2No 3000x3000, side by side. The property consists of five (5) major catchments that drains towards the middle tributary and Culverts. The catchments have an average slope of 4.9% towards the tributary. The catchments are sparsely vegetated.

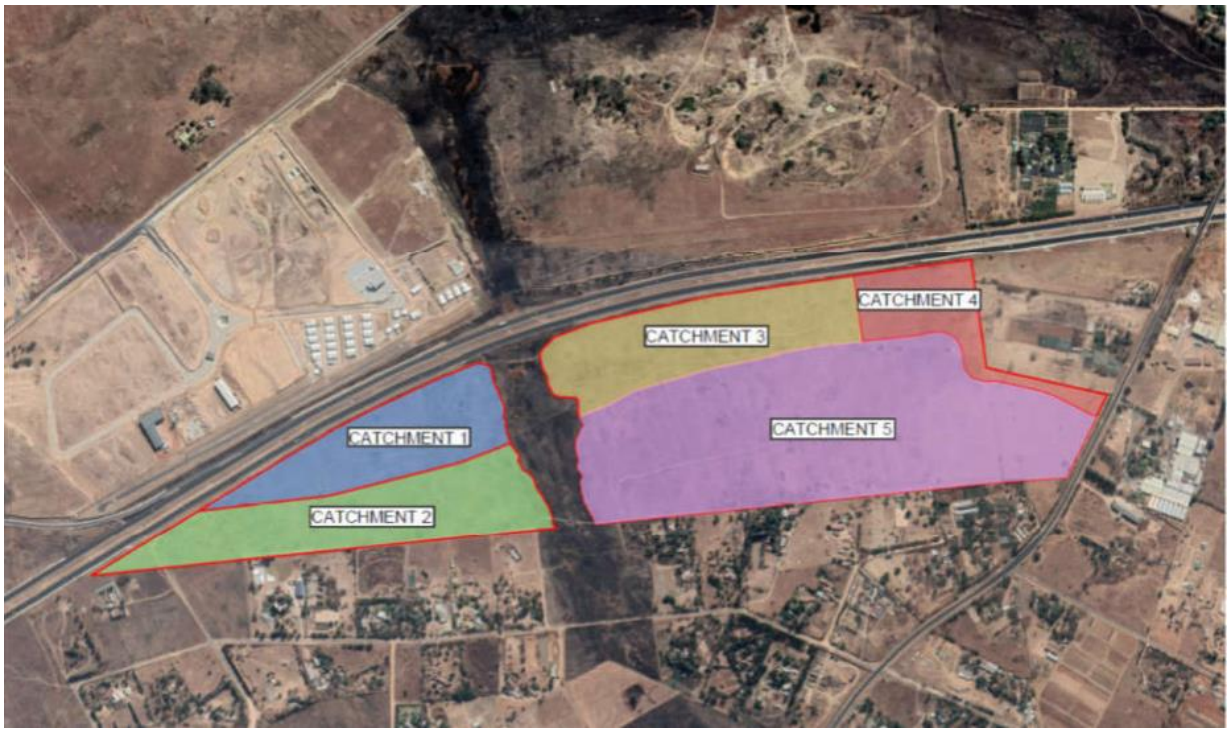


Figure 8: Stormwater Catchments

The stormwater generated by the development of Timsrand X1 will be conveyed an internal stormwater network consisting of concrete pipelines and open lined channels which will discharge into the tributary.

Further, the township is affected by the 100-year flood line from the tributary. A study to determine the delineation was conducted by Civil concept. No Industrial erven will be established beyond the wetland buffer or the 100-year flood delineation.

2.3.2.2 Proposed Stormwater Infrastructure

The stormwater generated by the development will be conveyed by a combination of a concrete pipe network and open channel lined channels which will discharge into the tributary with outlet structures equipped with permanent energy dissipating measures to prevent erosion.

The 1:100-year flood line has an elevation of 1448.800 at the existing 3800x3800 culvert underneath the N14. The invert level of the culvert was surveyed at 1447.574. Therefore, in the 1:100-year storm event this culvert will run 1.226m full (about 32% of its designed capacity). New culverts will be constructed under the new road to accommodate the upstream runoff. All dischargers will be to the natural stream, upstream of the flood line and will be designed to dissipate the discharge in order to prevent erosion.

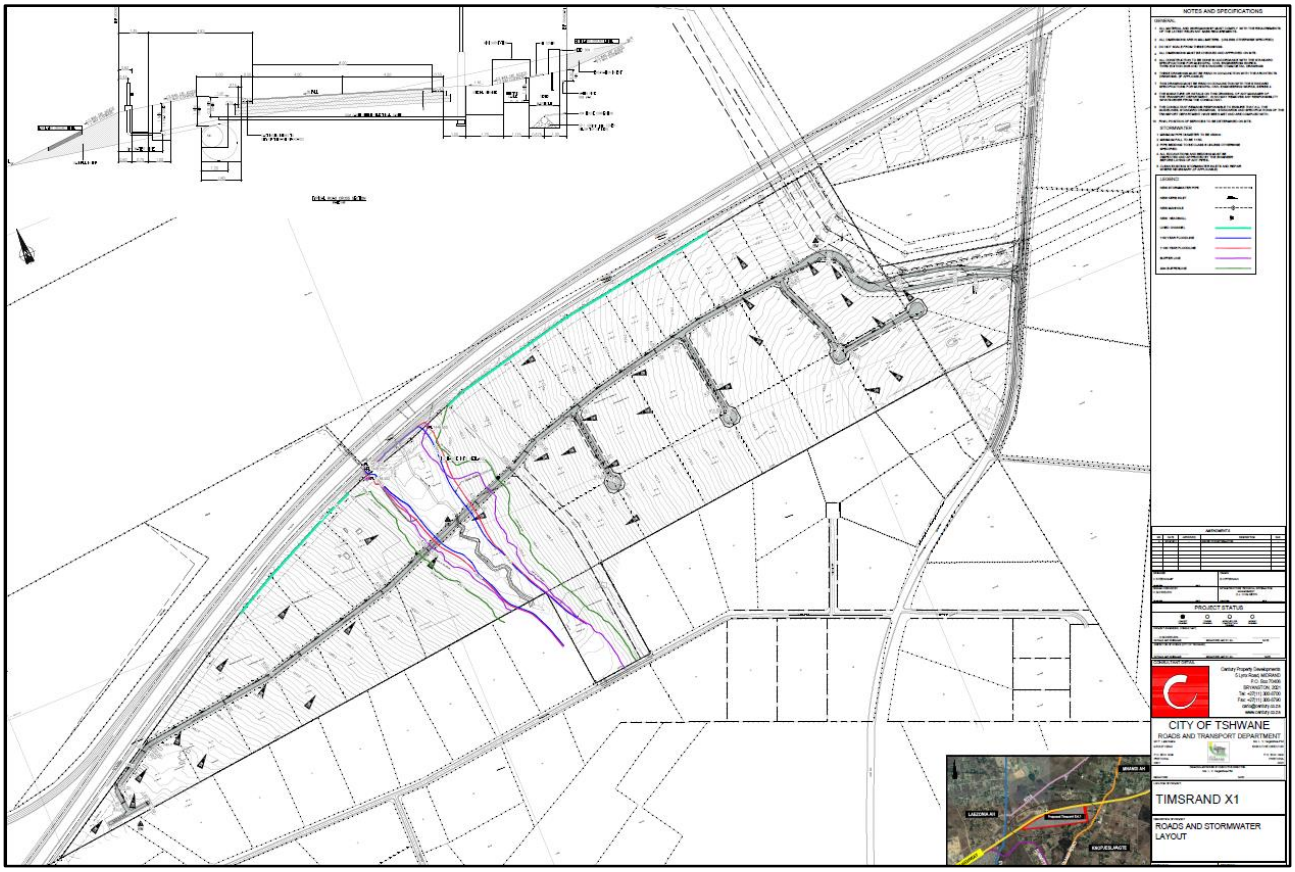


Figure 9: Proposed Stormwater Infrastructure

2.3.3 Bulk water services

Civil Concepts (Pty) Ltd were appointed to investigate the availability of bulk services and to provide for connections for the township.

2.3.3.1 Existing Bulk water services

According to the assessment, there is an existing 350 mm diameter pipe along Du Toit Road running on the southern boundary of Holding 23, Timsrand AH.

Figure 10: Existing Bulk Water Network

The estimated water demand that will be generated by the proposed townships is summarized in the table below:

Table 5: Water Demand

Land use	Area (ha)	FSR	Area	Type	Water demand per land use type	AADD (kℓ/day)
Industrial, with business buildings as general usage	67.64	0.6	405,840	units	0.8 kl/100m²	3246.72
Special – Gate house on Erf 42			2800	units	0.8 kl/100m²	17.92
Public Open space less area below buffer zone	19.21-10.83 = 8.38 ha			ha	15 kl/ha	125.7
SUB TOTAL (kl/day)						**3390.34**
Peak Factor						**3.3**
Peak Flow (excl Fire Flow)						**129.49**

As per Table 5 above, the fire flow requirement for the proposed development amount to 50 l/s as per the City of Tshwane Guidelines for the Design and Construction of Water and Sanitation Systems for Moderate Risk uses. The combined domestic and fire flow for the proposed development is 179.49, say 180 l/s l/s.

2.3.3.2 Proposed infrastructure

According to the engineers a 350mm diameter connection will be made to the bulk water pipeline on Du Toit Road. This will allow for 180 l/s fire flow @ maximum 2,2 m/s flow speed.

While the details of the internal network are still to be finalised, indicative pipe sizing is shown on the layout plan below.

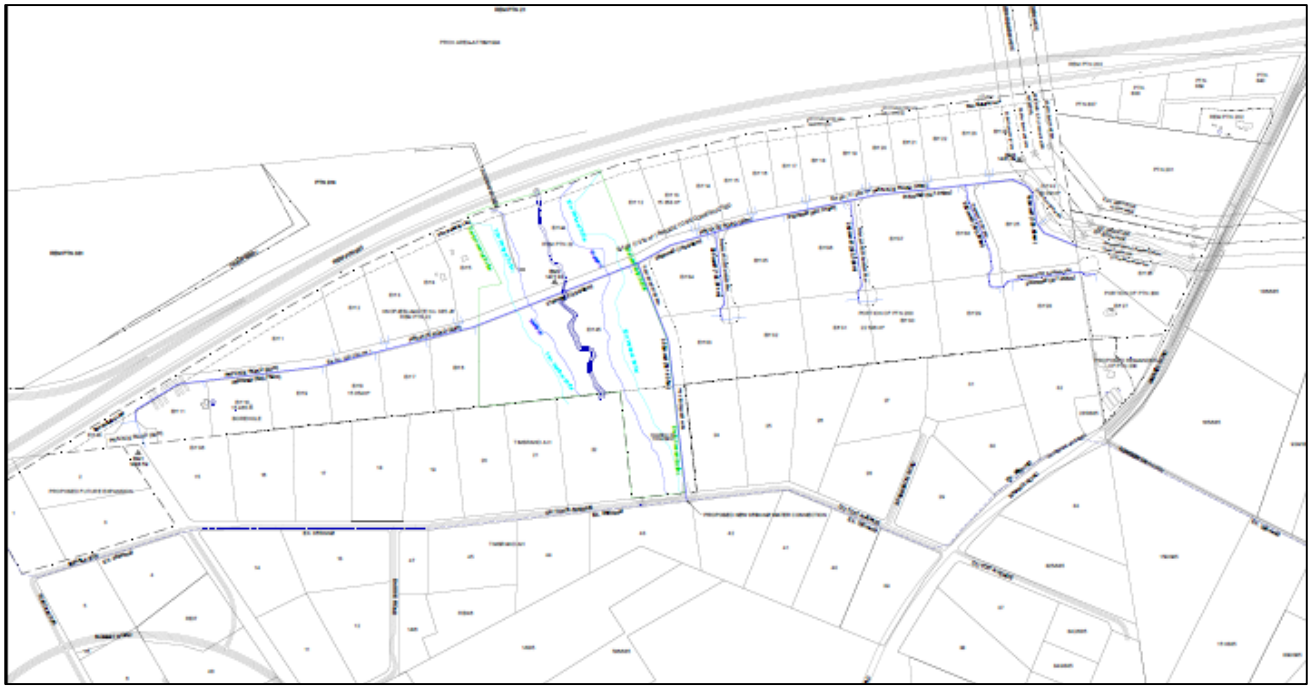


Figure 11: Proposed Internal Water Network

2.3.4 Bulk sewer services

2.3.4.1 Existing infrastructure

This development falls under the Swartspuit drainage area. It is the intention to be gravity drained from the upper reaches with the Swartspruit Outfall sewer and ultimately to the newly planned Schurveberg WWTP.

The Schurveberg WWTW is a future 50 Ml/day plant still to be designed and constructed. Approximately 5.3 km from Timsrand X1 is the existing Peach Tree private WWTW. Once the Swartspruit Outfall sewer is constructed this plant will be decommissioned.

According to the CoT, an interim option 3 – Vlakplaats Pump station 5A is planned whilst the Schurveberg WWTW is not yet operational. It involves a pump station and rising main from Peach Tree WWTW to Sunderland Ridge WWTW. Once commissioned the Peach Tree WWTW can also be decommissioned. This is a COT project and budget allocations have been made for the detail design and construction. There is no definite timeline for commencement.

Except for the Peach Tree WWTW, there is no other sewer infrastructure in the area.

2.3.4.2 Proposed Bulk infrastructure

It is proposed that Timsrand X1 install the Swartspruit Outfall sewer from the most southern boundary of Timsrand X1 until the Vlakplaats 5A pump station.

In addition, it is proposed that the reticulation items on the western side of the Swartspruit within Timsrand X1, also be installed as part of the development.

The various masterplan items and estimated cost are listed below. Allowance has been made for expropriation cost of the sewer servitude that will be required. Recent experiences proved the negotiations required facilitation from a specialist consultant and further cost for the actual deeds attorneys should also be included.
In the case of the Vlakplaats 5 A Pump station not being completed and commissioned in time for the development, it is proposed that for the interim the developer installs an on-site treatment plant. The plant will have to comply with all environmental and Department of Water and Sanitation (DWS) requirements and licencing. Once the outfall sewer is activated, the temporary plant will be removed.

2.3.5 Floodlines

Civil Concepts were appointed to determine floodlines for the proposed Timsrand X1 township. The 1:50 and 1:100 year floodlines were determined using peak flow rates for existing watercourse conditions together with HEC-RAS model outputs, hand calculations and refined by manually adjusting the lines as per contour data between cross sections. Existing and future flood events were modelled using the same flood peaks due to the size of the catchment and method of calculation.

The assessment concluded that:

- The proposed development is affected by the 1:50 and 1:100 year floodlines,
- Existing N4 culvert bridge & underpass were simulated to determine the effect on floodlines,
- Du Toit Avenue was simulated as a control point to determine the effect on the floodline;
- A proposed future culvert crossing was calculated to determine the possible effect on the floodlines based on inlet control, and
- The floodlines are therefore certified in terms of the Water Act.

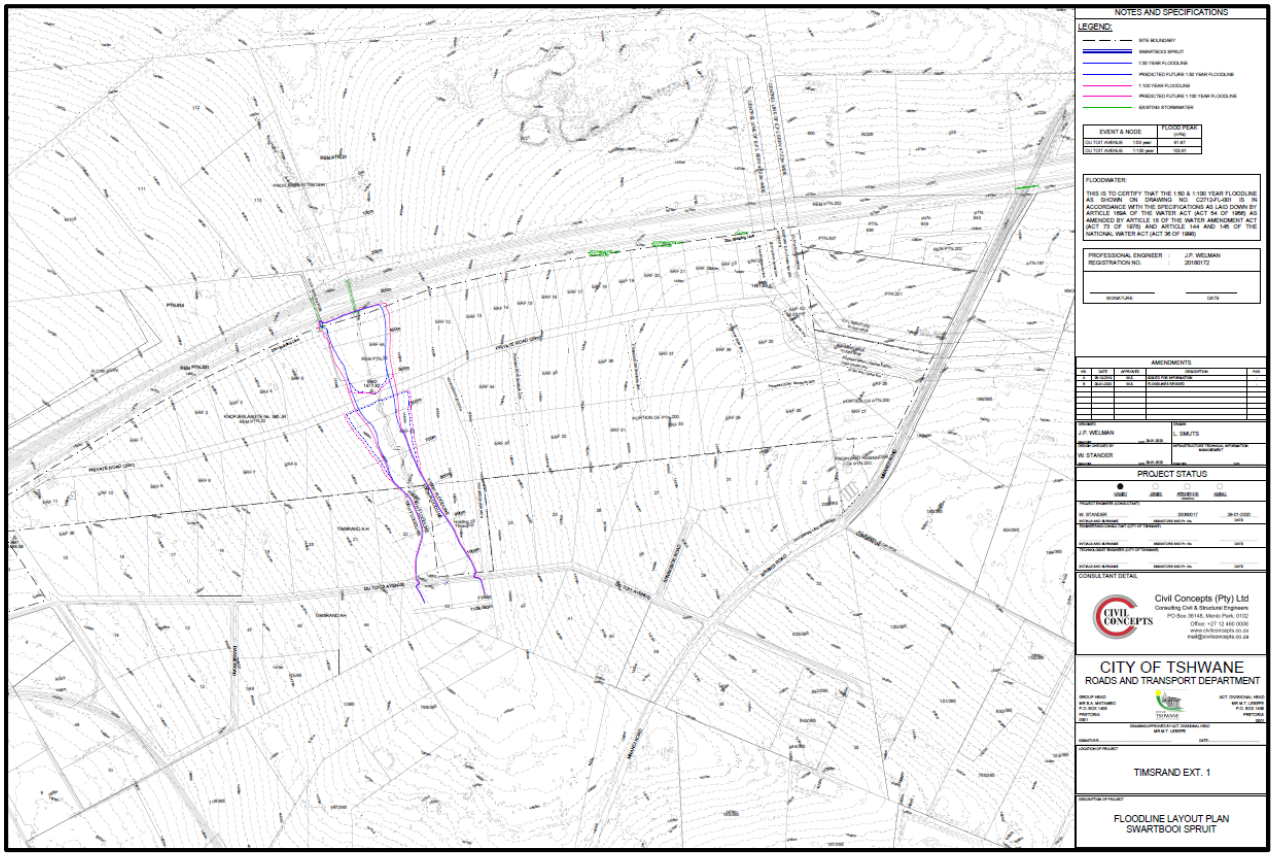


Figure 12: Proposed Internal Water Network

2.3.6 Electricity supplies

Investigations are currently underway to determine the availability of services as well as the required infrastructural upgrades. However, renewable infr4astructure will be installed as part of the township in order to reduce reliance on the national grid.

2.4 Listed Activities Triggered by the Development

In terms of the NEMA EIA Regulations of 2014, the table below presents the list of activities triggered by the proposed development.

Table 6: List of activities triggered

Government Notice:	Activity No (s)	Describe each listed activity as per the wording in the listing notices:
GN. R 983, 8 December 2014	Activity 19 of Listing Notice 1	The infilling 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 – (i) A watercourse; But excluding where such infilling, depositing, dredging, excavation, removal or moving- a) Will occur behind a development setback; b) Is for maintenance purposes undertaken in accordance with a maintenance management plan; or c) Fall within the ambit of activity 21 in this Notice, in which case that activity applies. d) … e) …
GN. R 983, 8 December 2014	Activity 25 of Listing Notice 1	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.
GN. R 983, 8 December 2014	Activity 27 of Listing Notice 1	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) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance plan
GN. R 984, 8 December 2014	Activity 15 of Listing Notice 2	The clearance of an area of 20 hectares or more of indigenous vegetation except where such clearance is required for-- (i). The undertaking of a linear activity; or (ii). maintenance purposes undertaken in accordance with a maintenance plan.
GN. R 985, 8 December 2014	Activity 12 of Listing Notice 3	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance is required for maintenance purposes undertaken in accordance with a maintenance plan. In Gauteng (iii). Within any critically endangered or endangered ecosystems listed in terms of section 52 of the NEMBA…

		(iv). Within Critical Biodiversity Areas or Ecological Support Areas identified in Gauteng Conservation Plan or bioregional plans; (v). …
GN. R 985, 8 December 2014	Activity 14 of Listing Notice 3	The development of – (i) …; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more… where such development occurs – (a) within a water course; (b) … (c) If no development setback has been established, within 32metres of a water course, measured from the edge of a water course; Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. In Gauteng … iv. Sites identified as Critical Biodiversity Areas and Ecological Support (CBA) and Ecological Support Areas (ESA) in the Gauteng Conservation Plan or bioregional plans; v. Within any critically endangered or endangered ecosystems listed in terms of section 52 of the NEMBA…; vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority; …

3.0 LEGISLATIVE AND POLICY CONTEXT

This section serves to highlight key legislation and policy framework that has implications on the proposed activity. It must be noted that this list is not exhaustive but notes, at high level, the critical laws and policies that have been considered.

3.1 The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

All environmental aspects should be interpreted within the context of the Constitution. The Constitution has enhanced the status of the environment by virtue of the fact that environmental rights have been established (Section 24) and because other rights created in the Bill of Rights may impact on environmental management. An objective of local government is to provide a safe and healthy environment (Section 152) and public administration must be accountable, transparent and encourage participation (Section 195(1)(e) to (g)).

Implications for the proposed development:

- Obligation to ensure that proposed activity will not result in pollution and/or ecological degradation;
- Obligation to ensure that where possible conservation is promoted; and
- Obligation to ensure that the proposed activity is ecologically sustainable, while demonstrating economic and social benefits.

3.2 The National Environmental Management Act, 1998 (Act No.107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998) (NEMA) is South Africa's overarching legislative framework for environmental management. Act establishes the principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for co-ordinating environmental functions exercised by organs of state.

It sets out a number of principles that aim to give effect to the environmental policy of South Africa. These principles are designed to, amongst others, serve as a general framework for environmental planning, as guidelines by reference to which organs of state must exercise their functions and guide other laws concerned with the protection or management of the environment.

Chapter 5 of NEMA serves to promote integrated environmental management which must place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural and social interests equitably. Development must be socially, environmentally and economically sustainable. Sustainable development therefore requires the consideration of all relevant factors.

In terms of the NEMA and the EIA Regulations, 2014, an application for environmental authorisation for listed activities must be submitted to either the competent authority, depending on the types of activities being applied for. The current EIA regulations, GN R.982, GN R.983, GN R.984 and GN R.985, promulgated in terms of Sections 24(5), 24M and 44 of the NEMA commenced on 08 December 2014. GN R.983 lists those activities for which a Basic Assessment is required, GN R.984 lists the activities requiring a full EIA (Scoping and Impact Assessment phases) and GN R.985 lists certain activities and competent authorities in specific identified geographical areas. GN R.982 defines the EIA processes that must be undertaken to apply for Environmental Authorisation. The listed activities that are applicable to this project are identified in Section 2 above.

Implications for the proposed development

- The principles espoused in NEMA serve as guidelines for relevant decision makers in ensuring the protection of the environment. Therefore, the proposed development must be consistent with these principles.

- Where this is not possible, deviation from these principles would have to be very strongly motivated;
- The activity may not take place without the required authorisation; and
- Both the Scoping and EIAR processes will have to be informed by these principles and include public participation, the outcomes of these are to be incorporated into the final reports to be submitted for decision making.

3.3 National Environmental Management: Waste Act, 2008 (Act No 59 of 2008)

One of the main objectives of the NEMWA is to provide for the regulation of waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. The Act provides:

- National norms and standards for regulating the management of waste by all spheres of government;
- Specific waste management measures including:
  - The licensing and control of waste management activities;
  - The remediation of contaminated land;
  - to provide for the national waste information system; and
  - Compliance and enforcement mechanisms.

In terms of the NEMWA, certain waste management activities must be licensed and in terms of Section 44 of the Act, the licensing procedure must be integrated with an environmental impact assessment process in accordance with the EIA Regulations promulgated in terms of the NEMA. Government Notice 921, which was published in Government Gazette No.37083, on 29 November 2013 and implemented with immediate effect, lists the waste management activities that require licensing. A distinction is made between Category A waste management activities, which require a Basic Assessment, and Category B activities, which require a full EIA (Scoping followed by Impact Assessment)

Implications for the development:

- Any activities listed in GN 718 of the Waste Act require an EIA.
- Waste generated by the activity must be managed in accordance with the provisions of the Act.

3.4 The National Environmental Management: Biodiversity Act (Act 10 of 2004)

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA. This Act allows for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources and the establishment and functions of the South African National Biodiversity Institute. Key elements of the Act are:

- The identification, protection and management of species of high conservation value;
- The identification, protection and management of ecosystems and areas of high biodiversity value;
- Biodiversity Initiatives such as the STEP (Subtropical Thicket Ecosystem Plan) and CAPE (Cape Action Plan for People and Environment) may become accepted as bioregional plans and are thus implemented as legislation;
- Alien invasive species control of which the management responsibility is directed to the landowner; and
- Section 53 of the Act identifies that any process or activity that is regarded as a threatening process in terms of a threatened ecosystem, requires environmental authorization via a full Environmental Impact Assessment (Government Notice No. 387).

Implications for the current development:

Any ecologically sensitive areas and endangered species encountered on the site must be protected as provided for in the Act.

3.5 Spatial Planning and Land Use Management Act (SPLUMA)

The Spatial Planning and Land Use Management Act "SPLUMA", 2013 (Act 16 of 2013) intends to provide a uniform framework for spatial planning and land use management in the republic. It seeks to promote consistency and uniformity in procedures and decision-making in spatial planning. The objective of the Act are as follows:

- Provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;
- Ensure that the system of spatial planning and land use management promotes social and economic inclusion;
- Provide for development principles and norms and standards;
- Provide for sustainable and efficient use of land;
- Provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and
- Redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

Implications for the proposed development:

- The principles espoused in SPLUMA apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land. Therefore, decisions on the proposed development must be consistent with these principles.
- Where this is not possible, deviation from these principles would have to be very strongly motivated;

3.6 The National Water Act, 1998 (Act No.36 of 1998)

The National Water Act (The Act) provides for the management of South Africa's water resources. The purpose of the Act is to ensure that the Republic's water resources are protected, used, developed, conserved and controlled. It is concerned with the allocation of equitable access and the conservation of water resources within South Africa. The National Water Act of 1998 repealed many of the powers and functions of the Water Act of 1956. Key provisions include the following:

- Catchment Areas - Any disturbance to a watercourse such as the construction of a dam or weir type facility requires authorization from the Department of Water and Sanitation.
- Water Supply - Under the Act, a developer is required to obtain the necessary permits for water usage and the disposal of wastewater from the authority responsible for the administration of the Act.
- Any private well or borehole sunk for the abstraction of groundwater has to be reported and registered with the regulatory authority.
- Wastewater - The National Water Act is the principal piece of South African legislation governing wastewater management.

Implications for the proposed development:

- All the proposed water uses must be registered and/or licensed;
- Any modifications to drainage lines on site must be investigated in terms of water use requirements;
- The developers are responsible for taking reasonable measures to prevent pollution of water resources that it owns, controls, occupy or uses on the land in question;
- The developers are required to remedy a situation where pollution of a water resource occurs following an emergency incident and where it is responsible for the incident or owns or is in control of the substance involved;
- Steps must be taken to minimise the impacts of the incident, undertake clean-up procedures, remedy the effects of the incident and implement measures as directed; and
- Waste needs to be controlled adequately to negate the impacts on ground and surface water.

3.7 The National Heritage Resources Act, 1999 (Act 25 of 1999)

The Act promotes good management of the national estate of South Africa. The national estate includes:

- Places, buildings, structures and equipment of cultural significance;
- Places to which oral traditions are attached or that are associated with living heritage;
- Historical settlements and townscapes;
- Geological sites of scientific or cultural importance;
- Archaeological and paleontological sites;
- Graves and burial grounds, including:
    - Ancestral graves
    - Royal graves and graves of traditional leaders
    - Graves of victims of conflict
    - Graves of individuals designated by the Minister by notice in the Gazette
    - Historical graves and cemeteries
- Other human remains covered by the Human Tissue Act, 1983 (Act No 65 of 1983).
- Sites of significance relating to the history of slavery in South Africa.

In terms of Section 38 of the Act, the South African Heritage Resources Agency (SAHRA) must be notified during the early planning phases of a project for any development that includes the following activities:

- the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length any development or other activity which will change the character of a site exceeding 5 000 m² in extent
    - involving three or more existing erven or subdivisions thereof
    - involving three or more erven or divisions thereof which have been consolidated within the past five years
    - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- the re-zoning of a site exceeding 10 000 m² in extent, or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

Implications for the proposed development:

- Any artefacts uncovered during the construction phase must be reported to SAHRA;
- No person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or palaeontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority. The age of the buildings on site needs to be determined; and
- SAHRA must be informed of the proposed development and provided an opportunity to comment. This may result in the need for a basic heritage assessment.

3.8 The Gauteng Provincial Environmental Management Framework, 2015

The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:

- To provide a strategic and overall framework for environmental management in Gauteng;
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

Implications for the proposed development:
According to the EMF, the site is located within the Urban Development Zone (Zone 1) with the exception of the wetland traversing the middle of the site. The intention of Zone 1 is to streamline urban development activities and promote development infill, densification and concentration of urban development to establish a more effective and efficient city region that will minimise urban sprawl. The proposed mixed-use development providing commercial/industrial uses in close proximity of residential uses is aligned with government policy in general and the provisions of the spatial tools including the EMF in particular.

3.9 Tshwane Spatial Development Framework 2018

The Regional Spatial Development Framework serves to address transformation in terms of spatial logic, economic development and environmental sustainability as envisioned in the Roadmap towards Tshwane 2030.

According to the RSDF, the site is located within a mixed use development node. It is also borderd by the Mnandi/Knopjeslaagte road which is classified as a Mobility Road (Class III and IV). This road serves as the most important linkage between the two existing Metropolitan cores. Medium to High density residential and nodal development with a mixed-use character is permitted. Further, the N14 to the north of the propose development is classified as a Highway (Class I).

Implications for the proposed development:
- The proposed Timsrand Extension 1 is situated along a mobility spine which creates great access to both major metropolitan cores and the proximity to the Highway gives great visibility. Therefore, the development must utilize this exposure while being aligned with the provisions of the RSDF.
- The development must support the transformative agenda as pronounced in the 2030 Roadmap.

3.10 Other policies, plans and guideline documents

Other policies, municipal plans and guideline documents that are relevant to the project are listed below:
- Electricity Act (Act 41 of 1987);
- White Paper on Renewable Energy (2003);
- Integrated Resource Plan for South Africa (2010);
- National Road Traffic Act (Act No. 93 of 1996);
- Gauteng Employment Growth and Development Strategy;
- Gauteng 2055 (2014).

4.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section describes the biophysical and socio-economic environment that may influence or be affected the development while establishing the baseline conditions of the site. This includes information obtained from literature sources and is described at a level deemed appropriate for a Scoping study. A summary of the affected environment is provided, and more detailed studies focused on significant environmental aspects of the development will be provided during the impact assessment phase. The three components to the environment are recognised as:

- Physical Environment;
- Biological Environment;
- Socio-Economic Environment.

Only those elements of the environment considered to have a bearing on the project are discussed.

4.1 Physical Environment

4.1.1 Climate

Centurion region has typically hot summers and cold dry winters. Most of the rainfall is recorded in the summer months, from October to March, with an annual average of 674mm. With an average of 21.6 °C, January is the warmest month. Winter is from June to September and is relatively mild but sunny. It is cold in the mornings and evenings. June is the coldest month, with temperatures averaging 10.5 °.

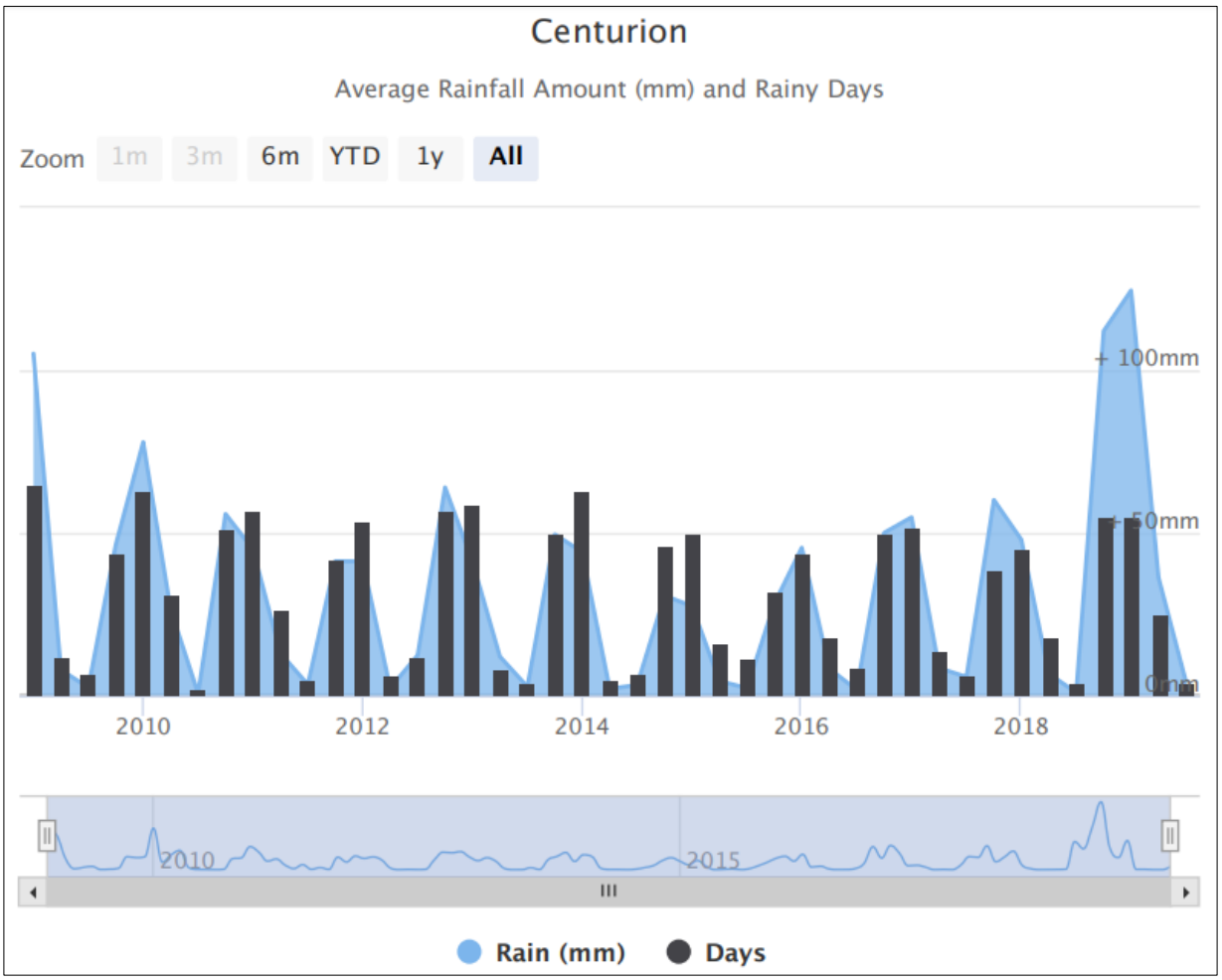


Figure 13: Average Rainfall Amount

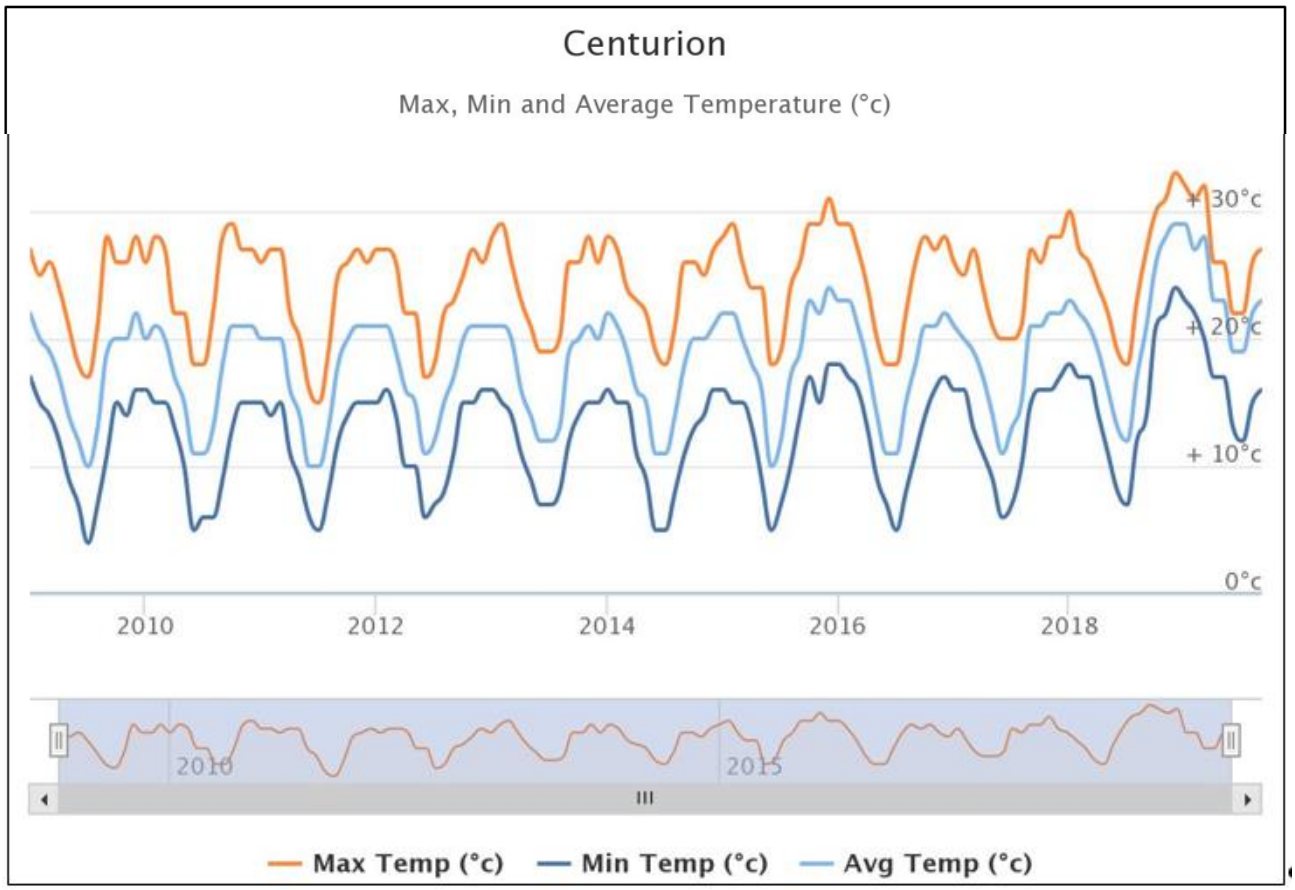


Figure 14: Minimum Maximum and Average Temperature

4.1.2 Air quality

The nearest air quality monitoring station is located in Diepsloot township. Results from the station show that the ambient air quality in the area is good. It is anticipated that similar, or even better conditions prevail on site except in moths when there are bush fires which might affect the air quality.

4.1.3 Noise

The site is located close to a private airfield. As the site is not located along the flight paths, it is not anticipated that the noise levels will exceed the ambient levels provided for in the Regulations and municipal By-laws. Further, the development is not anticipated to generate noise beyond the levels accepted in terms of the Re4gulations and municipal by-laws.

4.1.4 Topography

The topography of the area is typical of the highveld and comprises open grasslands. The slope gradients are typically between 1^0 and 5^0 to the west and east (depending on the position in relation to the Swartbooi Spruit) and natural slope instabilities are not expected on this site. The gradients tend to become steeper lower down the slope near the floodplain.

4.1.5 Geology and Soils

A Phase 1 Geotechnical Site Investigation was undertaken for township establishment on Portion Re/22, 202, 837-840 of the farm Knopjeslaagte 385-JR and Holding 23 Timsrand A.H., Diepsloot, Gauteng Province. The investigation was undertaken according to the SANS 634:2009 national standard as well as the Guidelines for Urban Engineering Geological Investigations (SAIEG & SAICE, 1997) for urban development on sites larger

than 10 hectares and included the excavation of trial pits, description of the soil profiles and soil sampling for laboratory testing.

The objectives of the investigation were:

- To determine the geology and the relevant mechanical properties of the soil and rock horizons present on site.
- To give general foundation recommendations.
- To comment on the excavation characteristics and possible uses of the materials underlying the site for installation of services as well as for use in layer works in paving and roads.
- To comment on site water management aspects particularly pertaining to shallow groundwater or seepage.

According to the 1:50 000 geological sheet 2528CC Lyttelton and 1:250 000 sheet 2528 Pretoria, the site is underlain by granite-gneiss and granite of the Johannesburg Granite Dome and consists of poorly exposed biotite tonalite, trondjhemite, granodiorite and migmatite varieties.

This site is not underlain by dolomitic bedrock and a surface stability investigation is therefore not required. According to the geological maps and investigations, no specific mineral deposits are present on the site.

The site has been classified into four Site Class Designation zones (Figure 6), based on the above constraints and the criteria as set out in the NHBRC (1999) guideline document. The classification and foundation recommendations are based on results from this and other nearby investigations.

ZONE I: Site Class Designation C-C1/2ABDEF- Moderate soil collapse and compressibility is expected due to open soil structure in loose surficial
and residual soil horizons. Shallow (< 1.5 m) perched groundwater tables are expected seasonally, especially on the lower elevated parts and on the localised ferricrete horizons in this zone.

The surficial sandy soils are expected to have a high risk for erosion. Difficulty of excavation can also be expected in some parts of this zone at depths of < 1,5 m.

ZONE II: Site Class Designation C-C1/2ABDE/3F- This zone is characterised by shallow honeycomb/hardpan ferricrete that translates to difficult excavation at depths of < 0,7 m.
Moderate soil collapse and compressibility is expected due to open soil structure in loose surficial and residual soil horizons.

Shallow (< 1.0 m) perched groundwater tables are expected seasonally, especially on the lower elevated parts and on the ferricrete horizons in this zone.

The surficial sandy soils are expected to have a high risk for erosion.
ZONE III: Site Class Designation C-C1-P(flood)/2ADEF/3BL - This zone is expected to have similar geotechnical constraints to **ZONE I;** however seasonal flooding and marshy conditions are anticipated in the rainy season.
ZONE IV: Site Class Designation C-C1-P(flood)/2ADE/3BFL - This zone is expected to have similar geotechnical constraints to **ZONE II;** however seasonal flooding and marshy conditions are anticipated in the rainy season.

4.1.6 Ground water

Although no groundwater seepage was encountered in any of the excavated test pits, the mottling in all the residual profiles and the ferruginisation of in situ materials are indications of seasonally saturated soil conditions.

It is expected that seasonal perching of percolating groundwater will occur, especially on the slopes with lower elevation as well as on the ferricrete horizons and specifically towards the end of the wet months. The perched water table may fluctuate depending on the season and amount of precipitation experienced. Surface seepage and marshy conditions are expected within the floodplain of the Swartbooi Spruit area.

Surface runoff and groundwater flow will follow the topography that slopes towards the floodplain of the Swartbooispruit in the central part of the farm. The present storm water reticulation and surfaced roads will not influence the natural runoff from the holding.

The regional groundwater in this area occurs in inter-granular and fractured aquifers with an average depth to the regional groundwater table of between 10 and 20 m and expected shallower depths near the drainage feature.

4.2 Biological Environment

Scientific Terrestrial Services (STS) was appointed to conduct a faunal and floral ecological assessment as part of the Environmental Impact Assessment (EIA) process for the proposed industrial development. The specific outcomes for the said study included the requirement to:

- provide inventories of floral species as encountered within the study area;
- determine and describe habitat types, communities and the ecological state of the study area and to rank each habitat type based on conservation importance and ecological sensitivity;
- identify and consider all sensitive landscapes including rocky ridges, wetlands and/ or any other special features;
- conduct a Red Data Listed (RDL) species assessment as well as an assessment of other Species of Conservation Concern (SCC), including potential for such species to occur within the study area;
- provide detailed information to guide the activities associated with the proposed mining activities within the study area; and
- ensure the ongoing functioning of the ecosystem in such a way as to support local and regional conservation requirements and the provision of ecological services in the local area.

The sections below present a summary of the findings of the study.

4.2.1 Terrestrial ecology

A faunal and floral ecological assessment was undertaken. All the ecological features of the study area were considered, and sensitive areas were assessed and mapped by means of a Global Positioning System (GPS). A Geographic Information System (GIS) was used to project these features onto satellite imagery. The sensitivity map should guide the final design and layout of the proposed development activities.

4.2.1.1 Egoli Granite Grassland

A portion of approximately 6.5ha of the western section of the study area is considered to be Egoli Granite Grassland in good condition. The Egoli Granite Grassland consists of some of the characteristics of a healthy grassland as described by Cadman *et al.,* (SANBI, 2013) such as a high diversity of growth forms, in this instance, graminoids (grasses), forbs, bulbs, shrubs and succulents. Although it was not possible to identify all grass species associated with this vegetation type, due to extensive grazing of the site, it was evident that the grass species diversity within this portion was significantly higher as compared to the remaining extent

of the study area, and the graminoid species diversity is considered more substantial than that recorded. A high grass species diversity as well as an even grass sward, as opposed to tussocked veld is a further sign of a healthy grassland, as was evident within the Egoli Granite Grassland habitat unit. No floral Invasive Alien Plant (IAP) species were recorded during the field assessment, with only a few scattered individuals of the indigenous bush encroacher *Seriphium plumosum* observed. This habitat unit can, therefore, be considered as Primary Grassland as per the definition provided by Cadman *et al.* (SANBI, 2013):" Primary *grasslands are those that have not been significantly modified from their original state; even though they may no longer have their full complement of naturally-occurring species, they have not undergone significant or irreversible modification and still retain their essential ecological characteristics*." Despite the good quality of the grassland, the habitat unit has started to show signs of disturbance, such as a decrease in basal cover, as well as a number of species often associated with anthropogenic *Hyperaemia hirta*-dominated Egoli Granite Grassland, as defined by Bredenkanmp *et al.* (2006) observed. These signs can predominantly be ascribed to extensive cattle grazing within the area.

4.2.1.2 Secondary Grassland Habitat Unit

This habitat unit has historically been utilised for crop cultivation and has been allowed to return to its grassland state and is considered to be in a subclimax state of succession. The area is currently extensively grazed, which has further altered the species composition, with the area predominantly dominated by *Hyparrhenia hirta* and S*eriphium plumosum.* Despite a low diversity of grasses within the Secondary Grassland Habitat Unit, the habitat unit did provide habitat for a variety of herbaceous species, with a low diversity of IAP species observed. The habitat integrity, although altered to some degree is considered to be of an intermediate level.

4.2.1.3 Freshwater Habitat

The watercourse traverses the central portion of the study area and was classified as an unchannelled valley bottom wetland (SAS, 2018). Hardened infrastructure such as roads has impacted upon the watercourse. However, pipe and box culverts associated with the roads allow for connectivity of the watercourse. The watercourse is currently subjected to extensive cattle grazing, which has resulted in the trampling of vegetation in some areas. These anthropogenic activities together with earthworks and rubble disposal in some portions of the watercourse have led to the establishment of some AIP species such as *Oenothera rosea,* and *Veronica anagalis-aquatica*. Despite AIP establishment within some portions of the wetland, the watercourse was still associated with a variety of facultative and obligate indigenous wetland vegetation such as *Typha capensis, Cyperus denudatus* var*. denudata, Kniphofia porphyrantha* and *Mimulus gracillies* amongst others. This habitat unit is therefore considered moderately modified from a floral ecological perspective.

4.2.1.4 Transformed Habitat Unit

The Transformed Habitat Unit was predominantly associated with dilapidated and current infrastructure, and as such comprised predominantly of AIP species and exotic garden ornamentals. This habitat unit no longer provides habitat for indigenous vegetation, and as such is considered transformed and of low ecological significance.

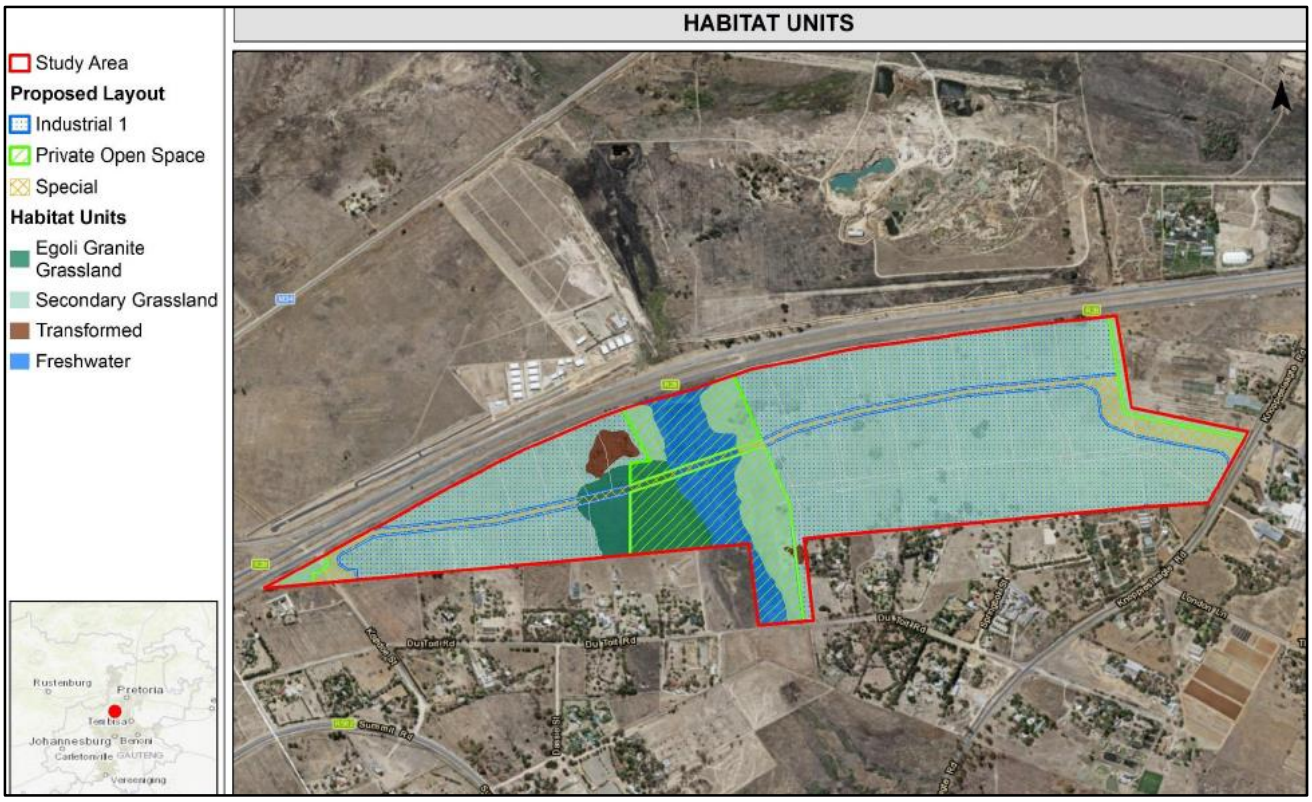


Figure 15: Habitat Units

4.2.1.5 Floral Species of Conservation Concern Assessment

Two floral SCC, the *Boophone disticha* and *Hypoxis hemerocallidea* were encountered within the study area. Both species were within the Egoli Granite Grassland and Secondary Grassland habitat units. Although all individuals and colonies were marked by means of GPS during the field assessment, a higher abundance of individuals is expected to occur within these habitat units, than what was recorded during the current assessment, and as such all individuals should be marked and rescued and relocated to suitable similar habitat outside of the development footprint.

Additionally, the floral SCC *Eucomis autumnalis* and *Crinum macowanii* have a high POC score (60%) which means that the study area has the habitat that can support the growth of this species. This species prefers damp conditions and as such is expected to occur predominantly within the Freshwater Habitat. During the field assessment, special attention was paid to the presence of these species, particularly within the watercourse. No individuals of the species were observed, and although not impossible, it is considered unlikely that individuals were missed during the site assessment.

4.2.2 Faunal Habitat

The study area comprised of four faunal habitat units. For a detailed description and discussion of these habitat units please refer to section 4.2.1 of this report.

4.2.2.1 Mammals

The available habitat within the study area remains suitable for small mammals which have a tolerance to increased urban activities and habitat degradation from increased grazing activities. The habitat within the study area would, provided that all human incursions and other impacts were limited, be capable of supporting an increased species diversity and abundance. At current the Freshwater Resource habitat, in conjunction with the Egoli Granite Grassland habitat are considered important for mammal species as these habitats provide food resources and serve as a movement corridor for species.

No mammal SCC were observed at the time of assessment, however taking into consideration the habitat condition and extent of the study area it is considered likely that *Atelerix frontalis* (Southern African Hedgehog, NT) may occur the study area. Although the onsite habitat has been negatively affected by historic and current anthropogenic activities, such as alien and invasive plant proliferation, over grazing, past agricultural activities and encroaching infrastructure (such as the N14 to the north) there is still sufficient habitat and resources to support *Atelerix frontalis*.

4.2.2.2 Avifauna

The study area is dominated by grassland of varying levels of integrity, with the Freshwater Resource habitat being located in the centre of the study area. The grassland habitat units provide suitable foraging for avifaunal species that select for more open habitat, however due to the increased levels of grazing, alien and invasive plant proliferation and the movement of domestic dogs, there are limited areas for ground nesting birds to safely construct nest. The wetland habitat provides limited suitable habitat for avifauna, however as with the grassland areas, grazing and the presence of domestic dogs limits the suitability of this habitat for nesting.

No avifaunal SCC were observed during the field assessment. The South African Bird Atlas Project (SABAP2) database does indicate a record for *Eupodotis senegalensis* (White-bellied Korhaan, VU) dating back to June 2018 and for *Mirafra cheniana* (Melodious Lark, NT) in January 2019. Both *Mirafra cheniana* (Melodious Lark, NT) and *Eupodotis senegalensis* (White-bellied Korhaan, VU) may utilise the study area for foraging, however it is unlikely that these species will use the study area for breeding purposes due to the close proximity if the R28 and the high levels of grazing, human movement and presence of domestic dogs.

4.2.2.3 Amphibians

Habitat continuity is of primary importance for amphibian species, notably with regards to wetland systems, as wetland systems often provide the shallow pools favoured by many amphibian species for breeding and laying of eggs. At present the wetland system is hydrologically linked to larger wetland areas in the north and south as a result of culverts associated with the N14 and Du Toit Roads.

No amphibian SCC were observed during the field assessment. Although Gauteng no longer lists amphibian SCC provincially, a species that remains of concern is *Pyxicephalus adspersus* (Giant Bull Frog) considered as Near Threatened by the Endangered Wildlife Trust (EWT). This species is listed as declining by the International Union for Conservation of Nature due to the continued loss of habitat, and persecution as a result of urban expansion. The wetland habitat and adjacent grasslands (within the wetland buffer zone) may provide suitable habitat to this species, and as such, the appropriate wetland buffers should be adhered to.

4.2.2.4 Reptiles

Habitat integrity for reptiles was considered to be intermediate. Although the various habitat units are still largely connected with no obstructions leading to a loss of habitat connectivity, overgrazing activities and habitat degradation through extensive alien and invasive plant proliferation have overall led to a decline in the habitat integrity. However, the freshwater, grassland and transformed habitats provide suitable habitat for common reptiles. Abandoned burrows and discarded building rubble further provides suitable habitat for reptile species to seek refuge within.

4.2.2.5 Insects

Habitat integrity for insects is considered to be intermediate. Increased levels of grazing and consequently the trampling effects of cattle have impacted upon the soil and thus the available herbaceous layer. Additionally, the prolific growth of *Seriphium plumosum* within the western portions of the site has led to a degradation of the available food resources by outcompeting various other herbaceous species. However, the freshwater and the two grassland habitat units provide suitable habitat to a number of insect species

that are common to the area. The varying height and density of the herbaceous layer further provides different areas of selective habitat and thus encourages an abundance of different insect species.

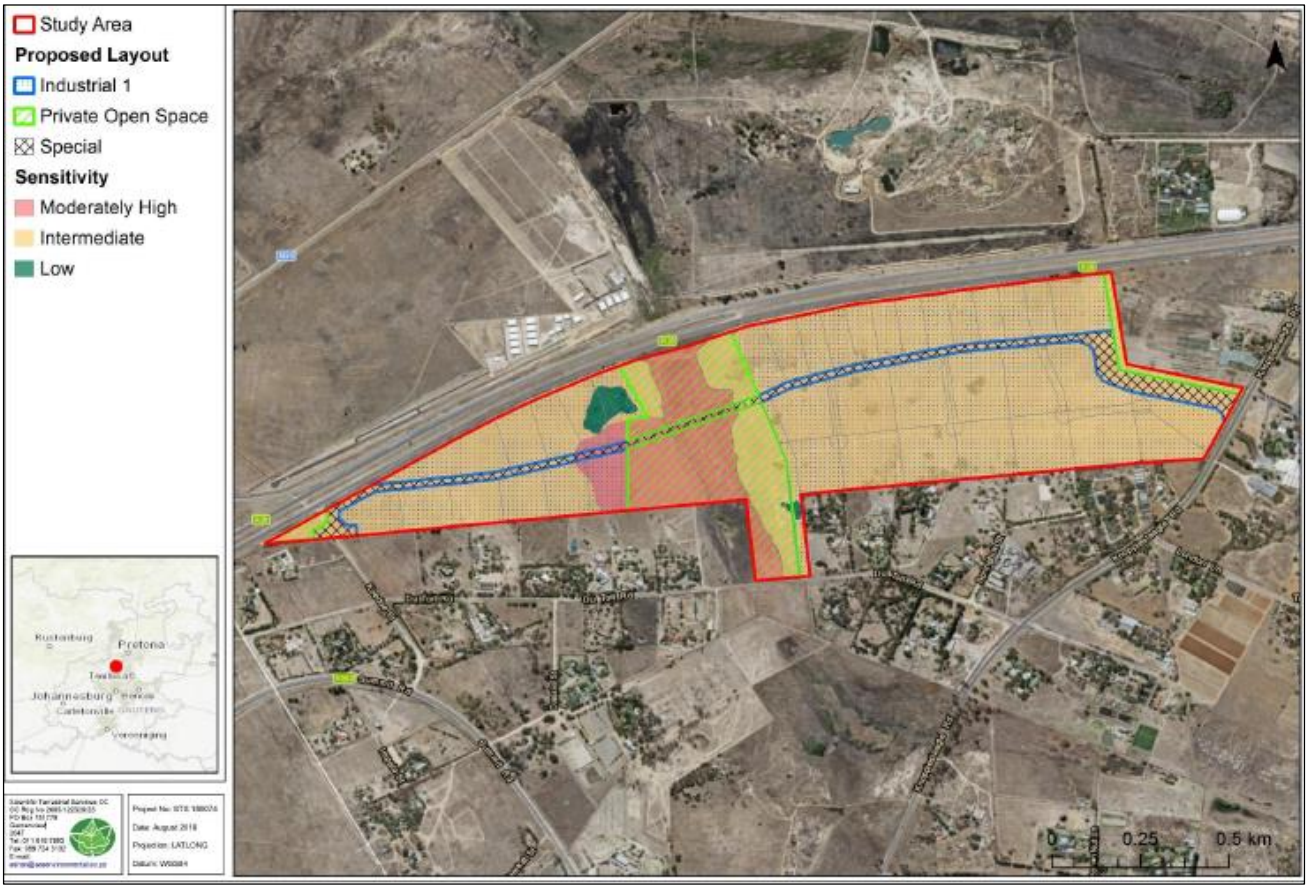


Figure 16: Faunal Sensitivity Map

4.3 Human Environment

4.3.1 Socio-economic issues

This section highlights key information on population, employment and the economic base of the region.

4.3.1.1 Population

The estimated population for this area is 463 737, people (IHS Global Insight & City Planning). The average growth rate for Region 4 is about 4.6%, which is the highest of all the region of the city. The population of this region has been increasing steadily in nominal terms, however, the percentage growth has been subjected to minor volatilities. In 2011, the total population was approximately 354 158 and grew to 390 108 in 2013, representing 10 percent growth over the period. The growth rate in 2011 was at 5.7 percent and this declined to 4.7 percent in 2013, showing that the growth rate has been declining.

There is a youth bulge in Region 4's population. From the above pyramids, it can be observed that a significant portion of Region 4's population is younger than 35 (59.7 percent).

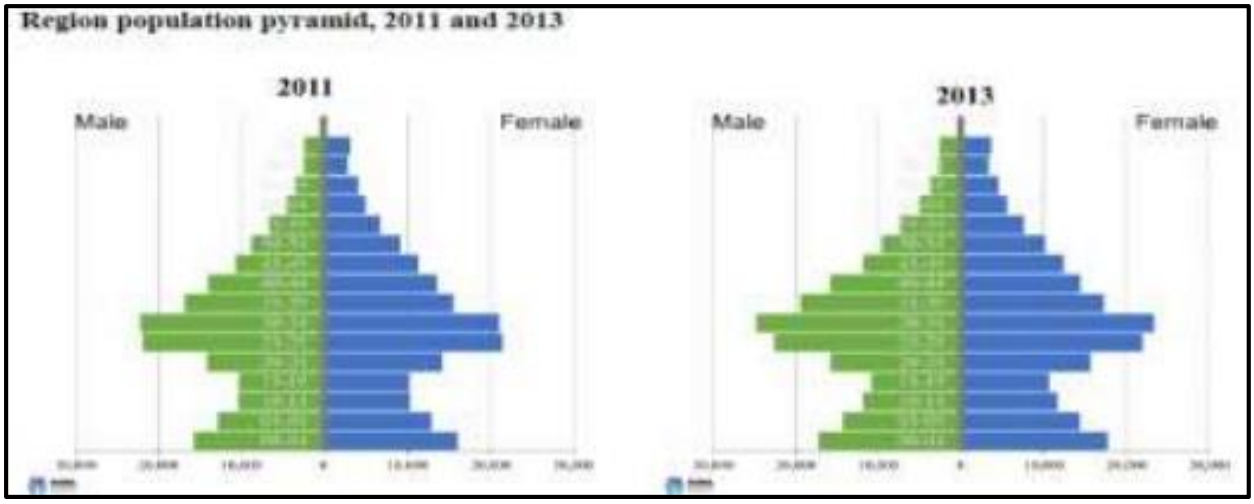


Figure 17: Population Pyramid- 2011-2013

Source: COT RSDF 2018

4.3.1.2 Employment

Total employment in Region 4 steadily increased during the 2011-2013 period. In 2011, the total number of individuals employed in the region were approximately 179 991. These have increased to 205 477 in 2013. As one would expect, the largest composition of this employment is formal employment which was 160 627 in 2011 which increased to 184 965 in 2013. On the other hand, informal sector employment increased from 19 364 in 2011 to 20 512 in 2013.

The unemployment rate in the region has been relatively unstable, however, over the 2011 – 2013 period, region 4 recorded improvements. In 2011, the unemployment rate was 12.0 percent, this slightly improved to 11.4 percent in 2013.

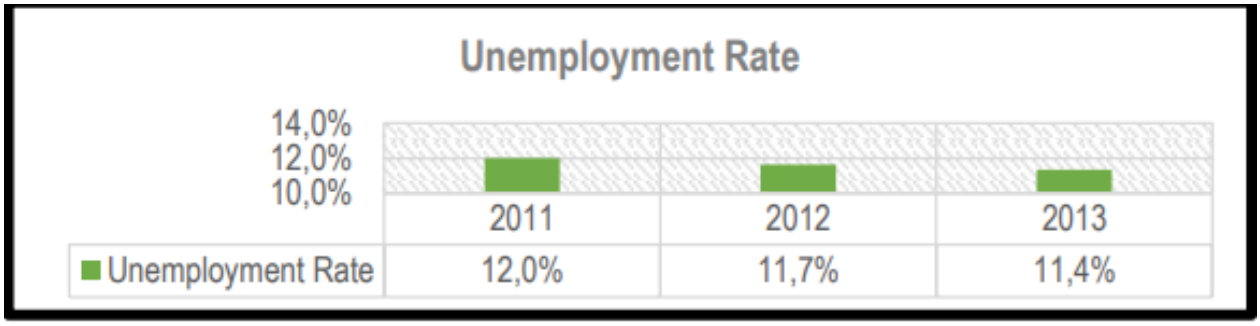


Figure 18: Unemployment Rate of the Region

Source: COT RSDF 2018

4.3.1.3 Economic Base

The region forms part of an area of economic expansion to the north of Johannesburg. This sub-node is dominated by Smart Industries and Business Tourism. There is a prospect for future expansion of a Smart Industry/ Knowledge Regional sub-node that could be used in strengthening the Gauteng Province's comparative advantage as a "Smart Province,

According to the RSDF, the Region's local economy is based on some dominant economic sectors including finance and business Service Sector (26.7%), general government services (22.7%), manufacturing (18.1%), trade (14%). From the activity map, most of these activities are located within the eastern half of the region.

4.3.2 Archaeology and cultural heritage/sites of importance

APelser Archaeological Consulting (APAC) were appointed to undertake a Phase 1 HIA for a proposed Mixed Use Development on Portions of the farm Knoppieslaagte 385JR. The objective of the study was to:

- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) on the portion of land that will be impacted upon by the proposed development;
- Assess the significance of the cultural resources in terms of their archaeological,
- historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impact of development on cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- Review applicable legislative requirements;

The findings of the assessment are presented in section 7 (seven) while the actual report is attached in Appendix 3 (three).

4.3.3 Visual aspects

SMEC's were appointed to conduct a Visual Impact Assessment. The primary objective of the study was to:

- To assess the visual landscape
- Description of the topography and landscape.
- Characterisation and description of the visual landscape using a widely recognised visual impact assessment approach.
- Undertake spatial analyses using geographic information system (GIS) software.
- Identify and assess potential visual impacts.
- Identify mitigation measures for potential visual impacts.

The findings of the assessment are presented in section 7 (seven) while the actual report is attached in Appendix 3 (three).

5.0 PROJECT NEED AND DESIRABILITY

The application is for an Industrial use along a major arterial, close to other similar townships. Further, it is in close proximity of the Diepsloot low income housing area and will, therefore, inject economic investment and create employment opportunities in an area where such is needed.

5.1 Need for the project

The proposed development is located close to the Diepsloot township in the north of Johannesburg within Region A in the City of Johannesburg Metropolitan Municipality. The township has a population estimate of 350 000. Diepsloot has a mixture of informal and formal settlements, and it is demarcated into two wards; ward 95 and ward 113. According to the Gauteng department of human settlements a high-density residential development is earmarked for development to the South west of the proposed development and east of Diepsloot, known as Tanganani Ext.14 (Diepsloot East). This will enlarge the existing Diepsloot Community placing pressure on development in the area. Due to the amount of people that will locate to the area, work opportunities will become more and more relevant for the area. The current Diepsloot Community has proven popular due to its location in terms of the North Johannesburg Suburbs and developments as well as the southern developments for the Tshwane Metro. It is safe to assume that migration towards the area will continue to rise in the near future as Gauteng has one of the highest urbanisation rates in the world. Thus pressure will keep increasing for the area and the community of Diepsloot to ensure an inclusive job-rich development.

The proposed development is in close proximity to the Fourways and Riversands nodes in the City of Joburg and the Rooihuiskraal/Olievenhoutbosch nodes connecting the north of Johannesburg with the south of Tshwane. Previously the area was characterised by peri-urban characteristics that contributed to the agricultural feel of the area. The majority of the area consisted of agricultural holdings. However, as the Midrand Centre started to develop, both metro's (City of Johannesburg and City of Tshwane) started to connect through various connection routes and development initiatives. The linkage of the two metros are giving the area great accessibility towards the Tshwane CBD (25k north east) and the Joburg CBD (30km south). The location of the development will therefore be extremely beneficial towards both economies.

According to the latest figures published by Statistics South Africa (May 2019), South Africa has an unemployment rate of 27.6%, given the fact that the economy is retracting the unemployment rate is expected to increase. Further to this Gauteng has an unemployment rate of 28.9%. This is starting a debate in the country on how to increase job opportunities and increase economic growth. President Cyril Ramaphosa appealed to all South Africans to start working together to change the current unemployment outlook. The private sector is a major factor in creating sustainable and long-term job opportunities. This is precisely what Century Property Developments intend to do. The proposed development is projected to create more than an 800 job opportunities during the construction phase of the development. Further to this post-development job opportunity are astronomical and will enhance the lives of the Diepsloot and Olievenhoutbosch communities. The state and quality of the development will change the aesthetics of the area and increase service delivery to all who is surrounded.

Research shows that the prospects of South Africa's manufacturing economy are tied to the fortunes of the manufacturing industry and vice versa. Over the last four decades, growth of manufacturing mirrored GDP growth in South Africa. The direct relationship between the two indicates the opportunity for manufacturing to become an engine, rather than a mirror of growth. As costs in China rises, manufacturing should start to become more popular on home soil creating jobs and development potential in the sector. As Africa continues to urbanise, manufacturing opportunities arise in areas of fast-moving consumer goods, packaging, durable household goods, metal components, plastics, pipes, tubing and automotive exports. This will achieve economic growth on a national, provincial and much needed local level. Currently the

industrial/manufacturing sector contributes to approximately 15% of the national GDP. This however is still much lower as other countries. Due to the fact of having the entire Africa as customers, this rate needs to increase dramatically. On local economies the increase on the expenditure rate of the new employees will have an impact on smaller economies in the community such as informal traders, convenience shops etc.

5.2 Desirability of the project

The proposed development intends to create a link between previously disadvantaged and marginalised groups and current economically favoured groups. With the Fourways node approximately 5km south of the proposed development and the Riversands node 3km south, the development tends to open a new urban expansion area for social inclusion in the area. As more money flows into the area due to this private investment, more opportunities will be generated for the communities further uplifting the area. This will assist in social cohesion in the greater area as more and more opportunities can be created to ensure different income groups interact with each other. The area is already seen as a melting pot with various foreign nationals in the area, Tension has been identified in the area but can be mitigated as more and more job opportunities are created in the area that will enhance relationships.

5.3 Description of Alternatives

The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. The various alternatives are assessed in terms of both environmental acceptability as well as economic feasibility. The preferred option is to be highlighted and presented to the authorities. The following alternatives are examples of the different kinds of alternatives that may be considered and investigated for a particular development:

- Input alternatives;
- Activity alternatives;
- Location alternatives;
- Status quo / no-go alternatives;
- Demand alternatives / Supply alternatives;
- Scheduling alternatives; and
- Process alternatives.

5.3.1 Input alternatives

Various types of material can be used for the construction of the township and its associated structures. These include different brick types (face brick, cement brick, etc.), roof types (pitched or flat), finishes (paint colour, external lighting, landscape features, etc.) and road surfacing (asphalt, brick paving). The proposed development should enhance the status of the area, be aesthetically pleasing and present a high order node in the area.

Energy effective construction and orientation methods need to be considered. The following recommendations regarding building structures and designs are recommended:

- Use of building material that requires excessive amounts of energy to manufacture should be minimised;
- Use of building material originating from sensitive or scarce environmental resources should be minimised, e.g. no tropical hardwood may be used;
- Building material should be legally obtained by the supplier, e.g. wood must have been legally harvested, and sand should be obtained only from legal borrow pits and from commercial sources;
- Building material that can be recycled / reused should be used rather than building material that cannot;

- Use highly durable building material for parts of the building that is unlikely to be changed during the life of the building (unlikely to change due to e.g. renovation, fashion, changes in family life cycle) is highly recommended;
- Make use of recycled concrete (green concrete); and
- Make use of clay blocks for construction of buildings.

5.3.2 Activity alternatives

These are sometimes referred to as project alternatives, although the term activity can be used in a broad sense to embrace policies, plans and programmes as well as projects. Consideration of such alternatives requires a change in the nature of the proposed activity.

A consideration was given to developing the site as a residential precinct. However, due to its remote location, distance to job opportunities and prohibitive infrastructure requirements, this option was discarded. An option of industrial development in lieu of adjacent activities, exposure to the N14 and the provisions of spatial planning frameworks, this option was considered ideal.

5.3.3 Site layout alternatives

Site layout alternatives permit consideration of different spatial configurations of an activity on a particular site. This may include particular components of a proposed development or the entire activity. For example, siting of a particular structure either prominently to attract attention or screened from view to minimize aesthetic impacts.

Further the site is surrounded by vacant land and is traversed by a wetland. As a result, the design of the layout had to incorporate environmentally sensitive portions of the site into an open pace system while ensuring that efficiency in circulation and linkages within the township are not adversely compromised.

Taking into account the elements mentioned above, infrastructure provisions and the need to ensure alignment and to reduce possible negative impacts of the proposed uses on the environment, two different layout versions have been developed. Refer to Figure 3 and 4 above.

5.3.4 Location alternatives

No alternative sites have been considered by the proponent, as this site is owned by the proponent and is contiguous to areas/sites that have been developed by the applicant. Preliminary investigations concluded that the proposed site is the most suitable due to its ideal location in terms of the requirements for residential development. Moreover, this township forms part of the precinct that has already been authorised for development.

5.3.5 Demand alternatives

The residential sector in Gauteng, South Africa, has performed very well over the last few years. This increased performance results from the abnormally long and severe slump in “construction fixed investments” during the 1980’s and 1990’s. A typical “construction fixed investment” cycle should be in the region of 15-20 years. In the 80’s/90’s period of stagnation in South Africa, this cycle was almost two decades. Subsequently, the country’s economic growth has been on a broad, accelerating path, since the early 1990’s. Hence, the demand for economic and residential infrastructure has been established.

5.3.6 Assessment of alternatives considered

Land uses choices as reflected in the layout, route alignment for the sewer line, Maxwell Drive extension and the no-go alternatives were evaluated for the site. Please refer to section 5 below where the different alternatives are assessed.

5.3.7 Status quo / No-go alternatives

The no-go option was also considered. This entails leaving the site in its present state. The site is currently vacant. Leaving it in its present state would mostly likely result in the site being unattended to, uncontrolled and unmanaged which could subject the site to abuse and degradation (which is already taking place), as no control mechanisms are likely to be implemented.

Vacant land within the Gauteng urban core in general is a valuable commodity and resource and even more so when such land falls within or is adjacent to a development corridor. It is imperative that such a resource is not left vulnerable to the effects of urban decay and its negative economic and social implications.

If development of the site is not approved the site will remain as is. Given that preliminary assessment does not point to any environmental fatal flaws but that the site is strategically located, and its development is likely to contribute substantially to economic development, employment creation and that the wetland areas will not be adversely affected it is therefore considered proper that development of the site might be a better option from economic, social and environmental perspectives. This shall be confirmed through the detailed assessment to be conducted through this process.

6.0 PUBLIC PARTICIPATION PROCESS

This section provides an overview of the processes required to fulfil the requirements of the Regulations.

6.1 Objectives of public participation

Public participation is an essential requirement in an environmental authorisation process and is required to be undertaken in terms of the Environmental Impact Assessment (EIA) Regulations GNR. 982. Further, in this application, the approach to public participation was in accordance with the principles of the NEMA as elaborated upon in General Notice 657, titled *"Guideline 4: Public Participation"* (Department of Environmental Affairs and Tourism, 19 May, 2006), which states that: *"Public participation process means a process in which potential interested and affected parties (I&APs) are given an opportunity to comment on, or raise issues relevant to specific matters."*

The process was designed to provide information to and receive feedback from interested and affected parties (I&AP). Feedback was in turn fed into the EIA process. This provided organisations and individuals with an opportunity to raise concerns and make comments and suggestions to influence the Project layout, design and the final impact assessment report.
During the Scoping Phase the public participation process enables Interested and Affected Parties to:

- Understand the context of the EIA;
- Become informed and educated about the proposed project and its potential impacts;
- Raise issues of concern and suggestions for enhanced benefits;
- Verify that their comments, issues of concern and suggestions have been recorded;
- Assist in identifying reasonable alternatives; and
- Contribute relevant local information and traditional knowledge to the environmental impact assessment process.

During the EIR phase, the process ensured that:

- relevant information including local and traditional knowledge contributes to the environmental impact assessment process;
- issues and suggestions from registered I&AP are considered in the environmental investigations and feedback has been provided;
- I&AP were afforded opportunities to comment on the findings of the EIA; and
- Issues of concern were Identified and investigated.

During the decision-making phase the process entitles I&AP to be informed of the outcome (authorisation) and how the decision can be appealed.

6.2 Public Participation undertaken during the Scoping Phase

As per the provisions of the Regulations, an extensive public participation was undertaken during the scoping phase. Below are some of the key activities undertaken.

6.2.1 Site and Related Notification

The Regulations require that site notices be fixed at places that are conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates is to be undertaken and on any

alternative site. Such notices are meant to notify the public of the project and to serve as invite for the public to register as stakeholders in the process.

Nali Sustainability Solutions erected site notices at two locations around the perimeter of the site. The position and sizes of these notices complied with the provisions in the Regulations. Also the adjacent land owners/occupiers, the ward councillor and government departments and state organs were given the requisite notices and afforded the opportunity to participate in the process.

6.2.2 Advertising

In accordance with the requirements of the Regulations, the project was advertised in the Citizen Newspaper. I&AP were invited to register their interest in the project, to review the Draft Scoping Report and to provide comments as appropriate.

6.2.3 Briefing Document

A Background Information Document (BID) for the project was compiled. The BID provided an outline of the project, details of the EIA process and how I&AP could participate in the process. The BID was distributed to potential I&APs including adjacent land owners/occupiers.

6.2.4 Issues and Response Report

Issues and concerns raised in the public participation process were compiled into an issues and response report. The report was included in the final scoping report submitted to GDARD.

6.2.5 Public Review of the Draft Scoping Report

All the notices and adverts informed the I&AP of the availability of the Draft Scoping Report and the Plan of Study for EIA at www.nalisustainabilitysolutions.co.zan and invited them to access and review it.

6.2.6 Authority Consultation

In addition to notifying and requesting comments from organs of state which have jurisdiction in respect of aspects of the proposed activity, specific consultation with GDARD in the manner described below was undertaken.

- Submission of an application for authorisation
- Acceptance of the application and allocation of activity specific reference number;
- Submission of Draft Scoping Report;
- Acceptance of Scoping Report and PoS for EIA, followed by comments from GDARD.

6.2.7 Final Environmental Scoping Report

Comments received were addressed and/or incorporated into the Final Scoping Report. The final report was made available on EAP's website to all Registered I&AP. The report was also submitted to GDARD for decision-making.

6.3 Public Participation during the EIR Phase

6.3.1 Notices and Advertising

The availability of the Draft EIA Report was advertised in the Citizen Newspaper. In addition, notices were placed on site to notify and invite I&AP to register and review the Draft EIA Report and to provide comments as appropriate.

6.3.2 Public Review of the Draft EIR

The Draft EIR was published on the EAP's website and I&APs were provided with an opportunity to review and comment on the report within a 30-day period.

6.3.3 Organs of state and authority consultation

Copies of the report were provided to the municipality and DWS. Other relevant organs of state were notified of the availability of the report and directed to access the electronic versions from the website. At the same time copies of the report were submitted to the GDARD for review.

6.3.4 Issues and Response Report

All comments and issues raised during the public participation process were addressed and incorporated into the final Report.

6.3.5 Environmental Authorisation and Notifications

On receipt of the environmental authorisation, an email will be sent out to inform stakeholders and Registered I&APs of the authorisation, its associated conditions and the provisions for the appeal process.

7.0 FINDINGS OF SPECIALIST STUDIES

This section presents the key findings from specialists' assessments. These were essential in informing the proposed development as well as the impacts likely to occur from or on the proposed activity. The specialists' reports are included in Appendix 3 of this report.

7.1 Ecological Assessment

The ecological assessment was undertaken in terms of the requirements in NEMA (1998) and the associated regulations as well as the GDARD Requirements for Biodiversity Assessments, 2014. All relevant databases such as the NFEPA, SANBI and GDARD C-Plan V3 have been analysed.

7.1.1 Floral Assessment

7.1.1.1 Floral Habitat Units

During the field assessment, four habitat units were identified within the study area, i.e. the Egoli Granite Grassland, Secondary Grassland, Freshwater Habitat and Transformed Habitat.

7.1.1.1.1 Egoli Granite Grassland

A portion of the western section of the study area is considered to be Egoli Granite Grassland in good condition. The grassland consists of some of the characteristics of a healthy grassland as described by Cadman *et al.,* (SANBI, 2013) such as a high diversity of growth forms, in this instance, graminoids (grasses), forbs, bulbs, shrubs and succulents. Although it was not possible to identify all grass species associated with this vegetation type, due to extensive grazing of the study area, it was evident that the grass species diversity within this portion was significantly higher as compared to the remainder of the study area. A high grass species diversity as well as an even grass sward, as opposed to tussocked veld is a further sign of a healthy grassland unit. No floral Invasive Alien Plant (IAP) species were recorded, with only a few scattered individuals of the indigenous bush encroacher *Seriphium plumosum* observed. This habitat unit can, therefore, be considered as Primary Grassland. Despite the good quality of the grassland, the habitat unit has started to show signs of disturbance, such as a decrease in basal cover, as well as a number of species often associated with anthropogenic *Hyparrhenia hirta*-dominated Egoli Granite Grassland, as defined by Bredenkanmp *et al.* (2006). These signs can predominantly be ascribed to extensive cattle grazing in the area.

7.1.1.1.2 Secondary Egoli Granite Grassland

The habitat unit was found to have been historically cultivated although it had been returned to a grassland state, and as such was classified as Secondary Grassland. The Grassland Ecosystem Guidelines (SANBI, 2013) defines Secondary Grassland as "those that have undergone extensive modification and a fundamental shift from their original state (e.g. to cultivated areas) but have then been allowed to return to a 'grassland' state (e.g. when old cultivated lands are re-colonised by a few grass species). Although secondary grasslands may superficially look like primary grasslands, they differ markedly with respect to species composition, vegetation structure, ecological functioning and the ecosystem services they deliver." This habitat unit was dominated by the increaser grass species *Hyparrhenia hirta*-as well as the bush encroachment species *Seriphium plumosum,* which according to Bredenkamp *et al.* (2013) is a sign of Egoli Granite Grassland with significant anthropogenic influence, whether recent or historic. Despite the obvious signs of disturbance, the habitat unit still provided suitable habitat for the floral SCC *Boophone disticha* and *Hypoxis hemerocallidea*.

7.1.1.1.3 Freshwater Habitat

The watercourse traverses the central portion of the study area and was classified as an unchanneled valley bottom wetland (SAS, 2018). Hardened infrastructure such as roads has impacted upon the watercourse. However, pipe and box culverts associated with the roads allow for connectivity of the watercourse. The watercourse is currently subjected to extensive cattle grazing, which has resulted in the trampling of vegetation in some areas. These anthropogenic activities together with earthworks and rubble disposal in some portions of the watercourse have led to the establishment of some AIP species such as *Oenothera rosea,* and *Veronica anagalis-aquatica*. Despite AIP establishment within some portions of the wetland, the watercourse was still associated with a variety of facultative and obligate indigenous wetland vegetation such as *Typha capensis, Cyperus denudatus* var. *denudata, Kniphofia porphyrantha* and *Mimulus gracillies* amongst others. This habitat unit is therefore considered moderately modified from a floral ecological perspective.

7.1.1.1.4 Transformed Habitat Unit

The Transformed Habitat Unit was predominantly associated with dilapidated and current infrastructure, and as such comprised predominantly of AIP species and exotic garden ornamentals. This habitat unit no longer provides habitat for indigenous vegetation, and as such is considered transformed and of low ecological significance.

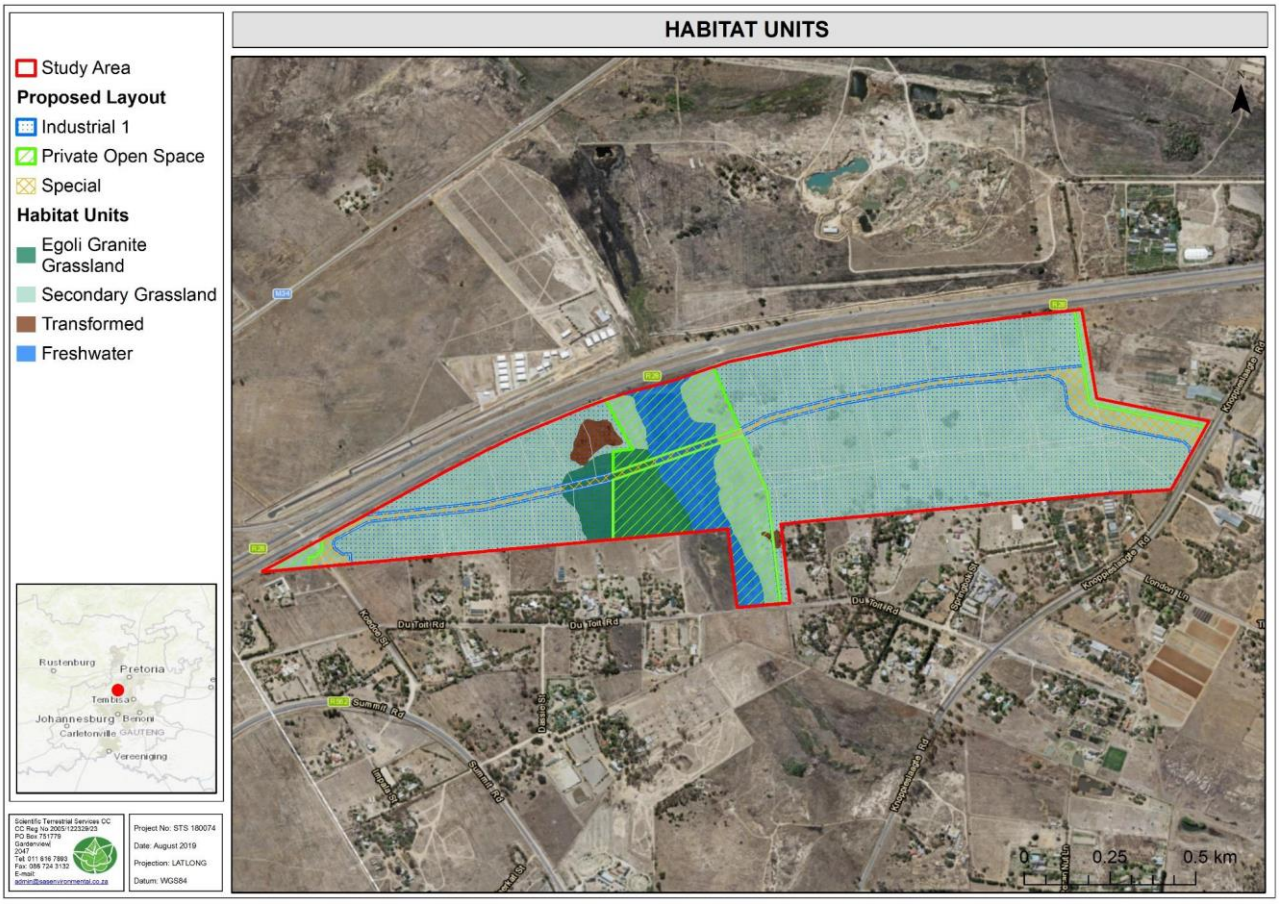


Figure 19: Floral Habitat Map

7.1.1.2 Floral Species of Conservation Concern

An assessment considering the presence of any floral SCC, as well as suitable habitat to support any such species, was undertaken. The GDARD conservation lists were acquired for the Quarter Degree Square (QDS) 2528CC. All SCC listed for the QDS, together with their calculated Probability of Occurrence (POC) ratings are tabulated in Appendix C. Table 5 below represents those species that obtained a POC score of 60% or more.

Table 7: Species of Conservation Concern

FAMILY	SPECIES	THREAT STATUS	POC (%)	Motivation
Amaryllidaceae	*Boophone disticha*	LC (National); Declining (Provincial)	100	Numerous individuals of the species were observed during the field assessment within the Egoli Granite Grassland and Secondary Grassland Habitat Units
Hypoxidaceae	*Hypoxis hemerocallidea*	LC (National); Declining (Provincial)	100	Individuals of this species were observed throughout the Egoli Granite Grassland and Secondary Grassland Habitat Units during the field investigation
Amaryllidaceae	*Crinum macowanii*	LC (National); Declining (Provincial)	60	The study area is situated within the known distribution range of the species, and the watercourse provides suitable habitat for the species.
Hyacinthaceae	*Eucomis autumnalis*	LC (National); Declining (Provincial)	60	The watercourse and Egoli Granite Grassland habitat units provide suitable habitat for the species. The study area is furthermore located within the known distribution range of the species.
LC = Least Concern				

From this list, two floral SCC were encountered within the study area, i.e. *Boophone disticha* and *Hypoxis hemerocallidea*. Both species were encountered within the Egoli Granite Grassland and Secondary Grassland habitat units. Although all individuals and colonies were marked by means of GPS during the field assessment, a higher abundance of individuals is expected to occur within these habitat units, than what was recorded during the current assessment, and as such all individuals should be marked and rescued and relocated to suitable similar habitat outside of the development footprint.

Additionally, the floral SCC *Eucomis autumnalis* and *Crinum macowanii* have a high POC score (60%) which means that the study area has the habitat that can support the growth of this species. This species prefers damp conditions and as such is expected to occur predominantly within the Freshwater Habitat.

7.1.1.3 Alien and Invasive Plant (AIP) Species

Alien and invasive floral species are floral species of exotic origin which are invading previously pristine areas or ecological niches (Bromilow, 2001). Not all weeds are exotic in origin but, as these exotic plant species have very limited natural “check” mechanisms within the natural environment, they are often the most opportunistic and aggressively growing species within the ecosystem. Therefore, they are often the most dominant and noticeable within an area. Disturbances of the ground through trampling, excavations or landscaping often leads to the dominance of exotic pioneer species that rapidly dominate the area. Under natural conditions, these pioneer species are overtaken by sub-climax and climax species through natural veld succession. This process, however, takes many years to occur, with the natural vegetation never

reaching the balanced, pristine species composition prior to the disturbance. There are many species of indigenous pioneer plants, but very few indigenous species can out-compete their more aggressively growing exotic counterparts.

Of the alien species recorded during the site visit, 10 are listed as NEMBA Category 1b, three as NEMBA Category 2 and three as NEMBA Category 3. The remainder are not considered invasive but are still considered problem plants in South Africa (Bromilow, 2001). The majority of alien species encountered are predominantly woody tree species associated with the transformed area, with a moderate diversity of forb AIPs also observed, particularly within the watercourse and secondary grassland habitat units.

Alien species located within the proposed development areas need to be removed on a regular basis as part of maintenance activities according to the National Environmental Management: Biodiversity Act (Act 10 of 2004): Alien and Invasive Species Regulations, GN R864 of 2016.

7.1.1.4 Medicinal Floral Species

Medicinal plant species are not necessarily indigenous species, with many of them regarded as alien invasive weeds. The table below presents a list of dominant plant species with traditional medicinal value, plant parts traditionally used and their main applications, which were identified during the field assessment.

The species found are common, widespread and not confined to the study area; nor are they unique within the region. However, *Hypoxis hemerocallidea* and *Boophone disticha* are classified as Declining in the Gauteng Province, mainly due to the rapid urbanisation in Gauteng, which has caused a decline in available natural habitat. These species would need to be rescued and preferably relocated to the Private Open Space Area, which should be undertaken by an aptly qualified specialist. If rescue and relocation is implemented, no other risks to their populations within the larger region, or locally, are foreseen for medicinal plants.

Table 8: Dominant traditional medicinal floral species

Species	Name	Plant parts used	Medicinal uses
Boophone disticha	Poison bulb, Sore-eye flower	Bulb scales	*Boophone disticha* has many medicinal uses. Traditional healers use it to treat pain and wounds. Parts of the plant are used by certain African tribes and also by some Europeans to cure various ailments: the outer covering of the bulb is applied to boils and abscesses; fresh leaves are used to stop bleeding of wounds.
Elephantorrhiza elephantina	Elandsbean	Underground rhizomes	Used as a traditional remedy for a wide range of ailment including diarrhoea and dysentery, stomach disorders, haemorrhoids, and perforated peptic ulcers, and as emetics. Also popular for the treatment of skin diseases and acne.
Gomphocarpus fruticosus	Milkweed, Wild Cotton	Leaves mainly used, sometimes the roots.	Leaves are used as snuff and as a sedative in the treatment of headache and tuberculosis. Roots are used to relieve stomach pain and general aches in the body.
Helichrysum nudifolium	Everlasting	Leaves and twigs, sometimes the roots	Used in the treatment of coughs, colds, fever, infections, headache, and menstrual pain. Also, a popular ingredient for wound dressing. *H. nudifolium* tea is an old Cape remedy for colds and chest ailments.
Hilliardiella oligocephala	Bicoloured-leaved Vernonia	Leaves and twigs, rarely the roots	Infusions are taken as stomach bitters to treat abdominal pain and colic. Other ailments treated include rheumatism, dysentery and diabetes. The roots have been used to treat ulcerative colitis.
Hypericum aethiopicum	St. John's Wort	Above ground parts	Used for the treatment of backache and loin pain, as well as for fevers and wounds.
Hypoxis hemerocallidea	African star grass or African potato	Tuberous rootstock (corm).	Dizziness, bladder infections and insanity are treated by using the infusions of the corm as an emetic. Stems and leaves can be used with other ingredients to treat prostate problems. Within the past couple of years, *H. hemerocallidea* has become commercialised as a source of extracts used in prostate preparations, as well as in various tonics and so called immune boosting preparations.
Pelargonium luridum	Wild Geranium	Tuberous, fleshy rootstock	Water or milk decoctions of the tubers are taken orally to treat diarrhoea and dysentery.
Pentanisia prunelloides	Wild Verbena	Fleshy tuberous root, sometimes the leaves	Wide range of uses has been recorded. Decoctions are often used for burns, swellings, sore joints and rheumatism. Also used in the treatment of heartburn, vomiting, fever, chest pain, toothache, tuberculosis, blood impurities, haemorrhoids and snake bite. Also, often regularly taken by pregnant woman to ensure easy childbirth. A leaf poultice is applied for a retained placenta.
Scabiosa columbaria	Wild Scabious	Leaves or fleshy roots	Plant used as a remedy for colic and heartburn. Dried roasted roots are made into a wound-healing ointment, and the powdered roots are also used as a pleasant-smelling baby powder.
Tagetes minuta	Khaki bush, Khaki weed, African marigold	Leaves, stalks and flowers	It is also grown commercially in South Africa, France and North America for its essential oil. The oil is very effectively used for wounds and a wide variety of infections.
Typha capensis	Bulrush	Thick, fleshy rhizomes	A decoction of the rhizomes is used for venereal diseases or during pregnancy to ensure an easy delivery, and for dysmenorrhoea, diarrhoea, dysentery and to enhance male potency and libido. It is also taken to treat unspecified problems related to the genitals, to promote fertility in woman, and to improve circulation. Decoctions are taken orally or applied externally to promote the expulsion of the placenta. It is said to strengthen uterine contractions.
Boophone disticha	Poison bulb, Sore-eye flower	Bulb scales	*Boophone disticha* has many medicinal uses. Traditional healers use it to treat pain and wounds. Parts of the plant are used by certain African tribes and also by some Europeans to cure various ailments: the outer covering of the bulb is applied to boils and abscesses; fresh leaves are used to stop bleeding of wounds.
Vachellia karroo	Sweet Thorn	Bark, leaves and gum	Bark and leaves are used in the Cape as a remedy for diarrhoea and dysentery. The gum, bark and leaves have also been used as an emollient and astringent for colds, conjunctivitis and haemorrhage. The gum is also used as food and taken for oral thrush.

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7.1.1.5 Floral Impact Assessment

7.1.1.5.1 Impact on Floral Diversity and Habitat

Based on the current layout, the development footprint will span the entire study area with the exception of the Watercourse Habitat, its regulatory zones, as well as a portion of the Egoli Granite Grassland immediately west of the watercourse, which is zoned as Private Open Space.

During the field assessment, a portion of the study area immediately west of the watercourse was identified as good quality Egoli Granite Grassland, and subsequently deemed to be of moderately high sensitivity, as floral disturbance was deemed moderately low, with the floral species composition still considered representative of the Egoli Granite Grassland. Furthermore, the Freshwater and Secondary Egoli Granite Grassland habitat units are of intermediate ecological importance and sensitivity, with the floral habitat, diversity and integrity for both habitat units also considered to be of intermediate significance. The watercourse and Egoli Granite Grassland habitat units are furthermore considered unique landscapes, particularly within an urban setting. It is therefore recommended that the area demarcated as private open space be conserved for all phases of the project, as well as an effective rehabilitation, management and monitoring plan be implemented throughout the life of the development, to ensure the conservation of these habitat units.

It is furthermore imperative that impacts are mitigated as efficiently and effectively as possible through all phases of the development, to limit the impact on the floral habitat and diversity of the area. Failure to implement mitigation measures will result in a decrease and alteration as well as permanent loss of sensitive floral habitat and diversity as well as the introduction and proliferation of alien and invasive plant species which will further contribute to habitat loss. At present, alien plant diversity is deemed to be very low to moderately low throughout the study area, and in order to continue maintaining the current levels of floral diversity and habitat, particularly within the Egoli Granite Grassland it must be ensured that these existing alien and invasive plant species are monitored and controlled. Bush encroachment, particularly within the Secondary Egoli Granite Grassland habitat was however considered significant and should be monitored and controlled together with AIP species

7.1.1.5.2 Impact on Floral SCC

The proposed development is highly likely to impact on the floral SCC *Boophone disticha* and *Hypoxis hemerocallidea,* as individuals of these species were encountered throughout the Egoli Granite Grassland and Secondary Egoli Granite Grassland habitat units, and as such avoidance of all individuals are considered highly unlikely. These SCC will be impacted upon as a result of vegetation clearance activities, edge effects and improper rehabilitation activities.

It is recommended that all individuals of these species situated within the development footprint, be rescued and relocated to the Egoli Granite Grassland associated with the Private Open Space Area. Alternatively, floral SCC can be used within the landscaping of the project or relocated a registered nursery, the ARC or SANBI.

7.1.1.5.3 Probable Latent Impacts

Even with extensive mitigation, significant latent impacts on the receiving floral ecological environment are deemed highly likely. The following points highlight the key latent impacts that have been identified:

- Continued loss of the Egoli Granite Grassland habitat situated within the Private Open Space;
- Continued loss of and altered floral species diversity;
- Alien and invasive plant proliferation within the Private Open Space;
- Permanent loss of floral SCC and suitable habitat; and
- Disturbed areas are highly unlikely to be rehabilitated to pre-development conditions of ecological functioning and significant loss of floral habitat, species diversity and floral SCC will most likely be permanent.

7.1.1.5.4 Cumulative Impacts

The study area is situated within an urban setting. As such the majority of the surrounding area has been transformed to residential small holdings, mining and agriculture, as well as other anthropogenic related infrastructure such as roads, and an airport associated with the Centurion Flight Academy. Furthermore, the Diepsloot Informal Settlement is situated approximately 1 km to the west. The floral ecology of the area has therefore been under severe pressure from urbanisation, which has resulted in the degradation and transformation of large portions of the Egoli Granite Grassland Vegetation type. The proposed development will, therefore, result in further transformation of the floral ecology, habitat and diversity of the area.

In the absence of the development, the current ecological status and sensitivity of the receiving environment cannot be guaranteed to persist, as a result of ongoing anthropogenic activities such as extensive cattle grazing, and urban expansion. Should the current ecological condition of the sensitive habitat areas included in the Private Open Space area be maintained as a result of effective monitoring and management, the likelihood of these habitat units to persist in the landscape can be significantly improved, which will further contribute to conservation targets of the province.

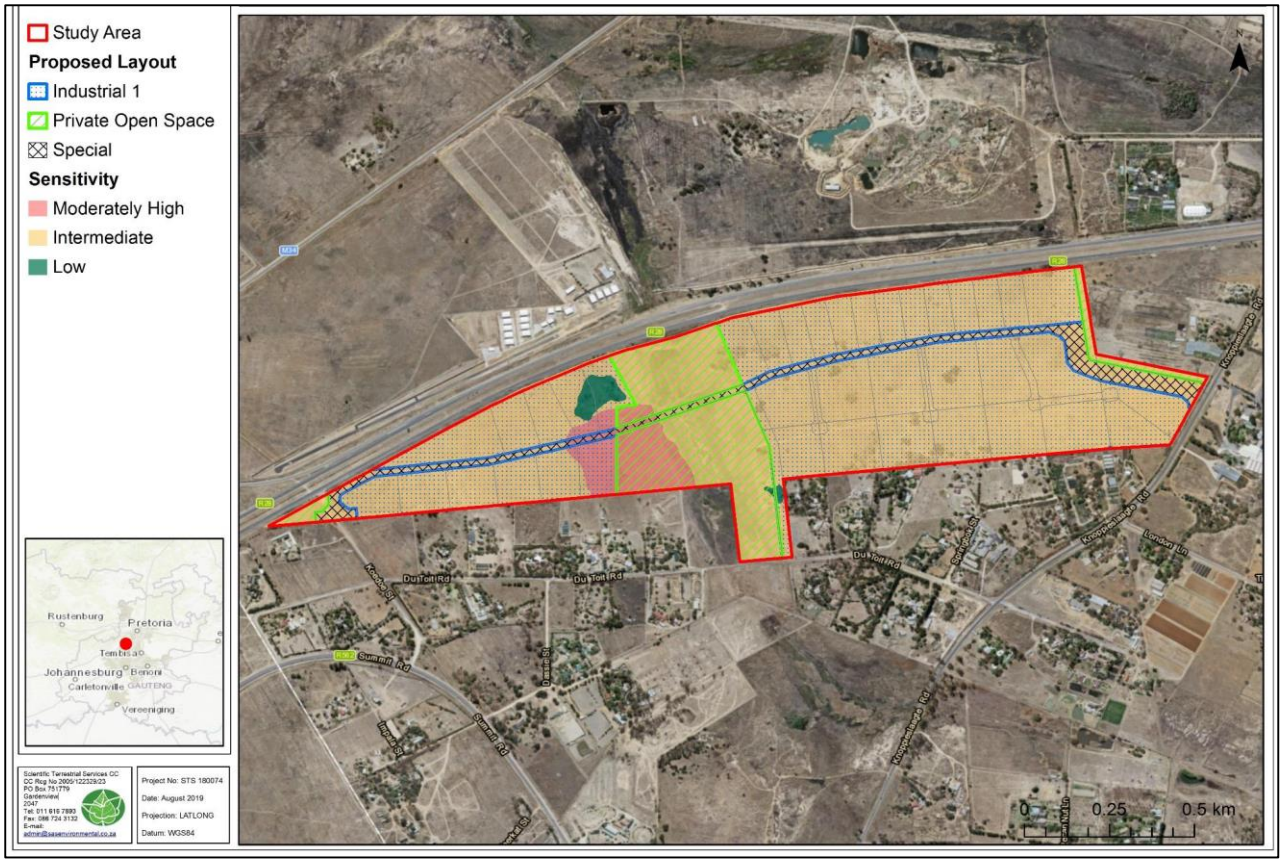

Figure 20: Floral Sensitivity Map

7.1.2 Faunal Assessment

7.1.2.1 Faunal Habitat

The study area comprised of four faunal habitat units which correspond to the floral habitats described above. These habitat units are discussed briefly in terms of faunal utilisation and importance below.

7.1.2.1.1 Egoli Granite Grassland

This habitat unit is adjacent to the western side of the freshwater habitat and was noted to be in a less degraded and more natural state than the surrounding habitats, however, over grazing by resident livestock was noted and, if allowed to continue, will have a significant detrimental impact on this habitat unit. This habitat unit was predominated by avifauna and insects and is likely to further be utilised by small mammals and reptiles. This habitat unit is considered important for faunal species, as it adjoins a freshwater habitat, thus the surrounding habitat creates important open space area for a diverse range of faunal species.

7.1.2.1.2 Secondary Egoli Granite Grassland

Past agricultural activities (ploughing) and the current high levels of grazing has resulted in the degradation of this habitat. Significant growth of *Seriphium plumosum*, an indicator of overgrazing, was observed within the western portion of this habitat unit. The dominant growth of this shrub has resulted in a significant loss of the herbaceous layer, impacting on food and habitat resources for faunal species. Consequently, the western portion of this habitat unit was noted to have a lower diversity and abundance of faunal species. The eastern portion of the habitat unit, although degraded from agricultural activities and grazing, was noted

to be significantly less encroached by *Seriphium plumosum*, with a more developed and intact herbaceous layer. As such, this area is capable of supporting a higher diversity and abundance of common faunal species in comparison to the western portion of this habitat unit.

7.1.2.1.3 Freshwater Resource Habitat

The Freshwater Resource traverses the central portion of the study area north to south and was classified as an unchanneled valley bottom wetland (SAS218215, 2018). At the time of assessment, the freshwater resource was predominantly dry, with the exception of a small depression, providing the only source of surface water for faunal species within the study area. The continued movement and grazing of cattle through the freshwater resource has resulted in a low herbaceous layer due to increased grazing activities as well as the trampling. The freshwater resource connects to the downstream freshwater habitats through a series of large culverts observed within the north of the study area, under the R28. These culverts, and subsequently the freshwater resource habitat provide increased habitat connectivity between the study area and additional down and upstream habitats, allowing for the movement and dispersal of faunal species, albeit those adapted to anthropogenically modified environments.

7.1.2.1.4 Transformed Habitat Unit

The Transformed Habitat Unit was predominantly associated with dilapidated and current infrastructure, comprising predominantly of alien and invasive plant (AIP) species and exotic garden ornamentals and, as such leading to a decreased provision of habitat and food resources for faunal species.

The various faunal classes pertinent to the study area are discussed in the Assessment Report attached to this EIR.

7.1.2.2 Faunal Species of Conservational Concern Assessment

During field assessments, it is not always feasible to identify or observe all species within an area, largely due to the secretive nature of many faunal species, possible low population numbers or varying habits of species. As such, and to specifically assess an area for faunal SCC, a Probability of Occurrence (POC) matrix is used, utilising a number of factors to determine the probability of faunal SCC occurrence within the study area. Species listed in Appendix C of the Assessment Report whose known distribution ranges and habitat preferences include the study area were taken into consideration.

None of the SCC listed in Appendix C were observed within the study area and immediate surroundings. However, taking into consideration the available habitat and resources attributed to the study area, it can be concluded it is likely that the following species have an increased probability of occurring within/utilising the study area:

- *Atelerix frontalis* (Southern African Hedgehog, NT);
- *Mirafra cheniana* (Melodious Lark, NT);
- *Eupodotis senegalensis* (White-bellied Korhaan, VU); and
- *Pyxicephalus adspersus* (Giant Bull Frog, NT).

Of the above listed species *Atelerix frontalis* (Southern African Hedgehog, NT) and *Pyxicephalus adspersus* (Giant Bull Frog, NT) are the most likely to occur within the study area. *Atelerix frontalis* will likely be most reliant on the Egoli Granite Grassland and Freshwater Resource habitat. These areas provide ideal foraging grounds as well as suitable soil substrates in which this species can burrow. Similarly, *P. adspersus* is likely to utilise the wetland habitat for breeding, following sufficient rainfall whilst in the dry months this species will burrow down into the soil and aestivate till it once again re-emerges, triggered by a high rainfall event.

The remaining two SCC are likely to only utilise the study area for foraging, however, should the habitat degradation of the Freshwater Resource and Egoli Granite Grassland be halted, it is possible that these species may begin to utilise the study area more frequently. Should any of these species be observed or encountered during development activities in the study area, all operations must be stopped immediately, and a biodiversity specialist must be consulted in order to ascertain the best way forward.

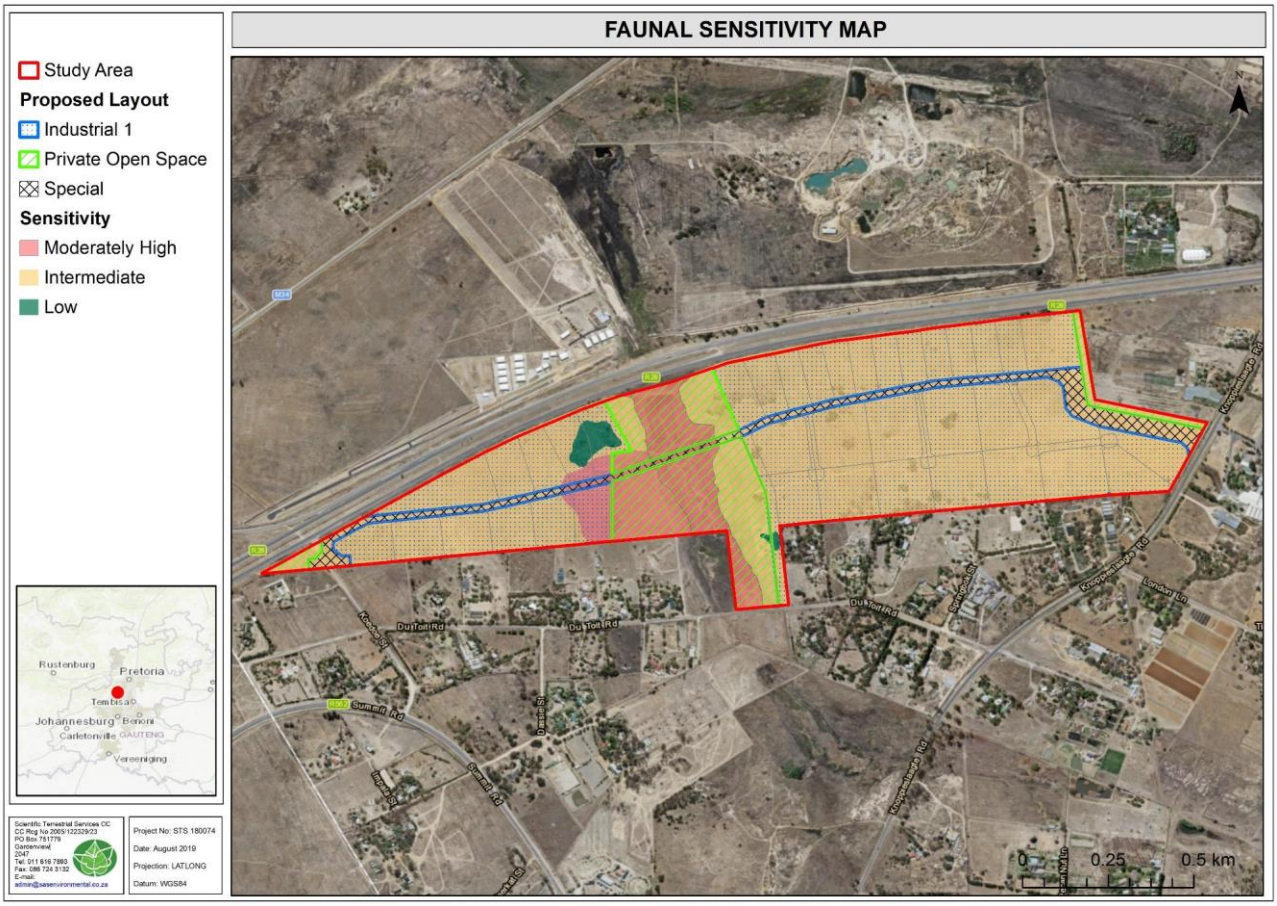

Figure 21: Faunal Sensitivity Map

7.1.2.3 Faunal Impact Assessment

The development is likely to result in a significant loss of habitat, leading to a loss of faunal species diversity and abundance. In order to minimise this loss of diversity and abundance and mitigate the proposed habitat loss, it is proposed that through the exclusion of the Egoli Granite Grassland and the Freshwater Resource habitat units an open space area be created. This will help ensure that a viable area of habitat is retained for faunal SCC within the study area.

7.1.2.3.1 Impact on Faunal Diversity and Habitat

The study area provides varying degrees of habitat for faunal species, with the Egoli Granite Grassland and Freshwater Resource habitats being considered the most important. The proposed development will result in significant clearing of vegetation within the study area, leading to an unavoidable loss of habitat and, as such faunal species diversity. The initial layout did not make allowance for open space areas other than that of the Freshwater Resource habitat. In addition, a bridge crossing is planned over the Freshwater Resource habitat. If not properly designed, this lead to further habitat fragmentation and loss of habitat connectivity.

7.1.2.3.2 Impact on Faunal SCC

Four faunal SCC have an increased likelihood of occurring within the study area, given the location and available habitat. As such, construction activities and vegetation clearing may result in the loss of faunal SCC from the study area as well as the surrounding habitats which are impacted by edge effects. Species that may be impacted upon as a result of the development were identified in the preceding section of this report.

Of particular concern are *Atelerix frontalis* and *Pyxicephalus adspersus* as these two species cannot readily relocate to other areas of suitable habitat. As such, the conservation of the Freshwater and Egoli Granites Grassland habitat units is considered to be of primary importance. The exclusion of these habitat units will help ensure that there is available habitat for these species, whilst also ensuring that suitable foraging grounds remain for *Mirafra cheniana* and *Eupodotis senegalensis*.

7.1.2.3.3 Probable Latent Impacts

Even with extensive mitigation, significant latent impacts on the receiving faunal ecological environment will be unavoidable as a result of the proposed development. The following points highlight the key latent impacts that have been identified:

- Loss of faunal habitat;
- Loss of and alteration to faunal species diversity and abundance; and
- Possible loss of faunal SCC and suitable habitat.

7.1.2.3.4 Cumulative Impacts

The proposed development will contribute to loss of habitat adding further stress on faunal species for within urbanized environments. This will lead to the displacement of faunal species currently inhabiting these areas, pushing them into the remaining vegetated areas along the watercourse thus resulting in an increase in competition for territories, breeding sites and food resources. There will likely be an increase of mortality rates, resulting in a decreased species abundance and possible further loss of species diversity.

7.2 Wetland Assessment

Scientific Aquatic Services (SAS) were appointed to conduct a wetland assessment as part of the Environmental Authorisation (EA). The purpose of the assessment was to define the ecology of the area in terms of watercourse characteristics, including mapping of the watercourse, defining areas of increased Ecological Importance and Sensitivity (EIS), and to define the Present Ecological State (PES) of the watercourse associated with the study area. In addition, the study sought to define the socio-cultural and ecological service provision of the watercourse and the Recommended Ecological Category (REC), Resource Management Objectives (RMO), and Best Attainable State (BAS) for the watercourse. Further, the study was to provide detailed information to guide the proposed project activities, to ensure the ongoing functioning of the ecosystem, such that local and regional conservation requirements and the provision of ecological services in the local area are supported while considering the need for sustainable economic development.

7.2.1 Watercourse Field Verification

For the purposes of this investigation, the definition of a watercourse and wetland habitat were taken as per that in the National Water Act, 1998 (Act No. 36 of 1998). Further, a w**etland habitat** is defined as “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”

The watercourse delineation took place according to the method presented in "A practical field procedure for identification and delineation of wetlands and riparian areas" (DWAF, 2005) as far as practically feasible, given the condition of the study area at the time of assessment. The foundation of the method is based on the fact that watercourses have several distinguishing factors including the following:

- Landscape position;
- The presence of water at or near the ground surface;
- Distinctive hydromorphic soils; and
- Vegetation adapted to saturated soils.

In addition to the delineation process, a detailed assessment of the delineated watercourse was undertaken (in November 2018), whereby factors affecting the integrity of the watercourse was taken into consideration and aided in the determination of the functioning as well as the provision of ecological and socio-cultural services by the watercourse.

7.2.2 Sensitivity Mapping

The watercourse associated with the study area was delineated with the use of a Global Positioning System (GPS). Geographic Information System (GIS) was used to project the feature onto digital satellite imagery and topographic maps.

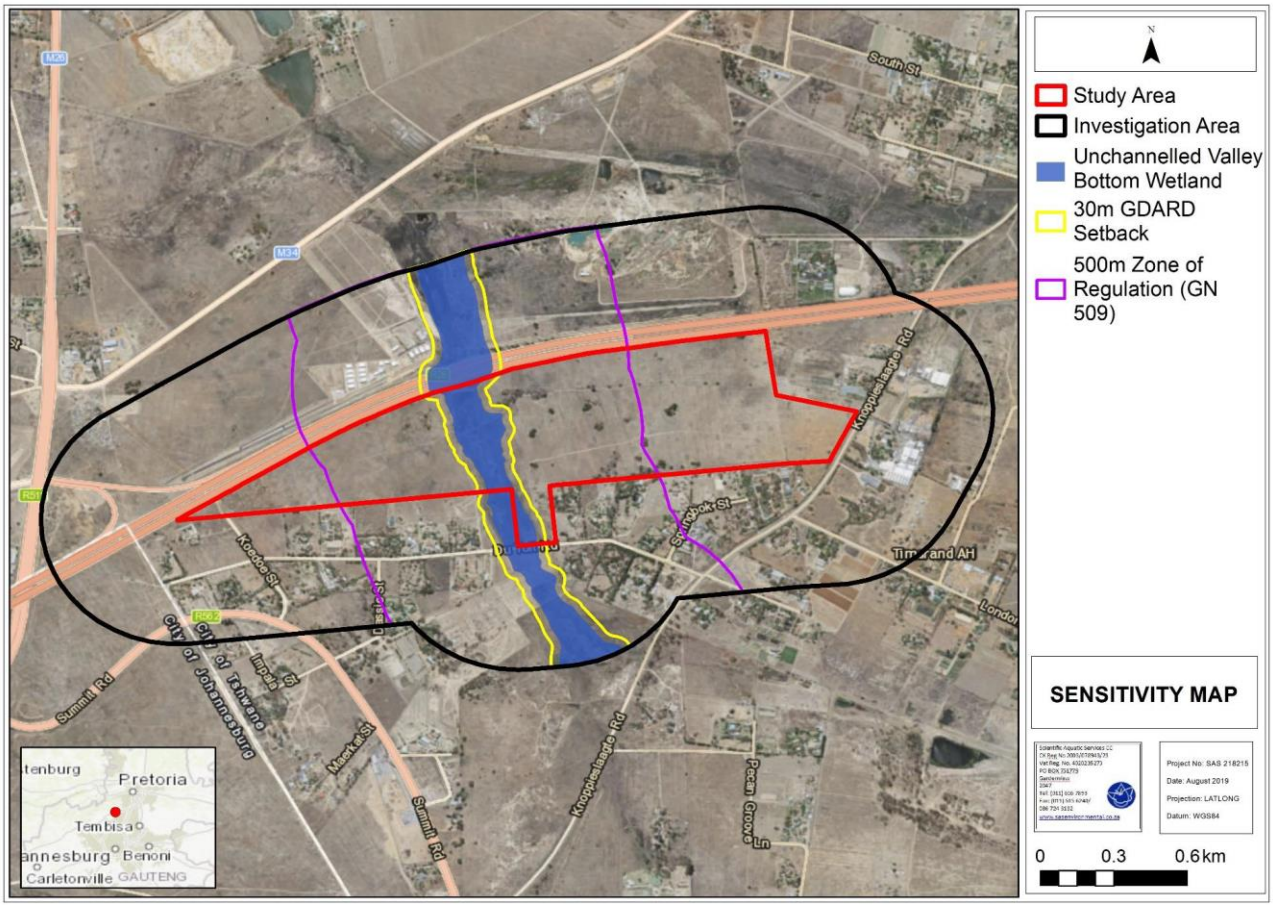

Figure 22: Wetland Delineation

7.2.3 Risk Assessment and Recommendations

Following the completion of the assessment, the DWS risk assessment was conducted and recommendations were developed to address and mitigate impacts associated with the proposed industrial development. These recommendations also include general 'best practice' management measures, which apply to the study area activities as a whole. Mitigation measures have been developed to address issues in all phases throughout the life of the operation including construction and operation.

7.2.4 Watercourse Characterisation

A watercourse was identified within the study area. The watercourse was identified as an Unchannelled Valley Bottom (UCVB) wetland, located within the central portion of the study area, that flows in a northerly direction. This wetland corresponds to the seep wetland identified by NFEPA (2011).

The wetland was classified according to the classification system as an inland system, falling within the Highveld Aquatic Ecoregion and the Mesic Highveld Grassland Group 3 wetland vegetation (WetVeg) group.

The UCVB wetland has been impacted upon by the construction of road infrastructure traversing the wetland, specifically Du Toit Road and the N14 highway. However, the construction of pipe and box culverts in the road infrastructure has allowed the connectivity of the wetland to other systems in the catchment to remain intact.

7.2.5 Impact discussion and essential mitigation measures

There are four key ecological impacts on the wetland that are anticipated to occur namely,

- Loss of wetland habitat and ecological structure;
- Changes to the sociocultural and service provision;
- Impacts on the hydrology and sediment balance of the wetland; and
- Impacts on water quality.

Various activities and development aspects may lead to these impacts, however, provided that the mitigation hierarchy is followed, these impacts can be avoided or adequately minimized where avoidance is not feasible. The mitigation measures provided in this report have been developed with the mitigation hierarchy in mind, and the implementation and strict adherence to these measures will assist in minimising the significance of impacts on the receiving freshwater environment.

7.2.6 Wetland integrity

In determining the integrity of the wetland the condition of the site and the indirect and direct disturbances is taken into account. Dumping, roads, overgrazing, alien invasive vegetation species, etc. was taken into account in determining the Present Ecological Status (PES) and Ecological Importance & Sensitivity (EIS) of these wetland units.

Table 9: PES and EIS of the wetlands and riparian zones

Wetland / Water course	PES	EIS	Ecoservices	EIS
Unchannelled Valley Bottom Wetland	Class D (Largely modified)	C (Moderate)	Moderately high	REC Category: D (Largely modified). RMO: D (Maintain)

The wetland within the study area is considered to be impacted upon. Alterations to the habitat of the wetland have occurred, primarily due to impacts relating to the surrounding road infrastructure, the diversion of flow through artificial channels and culverts, and grazing and trampling by cattle resulting in removal of natural wetland vegetation.

7.3 Wetland rehabilitation

In order to address the impacts emanating from the implementation of the project as well as to ensure the long term upkeep of the water resources, the rehabilitation plan must be implemented. The plan is applicable to the activities directly associated with the construction of the proposed development in the vicinity of the wetland and riparian zones.

7.3.1 Rehabilitation objectives

In order to address the problems identified, a number of objectives were established to guide rehabilitation planning for the impacted wetland units identified. In order to achieve the rehabilitation objective defined, a number of wetland interventions have been proposed. These have been prioritized from a wetland rehabilitation perspective, but implementation may need to be reordered due to practical or financial constraints. The proposed interventions aim to:

- Control alien invasive species in wetland areas;
- Stabilization of sloped banks to reduce erosion hazard;
- Support upstream intervention to reduce risk of failure;
- Re-direct flows out of downstream drain;
- Divert moderate summer flows and high flows out of downstream drain into adjacent wetland area.

7.3.2 Rehabilitation methods

The Environmental Rehabilitation process at the construction site should form an integral part of site development, operation and post-construction activities. A Rehabilitation Specialist and/or Environmental Control Officer (ECO) should therefore be appointed and be available on-site as part of the rehabilitation management / construction team. The ECO should form an integral part of the management team, attending regular site meetings, receiving Project Meeting Minutes and being kept fully updated regarding the closure plan and site rehabilitation process.

Rehabilitation measures that may be affected on site include systems such as soil terracing, berm creation, grass blocks, fascine work, gabion basket work, reno mattresses, retaining block mechanisms, sand bags, boulder and rock placement, stone pitching, and grading. Decisions pertaining to plant material choices and specific vegetation utilisation for specific areas from an integral part of the process, as the hard landscape components work in conjunction with the soft landscape components. For example, the utilisation of plants with substantial roots for bank stabilisation purposes.

7.3.2.1 Key actors and their responsibilities in the rehabilitation process

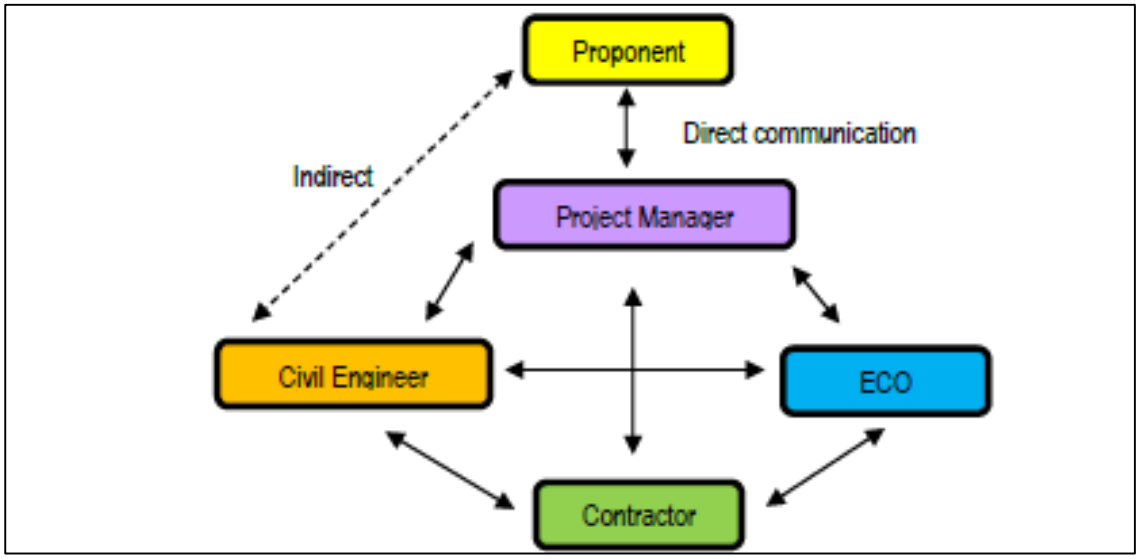

Figure 23:Key actors in the rehabilitation process

Table 10:Roles and responsibilities

Party	Responsibility
Proponent	• The Proponent will be responsible for the appointment of a suitably qualified independent Environmental Control Officer (ECO) for the construction phase of the project; • A management body (I.e. Project Manager) must be appointed to ensure compliance with the WRMP; • The Proponent will be responsible for ensuring all Contractors receive a copy of this document and understand its contents; • The Proponent is responsible to ensure there is sufficient funding for the required rehabilitation and management actions as set out in this WRMP; and • The Proponent can also be the Project Manager should they not wish to appoint a separate project manager.
Project Manager	• The Project Manager must ensure a clear communication line between all parties working on the project, to ensure all environmental concerns and measures as stipulated within this WRMP are implemented/adhered to; • The Project Manager should have direct communication with the Proponent; • The Project Manager should call a meeting with all responsible parties should there be conflict/ remediation requirements to ensure a suitable solution is found and implemented; • The Project Manager must ensure that there is sufficient funding and resources for an ECO to adequately perform their role and • The lead project manager must ensure that the WRMP is implemented and that suitable penalties are in place for non-conformance to the WRMP by Contractors (as indicated by the ECO).
Registered Civil Engineer	• Issue all instructions/ drawings to the Contractor; • Must immediately inform the Project manager and ECO if any changes to the project are envisaged; • Must immediately inform he Project Manager and ECO if any aspects of the WRMP and/or Record of Decision (RoD) for the relevant authorities cannot be complied with; and
	• Must remain in communication with the ECO and the Project Manager to ensure that any design changes required are issued to the Contractor.

Environmental Control Officer (ECO)	• The ECO is the person responsible for the monitoring of the implementation of the WRMP during the implementation of the activities and for reporting on the degree of compliance. The ECO should ideally be appointed at the start of construction activities and be responsible for ensuring that all rehabilitation activities are implemented. The ECO is mandated to do the following: • Ensure that all contractors/ subcontractors/ employees/ construction workers are fully aware of their environmental responsibilities. This should take the form of an initial environmental awareness-training program in which requirements of this document will be explained; • Monitor site activities on a regular basis to ensure that there is minimal environmental impact due to construction activities. A monitoring report should be submitted to the Contractor, the Civil Engineer (should there be any design changes required) and the Project Manager; • Ensure that a 'hotline' exists for reporting incidents and resolving any problems rapidly; • The ECO must regularly audit the operation and establish whether the measures in the WRMP are applied, where after the ECO reports to the lead project manager; • All reports compiled by the ECO must be submitted to the relevant compliance office within the DWS and the relevant competent authority; • The ECO has the authority to stop works if in his/her opinion there is/may be a serious threat to or impact on the environment caused directly by the construction operations; and • Conduct a final environmental audit and a review of management and rehabilitation measures. • Should the appointed ECO not have any freshwater ecological experience, a suitably qualified wetland ecologist should be appointed to assist the ECO as and when needed.
Contractor	• The Contractor/s in this case refers to any Contractor/s on site, including the building Contractor/s and sub-contractors on any item of infrastructure being erected or demolished; • Such contractor/s will take full responsibility for each of his/her employees and any penalties imposed; • The Contractor must immediately inform the Project Manager and ECO if any changes to the project are envisaged and if any aspects of this WRMP or the RoD cannot be complied with; • All design change instructions must come from the Project Manager and/or Civil Engineers; • It is the responsibility of the Contractor/s to ensure that the measures stipulated within this WRMP are adhered to; and. • Should the Contractor require clarity on any aspect of the WRMP the Contractor must contact the ECO for advice.

7.3.2.2 Erosion Rehabilitation Measures

Remedial actions must be established to ensure that potential erosion on site is addressed with an erosion control strategy towards rehabilitation. The following management measures are proposed for the rehabilitation process:

- Reprofiling of the banks of disturbed drainage areas to a maximum gradient of 1:3 to ensure bank stability;
- Reinforce banks and drainage features where necessary with gabions, reno mattresses and geotextiles. This is especially relevant for the stormwater outlet area;
- Reseed any areas where earthworks have taken place with indigenous grasses to prevent further erosion;

- Erosion control mechanisms must be established as soon as possible. Further financial provision should be continued over the subsequent years to allow for maintenance of the gabions, reno mattresses, and associated structures;
- A stormwater plan must be developed with the aid of an engineer to ensure that water runoff is diverted off the site without pooling and stagnation or erosion. Financial provision for closure will include the estimated costs for erosion control post-construction;
- Topsoil stockpiles should be vegetated to control loss from erosion and should have berms on top to reduce erosion from surface runoff. In areas where soil stockpiles are greater than 2 m high, soils should be ameliorated during closure to ensure their suitability for use in rehabilitation;
- If compaction occurs, rectification can be done by application and mixing of manure, vegetation mulch or any other organic material into the area. Use of well cured manure is preferable as it will not be associated with the nitrogen negative period associated with organic material that is not composted;
- Vehicle traffic should not be allowed on the rehabilitated areas, except on allocated roads, must not be allowed. It will have a negative impact due to the dispersive/compaction characteristics of soils and its implications on the long term;
- Foot action should be prevented by brush-packing the area during the establishment phase of vegetation on the rehabilitated areas, especially the first two seasons.

7.3.2.3 Reinstatement of Topsoil

The correct handling of topsoil is vital in conserving the seed bank and nutrients which occur within this layer thereby ensuring successful rehabilitation:

- Topsoil must only be used for rehabilitation purposes and not for any other use example i.e. construction of roads;
- Previously excavated areas on the site should be backfilled with suitable topsoil, levelled to resemble the surrounding topography and slopes and scarified for re-vegetation/re-seeding;
- On steeper slopes rehabilitation measures may include systems such as soil terracing, berm creation, grass blocks, fascine work, gabion basket work, reno mattresses, retaining block mechanisms, sand bags, boulder and rock placement, stone pitching, and grading;
- Erosion control netting or matting (GeoJute or Bio-Jute) may be utilised on steep slopes to assist with soil retention, weed control and vegetation establishment. The netting material helps protect the soil from wind and water erosion, and the required rehabilitation plant material can be installed by making small incisions for planting. The netting is biodegradable and will eventually break down and form a mulch layer.

7.3.2.4 Re-vegetation

Plant species that have been rescued or removed and relocated to the temporary nursery could be used in replanting rehabilitation areas. Additional plant material (indigenous trees) as required should be sourced from local indigenous nurseries and specifications regarding plant sizes, heights and the installation process of these plants should be developed by the On Site ECO and Rehabilitation Specialist. Standard horticultural best practice would apply, with specific reference to the fact that the plant material would have to be in good condition, free from pests and diseases (any such plant would have to be removed from the site), well-formed and well rooted, potting materials are weed free and with sufficient root cover. Groundcovers and sedges are often supplied in trays, and the same standards would apply.

- A plant species specification for the rehabilitated areas is included below. Re-grassing or planting of wetland species should be undertaken (as far as possible) during the summer months, as germination and establishment is best at this time of year. Spring rains are also conducive to good germination results, and as such rehabilitation programmes should take these factors into consideration;
- There are two methods for seeding, hand broadcasting and hydro-seeding. The methods utilised will be site specific and the On Site ECO and Rehabilitation Specialist will determine them;
- Re-vegetation (grassing) should occur immediately after topsoil reinstatement. Seeding on the site can in most cases be done by hand. The contractor is to guarantee a success rate of 80% for all re-seeded areas and follow up will be conducted monthly until such time as 80% success of vegetation cover has been achieved.
- In certain areas grass runners may be required, and grass sods where instant cover is necessary;
- Indigenous seed tends to germinate much easier going into spring and summer than in midsummer as temperatures escalate slower. This method has been used the past several years abroad with great results and in South Africa as well the last three years;

- The following criteria is recommended to be used to inform the selection of wetland plant species for the UCVBW:
  - Plants must be hardy, and ideally able to withstand:
  - Elevated nutrients;
  - Periodically high hydrocarbons (oils);
  - Occasional high sediment inflows;
  - o Elevated ammonia concentrations;
  - Periods of low oxygen, depending on zonation; and Periodic inundation (it is assumed that inundation is likely during the rainy season);
  - Plants must be readily available;
  - Plants must establish rapidly to facilitate prompt onset of wetland function; and
  - Plants should ideally be locally indigenous and no plants that are alien and invasive may be planted or allowed to remain in the UCVBW or 30m GDARD setback area.

- The below list was compiled through the use of the field guide titled “Easy identification of some South African Wetland plants (Grasses, restios, sedges, rushes, bulrushes, Eriocaulons and Yellow-eyed grasses)” (van Ginkel et al. 2011), which is the recommended wetland vegetation specimens to be planted:
  - Cyperus congestus
  - Eleocharis dregeana
  - Isolepis cernua
  - Isolepis costata
  - Isolepis sepulcralis
  - Isolepis setacea
  - Juncus dregeanus
  - Juncus effusus
  - Juncus lomatophyllys
  - Schoenoplectus brachyceras
- Proliferation of any of the following AIPs (as identified in the study area by the Floral Assessment conducted by Scientific Terrestrial Services (STS, 2019)), must be removed by hand and the use of chemicals be limited to when absolutely necessary, in order to

prevent die back of remaining indigenous vegetation and to prevent contamination of the wetland:

- *Morus alba*
- *Senna didymobotria*
- *Solanum mauritianum*
- *Oenothera rosea*
- *Veronica anagalis-aquatica*
- *Campuloclinium macrocephalum*
- *o Cirsium vulgare*

7.4 Cultural and Heritage Resources

A Pelser Archaeological Consulting (APAC) were commissioned to undertake a Phase 1 HIA for the proposed Mixed Use development. Their findings were that A number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. There are no known sites on the specific land parcel, although some were identified in the study area during the assessment. From a Cultural Heritage point of view, the development can continue, taking into consideration the mitigation measures proposed.

7.4.1 The Stone Age

No Stone Age sites or occurrences are known on the site, although Later Stone Age sites are known in the larger geographical area (including Zwartkops, Hennopsrivier, Uitkomstgrot, Glenferness, Pietkloof and Zevenfontein).

No Stone Age sites or objects (such as stone tools) were identified in the area. If any Stone Age artifacts are to be found in the area then it would more than likely be single, out of context, stone tools. The site inspection produced no Stone Age material or remains.

7.4.2 The Iron Age Farmer Period

Based on Tom Huffman's research it is possible that LIA sites, features or material could be present in the larger area. This will include the Ntsuanatsatsi facies of the Urewe Tradition, dating to between AD1450 and AD1650 (Huffman 2007: 167); the Uitkomst facies of the same tradition (AD1700 to AD1820) [p.171]; Olifantspoort facies of Urewe (AD1500 – AD1700) [p.191], as well as the Buispoort facies of Urewe, dating to around AD1700 – AD1840 (p.203).

No Iron Age occurrences were identified in the study area during the assessment.

7.4.3 Historical / Colonial Period

The historical age started with the first recorded oral histories in the area. It includes the moving into the area of people that were able to read and write. The first Europeans travelling close to this area were the early travellers Cornwallis Harris in 1836 & Livingstone in 1847. These groups were closely followed by the Voortrekkers after 1844 (Bergh 1999: 12-13). The larger area also saw some activity during Anglo-Boer War (1899-1902) (Bergh 1999: 51; 54).

The sites identified and recorded during the September 2018 field assessment dates to the recent historical period.

The oldest map that could be obtained from the database of the Chief Surveyor General (CSG Document 10HC5Y01) is for Portion 2 and dates to 1905. It was then known as Knopjeslaagte No.140 and was situated in the District of Pretoria and the Ward of Witwatersrand. This map indicates that Portion 2 was transferred by deed to one H.A. Pretorius on the 10th of March 1905 and was surveyed in March 1905 as well. A 1909 map for Portion 3 of the farm (CSG Document 10290501) indicates that the whole farm was originally granted by deed to one D. J. J. Oosthuizen in October 1859. Portion 3 was surveyed in May 1909.

Previous work by the author on Portions 12 & 13 of the same farm also found no Stone Age and/or Iron Age sites, features or material, but did identify some recent grave sites similar to the one found during the September assessment (Pelser 2016).

The study concluded that although no heritage and archaeological resources were found within the area, cognisance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any possible archaeological material culture discoveries are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

7.5 Visual Impact Assessment

SMEC South African (SMEC) were appointed to undertake a visual impact assessment (VIA) for the proposed Timsrand Industrial Township. The study concluded that the landscape is largely a transformed peri-urban area with visual resources comprising of an undulating topography covered with a diversity of land uses.

The proposed development will change the visual appearance of the proposed development site permanently. However, a high degree of visual absorption capacity exists by virtue of existing and new developments.

The significance of visual impact is low given the high degree of transformation in the landscape, the lack of scenic visual resources and the visual absorption capacity in places. Existing processes in the landscape can continue apart from the mining activities.

Mitigation measures relate to architectural design and blending in of buildings with similar developments in the visual landscape.

7.6 Geotechnical assessment

According to the dolomitic investigations carried out on site, no dolomitic residuum was encountered in any of the test pits or boreholes across Zones 1 and 2. The site is underlain by granite-gneiss and granite of the Johannesburg Granite Dome and consists of poorly exposed biotite tonalite, trondjhemite, granodiorite and migmatite varieties. As the site is not underlain by dolomitic bedrock and a surface stability investigation is therefore not required.

7.6.1 Designated Zones

The site was classified into four zones (Zones I-IV.

- **ZONE I: Site Class Designation C-C1/2ABDEF-** Moderate soil collapse and compressibility is expected due to open soil structure in loose surficial and residual soil horizons. Shallow (< 1.5 m) perched groundwater tables are expected seasonally, especially on the lower elevated parts and on the

localised ferricrete horizons in this zone.

The surficial sandy soils are expected to have a high risk for erosion. Difficulty of excavation can also be expected in some parts of this zone at depths of < 1,5 m.

- **ZONE II: Site Class Designation C-C1/2ABDE/3F-** This zone is characterised by shallow honeycomb/hardpan ferricrete that translates to difficult excavation at depths of < 0,7 m.

  Moderate soil collapse and compressibility is expected due to open soil structure in loose surficial and residual soil horizons.

  Shallow (< 1.0 m) perched groundwater tables are expected seasonally, especially on the lower elevated parts and on the ferricrete horizons in this zone.

- **ZONE III: Site Class Designation C-C1-P(flood)/2ADEF/3BL -** This zone is expected to have similar geotechnical constraints to **ZONE I;** however seasonal flooding and marshy conditions are anticipated in the rainy season.

- **ZONE IV: Site Class Designation C-C1-P(flood)/2ADE/3BFL -** This zone is expected to have similar geotechnical constraints to **ZONE II;** however seasonal flooding and marshy conditions are anticipated in the rainy season.

7.6.2 Suggested Foundations

Suggested foundation options for the above Zones I and II, depending on the type of structure to be erected on site and the foundation depths (SAICE, 1995), are:

- *Modified normal.*
- *Deep strip foundations*
- *Soil raft.*

These foundation recommendations are according to the Joint Structural Division (SAICE, 1995) Code of Practice for single storey masonry structures founded below the loose upper horizons.
Depending on the delineation of the floodlines and wetlands and possible flood mitigation measures, parts of the indicated Zones III and IV may be suitable for development. Additional precautionary measures will then be necessary in Zone III and Zone IV with regards to foundations and drainage measures.
Due to possible reduced soil strength when wet or saturated *stiffened or cellular rafts* are recommended.
In addition to the suggested foundation precautions, drainage precautionary measures will be necessary and may include upslope cut off trenches and subsurface drains to reduce seepage or perching. Competent persons need to be appointed to determine floodlines, wetlands and mitigating measures.
It is recommended that the structural engineers calculate the best economical foundation option for the proposed development based on the type of structure and the different available construction methods.

Table 11: Summary of Geotechnical Zoning for urban development

ZONE		CONSTRAINTS	FOUNDATION DESIGN AND BUILDING PROCEDURES FOR SINGLE-STOREY MASONRY STRUCTURES	
I	C-C1/ 2ABDEF	Collapsible and compressible soils Seasonal perched water table Erodable soils Difficult excavation	Modified normal	• Reinforced strip-footings. • Articulation joints • Light reinforcement • Good site drainage.
			Deep strip foundations	• Normal construction with drainage requirements • Founding on competent horizon below problem horizon
II	C-C1/ 2ABDE/3F	Collapsible and compressible soils Seasonal perched water table Erodable soils Difficult excavation	Soil raft	• Removal of in situ material to 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod ASSHTO at -1 % to +2 % of OMC. • Normal construction with lightly reinforced strip footings and light reinforcement in masonry.
III	C-C1-P(flood)/ 2ADEF/3BL	Collapsible and compressible soils Seasonal perched water table Erodable soils Difficult excavation Flooding	No development or Adjusted zone boundaries with development.	• Once the floodlines are determined and development is possible in Zones III and IV. • Stiffened or cellular rafts are suggested • Additional drainage precautions. • Drainage precautions may include upslope cutoff trenches and subsurface drains to reduce seepage or perching. • Competent persons need to be appointed to determine floodlines, wetlands and mitigating measures.
IV	C-C1-P(Marshy areas)/ 2ADE/3BFL	Collapsible and compressible soils Surface seepage and marshy conditions Erodable soils Difficult excavation		

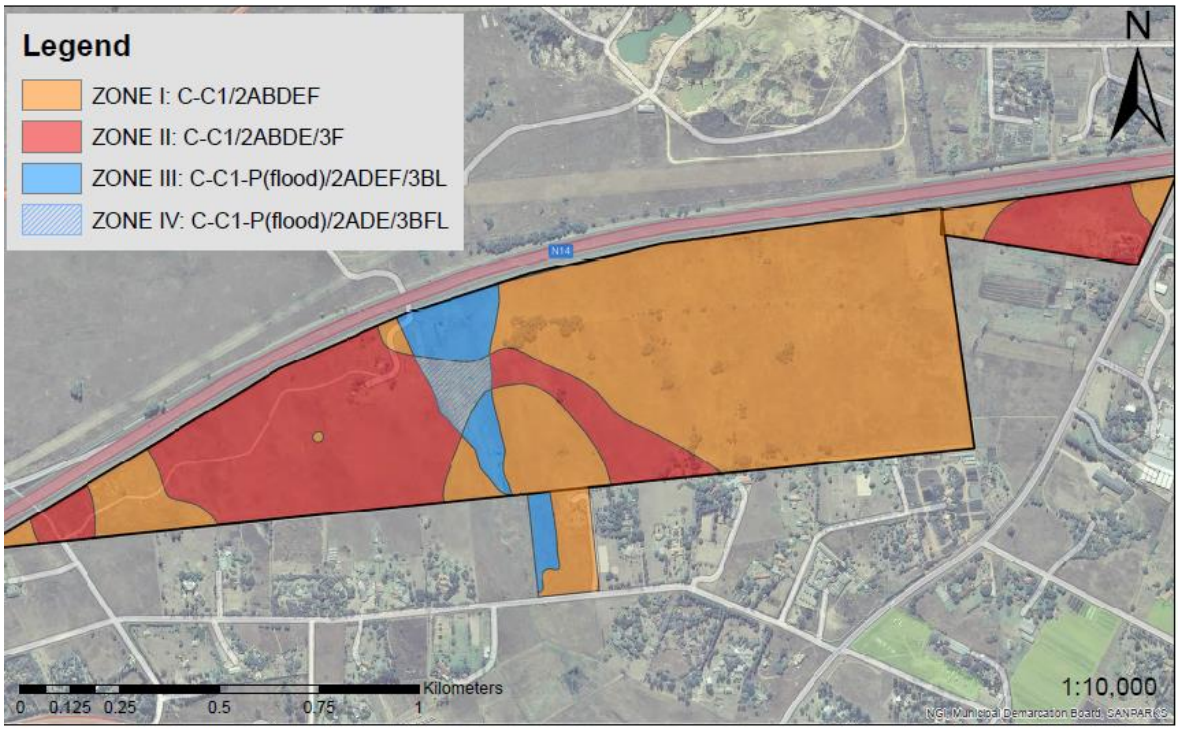

Figure 24: Geotechnical zones

7.6.3 Ground water

Although no groundwater seepage was encountered in any of the excavated test pits, the mottling in all the residual profiles and the ferruginisation of in situ materials are indications of seasonally saturated soil conditions.

It is expected that seasonal perching of percolating groundwater will occur, especially on the slopes with lower elevation as well as on the ferricrete horizons and specifically towards the end of the wet months. The perched water table may fluctuate depending on the season and amount of precipitation experienced. Surface seepage and marshy conditions are expected within the floodplain of the Swartbooi Spruit area.

Surface runoff and groundwater flow will follow the topography that slopes towards the floodplain of the Swartbooispruit in the central part of the farm. The present storm water reticulation and surfaced roads will not influence the natural runoff from the holding.

The regional groundwater in this area occurs in inter-granular and fractured aquifers with an average depth to the regional groundwater table of between 10 and 20 m and expected shallower depths near the drainage feature.

8.0 ENVIRONMENTAL IMPACT ASSESSMENT

This section provides the details of the methodology used for assessing the significance of impacts emanating from the activity. The criterion for determining impact is in accordance with the provisions of Appendix 3 of the Environmental Impact Assessment Regulations, 2014. The levels of details described in the EIA regulations were fine-tuned by assigning specific values to each impact.

In order to establish a coherent framework within which all impacts could be objectively assessed, it was deemed appropriate to establish a rating system, to be applied consistently to all the criteria. For such purposes each aspect was assigned a value ranging from one (1) to four (4) depending on its definition. The tables below provide a summary of the criteria and the rating scales used in the assessment of potential impacts.

8.1 Description of nature and scale of impacts

The table below provides a brief description of the terms used to assess the impact of the proposed activity on the environment.

Table 12: Nature, extent, duration, probability and significance of impact

• **Nature**: classification of whether the impact is positive or negative, direct or indirect.
• **Extent**: spatial scale of impact and classified as: ○ **Site:** the impacted area is the whole or significant portion of the site. ○ **Local**: Within a radius of 2 km of the construction site. ○ **Regional:** the impacted area extends to the immediate, surrounding and neighbouring properties. ○ **National**: the impact can be considered to be of national significance.
• **Duration:** Indicates what the lifetime of the impact will be and is classified as: ○ **Short term**: The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase. ○ **Medium term**: The impact will last for the period of the construction phase, where after it will be entirely negated. ○ **Long term**: The impact will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory. ○ **Permanent**: Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
• **Intensity:** Describes whether an impact is destructive or benign; ○ **Low**: Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected. ○ **Moderate**: Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way. ○ **High**: Natural, cultural and social functions and processes are altered to extent that they temporarily cease. ○ **Very High**: Natural, cultural and social functions and processes are altered to extent that they permanently cease.
• **Probability**: Describes the likelihood of an impact actually occurring: ○ **Improbable**: Likelihood of the impact materialising is very low ○ **Possible**: The impact may occur ○ **Highly Probable**: Most likely that the impact will occur ○ **Definite**: Impact will certainly occur.

- **Significance**: Based on the above criteria the significance of issues was determined. The total number of points scored for each impact indicates the level of significance of the impact, and is rated as:
  - **Low:** the impacts are less important.
  - **Medium:** the impacts are important and require attention; mitigation is required to reduce the negative impacts.
  - **High:** the impacts are of great importance. Mitigation is therefore crucial.
- **Cumulative**: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
- **Mitigation**: Where negative impacts are identified, mitigation measures (ways of reducing impacts) have been identified. An indication of the degree of success of the potential mitigation measures is given per impact.

8.2 Criteria for rating of impacts

This describes the criteria used and the significance rating of the impacts.

Table 13: Criteria for rating of impacts

Criteria for the rating of impacts				
Criteria	**Description**			
Extent	National	Regional	Local	Site
Duration	Permanent	Long-term	Medium-term	Short-term
Intensity	Very high	High	Moderate	Low
Probability	Definite	Highly probable	Possible	Improbable
Points allocation	**4**	**3**	**2**	**1**

Significance Rating of identified impacts		
Impact	**Points**	**Description**
Low	**4-6**	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium	**7-9**	Mitigation is possible with additional design and construction inputs.
High	**10 12**	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high	**13-16**	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Status	Perceived effect of the impact	
Positive (+)	Beneficial impact	
Negative (-)	Adverse impact	
Negative impacts are shown with a (-) while positive ones are indicated as (+)		

8.3 Assessment of anticipated impacts

The environmental issues relating to the physical, biological, economic social and institutional/legal framework have been identified in the body of the report. The section below assesses the beneficial and adverse effects of the proposed activity

8.3.1 Assessment on Impacts during the Construction Phase

8.3.1.1 Biophysical Environment-

Table 14: Assessment of impacts on biophysical environment during construction

Source of impact	Potential impact	Impact Significance before mitigation			Mitigation measures	Impact Significance after mitigation		
		LA1	LA2	LA3		LA1	LA2	LA3
Impacts on Fauna and Flora								
• Site clearing and the removal of sensitive habitat, particularly relating to the loss of primary grassland and habitat for floral SCC • Construction activities resulting in the removal and destruction of the potential floral SCC occurring within the study area. • Increased human movement and hardened infrastructure	• Loss of threatened, near threatened and endemic taxa. • Loss of some of the natural habitats that support endemic species will result in the local displacement of endemic listed flora.	-	-	-	• Any disturbances to the intermediate sensitive floral habitat must be actively avoided. Except for infrastructure, the Freshwater Resource and its associated regulatory zones should be excluded from the development. This area must be cordoned off during the construction phase; - • Although no floral SCC was recorded during the site assessment, the following is recommended: - During the surveying and site-pegging phase of surface infrastructure, a walkdown of the area must be done to ensure that any floral SCC, if encountered, be rescued and relocation outside of the development footprint; - All possible SCC individuals situated within the development footprint should be rescued and either relocated to: ○ Suitable similar habitat within the study area but outside the development footprint, should this habitat unit be excluded from the development, ○ Used within the landscaping plan of the development or ○ Relocated to a registered nursery, the ARC or SANBI; • It should be noted that should SCC individuals be removed from the study area to an area not listed above, permits might be required from the GDARD, and	-	-	-

surfaces within the study area.					• The rescue and relocation plan should be overseen by a suitably qualified specialist; • No collection of indigenous or medicinal floral species must be allowed by construction personnel. • Edge effect control needs to be implemented to ensure no further degradation and potential loss of vegetation outside of the proposed development footprint area occurs; • Appropriate sanitary facilities must be provided during the construction phase and all waste must be removed to an appropriate waste facility; - No dumping of waste on site should take place. As such it is advised that waste disposal containers and bins be provided during the construction phase for all construction rubble and general waste; • - If any spills occur, they should be immediately cleaned up. In the event of a breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced preventing the ingress of hydrocarbons into the topsoil. It should be ensured that no spills leak into the Freshwater resource associated with the central portion of the study area, • Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed; • Removal of vegetation should be restricted to what is absolutely necessary; - Alien vegetation, as listed in section 3.5 of this report, must be removed from the study area during both the construction and operational phases, with specific mention of Category 1b and 2 species in line with the NEMBA Alien and Invasive Species Regulations (2016); • Edge effects of all construction activities, such as erosion and alien and invasive plant species proliferation, which may affect the sensitive habitat areas as stipulated in this report, as well as adjacent grassland and freshwater resource habitat within surrounding areas, need to be strictly managed adjacent to the proposed development footprint areas. Specific mention in this regard is made to Category			

					1b and Category 2 species identified within the development footprint areas (refer to section 3.5 of this report); and • Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous grassland species be used to revegetate the disturbed area. Recommended seed mix: Mayfort Biosome Grassland seed mix: http://mayford.co.za/veld-grass.			
• Excavation of soils leading to increased runoff and sedimentation freshwater habitat • Site clearing and the removal of habitat within the freshwater habitat and associated buffer zones • Collision of faunal species with construction vehicles • Potential hunting/trapping /killing of faunal species by construction personnel • Dumping of material outside designated areas	• Loss of faunal habitat, species and faunal SCC • activities could lead to disturbance and compaction of soils in close proximity of the freshwater habitat and outside of the footprint area, leading to decreased faunal habitat	-	-	-	• The footprint of the proposed development must be fenced/ demarcated off to prevent vegetation clearing and footprint creep into the sensitive freshwater habitat; • No new access roads should be constructed crossing over the freshwater habitat; • Vegetation clearance and commencement of construction activities should either be scheduled to coincide with low rainfall conditions when erosive stormwater is anticipated to be limited or alternatively stormwater controls must be established at the start of construction and dust suppression implemented; • Revegetation of disturbed areas that form part of the proposed open space areas should be carried out in order to restore habitat availability and minimise soil erosion and surface water runoff; • When rehabilitating disturbed areas, it is recommended that natural indigenous vegetation be used so that faunal species that were displaced by vegetation clearing activities are able to utilise and inhabit these areas; • Removal/ cutting down of large indigenous trees (>2.5m) within the riparian areas should be avoided as these are considered important for avifauna, and cannot be readily replaced through rehabilitation; • Spills and /or leaks from construction equipment must be immediately remedied and cleaned up so as to ensure that these chemicals do not enter into the soil later or freshwater habitat; • Each construction team/site should have an individual that has undergone a snake handling course so as to safely catch and release any snakes within the site;	-	-	-

					• Construction personnel are to be informed and educated with about general faunal species that may be encountered on site, notably of snakes. Personnel are to be instructed that if encountered they are not to kill the faunal species but let them either move off on their own or call the nominated construction personnel who is to safely catch and release the snake; • No hunting/trapping or collecting of faunal species is allowed; • Should any faunal SCC be encountered/observed during construction activities in that area are to be halted and a biodiversity specialist consulted to determine the best way forward; • Construction edge effects, notably stormwater runoff, are to be actively managed so as to ensure that the downslope freshwater habitat is not impacted upon. As such, SuDs should be utilized as part of the development to recreate additional freshwater habitat that could be colonized by aquatic faunal species; • No informal fires by construction personnel are allowed; and • Initiate an alien and invasive plant control.			
• Clearance of vegetation. • Rainfall/ stormwater and inadequate drainage. • Leakages and spillages of chemicals/polluting material	• Destabilisation of surface geology and soil as a result of excavations and heavy loads; • Erosion, degradation and loss of topsoil due to construction activities as well as storm water runoff; • Soil compaction and erosion leading to sedimentation of the wetland. • Soil pollution	-	-	-	• Site disturbances must be limited to areas where structures will be constructed. Cleared areas to be effectively stabilised to prevent and control erosion. Excess rocks and boulders can be used for erosion protection work on site. • Stormwater management plan to be implemented. • Areas susceptible to erosion must be protected by installing the necessary protective materials. • Any tunnels or erosion channels developing during the construction period shall be backfilled and compacted. • Suitable excavated material is to be stockpiled next to excavations for use as backfill. Excess material from excavations and construction rubble must be appropriately disposed of. • Soil stockpiles must be situated away from drainage areas. Soil from the excavation for bio-retention ponds to be stockpiled upward slope of the excavations.	-	-	-

					• Areas exposed to erosion due to construction activities must be vegetated with species naturally occurring in the area. • Dry chemicals to be stored on an impervious surface protected from rainfall and storm water run-off; • Spill kits should be on-hand to deal with spills immediately; • Spillages or leakages must be treated according to an applicable procedure as determined by a plan of action for the specific type of disturbance; • All construction vehicles should be inspected for oil and fuel leaks regularly and frequently. Vehicle maintenance will not be done on site except in emergency situations in which case mobile drip trays will be used to capture any spills. Drip trays should be emptied into a holding tank and returned to the supplier			
Vegetation clearance and construction activities could lead to disturbance and compaction of soils outside of the footprint area and, hence, a decreased potential for indigenous floral species to re-establish, and AIP proliferation	Spread of alien plants	-	-	-	• Eradication of the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and reinvasion. • Weeds and invader plants will be controlled in the manner prescribed for that category by the CARA or in terms of Working for Water guidelines. The control of these species should even begin prior to the construction phase considering that small populations of these species was observed during the field surveys; • Institute strict control over materials brought onto site, which should be inspected for seeds of noxious plants and steps taken to eradicate these before transport to the site. Routinely fumigate or spray all materials with appropriate low-residual herbicides prior to transport to or in a quarantine area on site. The contractor is responsible for the control of weeds and invader plants within the construction site for the duration of the construction phase. Alien invasive tree species listed by the CARA regulations should be eradicated; • Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily able to establish;	-	-	-

					• A plan should be developed for control of noxious weeds and invasive plants that could occur as a result of new surface disturbance activities at the site. The plan should address monitoring, weed identification, the manner in which weeds spread, and methods for treating infestations. Require the use of certified weed-free mulching. Prohibit the use of fill materials from areas with known invasive vegetation problems. The spread of invasive nonnative plants should be avoided by keeping vehicles and equipment clean and reseeding disturbed areas with native plants; • Institute a monitoring programme to detect alien invasive species early, before they become established and, in the case of weeds, before the release of seeds. Once detected, an eradication/control programme should be implemented to ensure that the species' do not spread to surrounding natural ecosystems.			
Impact on Wetland and water resources								
• Removal of vegetation leading to exposure of soils and associated erosion. • Possible indiscriminate driving through the wetland by construction vehicles. • Removal of topsoil and creation of topsoil stockpiles.	• Increased runoff and erosion leading to sedimentation of the wetland. • Increased sedimentation of the wetland leading to smothering of wetland vegetation and potentially altering surface water quality. • Decreased ecoservice provision. • Damage to wetland vegetation, leading to exposed/compacted soils, in turn leading to increased runoff and	-	-	-	• Areas which are to be cleared of vegetation, including contractor laydown areas, must remain as small as possible, in order to retain a level of protection to the buffer zone surrounding the wetland. Contractor laydown areas are to remain outside of the delineated wetland and buffer zone; • At no point may construction equipment enter the wetland without authorisation or be stored within the 30m GDARD setback area; • Protect exposed soils by means of geotextile such as hessian sheeting. • Due to the slope of the site, sediment control devices must be implemented in the 30m GDARD setback area to prevent sedimentation of the wetland as a result of site clearing activities. • The wetland and associated buffer area are to be clearly demarcated on site, and to remain off-limits to all non-essential personnel. A geotextile mesh should be used to demarcate the site; • No indiscriminate driving of vehicles through the wetland may be permitted. All vehicles must remain on existing road crossings only and within the proposed road reserve for the culvert crossing.			

	erosion. • Decreased ecoservice provision. • Further decreased ability to support biodiversity. • Disturbances of soils leading to increased alien vegetation proliferation, and in turn to altered wetland habitat. • Altered runoff patterns, leading to increased erosion and sedimentation of the wetland.				• Exposed soils and stockpiles to be protected from wind, and limit the time in which soils are exposed, by covering with a suitable geotextile such as hessian sheeting; • No long-term stockpiles are to be permitted within the wetland and the associated bufferzone. Should long-term stockpiling be required, a designated area, as approved by the Environmental Control Officer (ECO) can be utilised; • Soils from trenching can be stockpiled alongside the trench, on the upgradient side of the wetland to ensure no excessive sediment is washed into the downgradient portion of the wetland feature; • Ensure no stockpiles are higher than 2m; and • Dust suppression measures must be implemented throughout construction to prevent excessive dust which may smother the wetland vegetation, but not to such quantities to create runoff that can enter the wetland			
Spillages of hydrocarbons and other chemicals as well as construction related waste and ineffective waste and pollution management	Contamination and pollution of soils, surface and groundwater resources	-	-	-	• Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants • A walled concrete platform, dedicated store with adequate flooring or bermed area should be used to accommodate chemicals such as fuel, oil, paint, herbicide and insecticides, as appropriate, in well-ventilated areas. Sufficient care must be taken when handling these materials to prevent spillages; • Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a sump which will separate these chemicals and oils. • Oil residue shall be treated with oil absorbent such as Drizit or similar and this material removed to an approved waste site. • Storm water shall not be allowed to flow through the batching area. Cement sediment shall be removed from time to time and disposed of in a manner as instructed by the Site Engineer.	-	-	-

					• All construction materials liable to spillage are to be stored in appropriate structures with impermeable flooring. • Implement and adhere to the conditions of the Environmental Management Programme (EMPr).			
• Site clearance and construction works. • Spillages of hydrocarbons and other chemicals as well as construction related waste and ineffective waste and pollution management. • Construction of infrastructure services.	• Loss of wetland habitat and ecological structure. • Changes to wetland ecological and sociocultural service provision. • Wetland hydrological function and sediment balance affected. • Contamination of surface and groundwater due to spillage, leakage, incorrect storage and handling of chemicals, oils, lubricants, cement, fuels and other hazardous materials • Erosion of the banks and wetland pollution • Impeded flow of surface water	-	-	-	• Limit clearing of vegetation and associated soil disturbances to essential areas only. Protect exposed soils by means of geotextile such as hessian sheeting. Ensure contractor laydown areas are placed outside of the wetland areas and bufferzones. • All wetland areas and associated buffer zones to be clearly demarcated on site, and, except for infrastructure services, to remain off limits to all non-essential personnel. No vehicles to be permitted within the wetland habitat. • Protect exposed soils and stockpiles by covering with a suitable geotextile such as hessian sheeting. Limit the time in which soils are exposed. No stockpiles to be permitted within wetland areas or bufferzones. • Stockpiles during the construction of the retention ponds to be upslope of the excavated areas. • All wastes are to be removed from the site and disposed of at a registered facility. • Storm water management measures to be installed to prevent erosion and minimise sedimentation of the stream; • All hazardous substances must be stored on an impervious surface in a designated bunded area able to contain 110% of the total volume of materials stored at any given time. • Vehicles to be regularly inspected for leaks and to be refuelled on sealed surface to prevent ingress into soils. All spills are to be immediately cleaned up and treated accordingly • Contractor's camp, storage areas and sanitary areas must be kept outside of the bufferzone. • These sites must be kept tidy, in good condition and sanitary throughout the whole project. Refuse bins must be cleaned/ emptied	-	-	-

					and the waste must be removed at regular intervals in order to ensure capacity is always available; • A minimum of 1 chemical lavatory per 10 individuals must be provided. If applicable (i.e. if no other facilities, such as a change house, are available), all portable lavatories must be secured to the ground to prevent them from toppling due to wind, and should be located at least 100m away from the freshwater resources to prevent inadvertent sewage contamination of the freshwater resources.			

8.3.1.2 Socio-economic impacts

Table 15: Assessment of socio-economic impacts during construction

Source of impact	Potential impact	Impact Significance before mitigation			Mitigation measures	Impact Significance after mitigation		
		LA 1	LA 2	LA3		LA 1	LA 2	LA3
Noise								
• Noise is likely to be generated through: - Ground works/clearance works; - Excavations for Foundations and trenching; - Building activities; - Transportation of building material to and from the construction site;	• Noise generated by construction activities exceeding tolerance and or legislated levels • Disturbance of peace and tranquillity on adjacent properties.	-	-	-	• Surrounding residents must be notified in advance of construction schedules. • Impose construction down time from 17h00 to 07h00 daily, public holidays and Sundays. Work hours must be strictly enforced unless permission is given by the relevant authority. Permission must not be granted without consultation with the local residents and businesses by the Environmental Officer (EO). • The EO must inform the residents of houses and businesses adjacent to the development in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites. These activities could include, but are not limited to, blasting, piling, use of pneumatic jack-hammers and compressors, bulk demolitions. • All construction vehicles must be in a good working order to reduce possible noise pollution.	-	-	-

- Assembling of equipment/machinery and buildings.					• Noise reduction by limiting unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. The use of silent compressors is a specific requirement. • The conditions as set out in the Occupational Health and Safety Act of 1993 must be adhered to especially where noise levels will exceed 85 Db.			
Traffic congestion and safety								
Construction vehicles moving to and from the site using the local road network	Increase in vehicular traffic leading to impeded flow	-	-	-	• Vehicular movement beyond the site boundaries must be limited during peak hour traffic, i.e. between 07:00-09:00am, and 16:00-18:00pm. • The development will be subject to the completion of road upgrades and access routes. • Access points from Mnandi Road must be clearly visible from the road, and vice versa. The main contractor must ensure all construction vehicles accessing the site only utilise the designated route and access to the site. • Enforce speed limits at all times on all external access roads. Unless otherwise specified, the speed limit on construction roads is 50km/h. • Allow for safe pedestrian and cycling access and crossing where necessary. • Ensure adequate and appropriate warning signage for construction vehicles turning at the main entrance/exit. • Traffic controllers must be positioned at strategic points along the access road to ensure minimum disruption of traffic by construction vehicles	-	-	-
Dust nuisance								
Dust generation from: • Construction activities including vegetation clearance and ground levelling • Vehicular movement on construction roads	Dust generation and pollution which would affect the construction site and adjacent areas.	-	-	-	• Dust emissions must be kept low at all times and suppression measures such as water spraying should be implemented regularly on areas associated with high dust emissions. • The dust fall rates from blasting operations should be kept within acceptable dust fall rates limit (<600 mg/m2/day, 30days average) published in the National Dust Control Regulations, 2013. • Dispersive material in trucks should be dampened or covered.	-	-	-

Visual impacts								
• Site clearing, including the removal of vegetation leading to higher visual contrast with the surrounding. • Intrusive impact due to construction activities and infrastructure including access roads. • Topographically altering the landscape area during site sloping activities	• Alteration of landscape character and sense of place • Visual intrusion and VAC • Visual exposure and visibility • Glare from night time lighting	-	-	-	• Site offices and temporary structures should be limited to single storey and situated at such a location so as to reduce visual intrusion; • The construction site should be demarcated and screened with a solid material in order to limit visual impact on passing motorists and residential in a direct line of site of the development. • Where infrastructure is sited within view of visually sensitive areas, it must be placed as far away as possible or within lower-lying areas where it may be screened by topography. Where full screening of infrastructure components is not possible, siting should take advantage of partial screening opportunities, such as vegetation, or making use of a colour palette that will blend into the surrounding landscape. • It must be ensured that where possible existing vegetation be retained during the construction phase to act as visual screens, with particular reference to existing tall trees and larger shrubs, with care also taken to retain existing vegetation along the site boundaries; • Where possible, existing natural vegetation is to be retained during the construction and operational phases of the project and incorporated into the concurrent site rehabilitation especially in line of sight from sensitive receptors; • Roadside vegetation and use of tall trees should be incorporated into landscaping plans of the proposed development Screening by vegetation will become effective once the vegetation has grown to 8m in height. • Erosion, which may lead to increased levels of visual contrast and further detract from the visual environment, must be prevented throughout the lifetime of the project by means of putting soil stabilisation measures in place where required and through concurrent rehabilitation. • Dust suppression must take place during the construction phase of the development; • Outdoor lighting must be strictly controlled; • Low-level lighting or limiting mounting heights of lighting fixtures or utilising foot-light or bollard level lights is recommended. The use of high light masts and high pole top security lighting should be avoided along the	-	-	-

					periphery of the development. Any high lighting masts should be covered to reduce glow and light spillage; • Use of minimum lumen or wattage in light fixtures			
Waste management								
Generation of waste from construction activities and construction material on site	• Contamination of the site with general and hazardous waste • General waste produced on site includes: Office waste; Operational waste (clean steel, wood, glass); and General domestic waste (food, cardboards, paper, bottles, tins). • Contamination or pollution of or effluent release into surface water, groundwater, rivers and other nearby hydrological or ecological systems with general and hazardous waste. • Litter on site and adjacent areas due to poor waste management practices	-	-	-	• No construction waste must be dumped in surrounding areas, and all waste illegally dumped on site must be removed and disposed at a registered landfill site. • All building waste generated during construction must be managed in terms of the Gauteng Building and Demolition Waste Guidelines, 2009 which prescribe a waste hierarchy approach to waste management. • A suitable flat area must be designated for the temporary storage of all waste material from the construction site. • Appropriate measures should be taken to divert stormwater away from the waste storage area. • None re-usable/recyclable building rubble and solid material must be disposed at a registered waste facility. • The contractor must ensure all waste disposal certificates are kept on file for record purposes and as proof should these be required. Littering is strictly prohibited and appropriate receptacles should be made available within the construction site. • Domestic waste generated on site during construction to be collected in waste skips. Waste skips containing food waste must be covered. • Adequate on-site chemical sanitation systems (one toilet for every 10 workers) must be provided within walking distance to all construction workers. • Solid construction waste not posing a pollution hazard should be used on site as backfill or aggregate material as much as possible. Should no backfilling material be required, this waste should either be taken to a recycling facility or disposed at a registered landfill facility. • Burning of litter or waste on site is prohibited. Litter patrols must take place once a week to ensure the site is kept free of litter. • Waste shall be separated into recyclable and non-recyclable waste. Bins shall be clearly marked for ease of separation. The contractor must	+	+ -	-

					adhere to all the relevant laws and regulations applicable to the disposal of construction waste and rubble. • The contractor shall provide sufficient closed containers on site, as well as waste skips, which must be placed in the crew camp, to handle the amount of litter, wastes, and builder's wastes generated on site. • Containers shall be emptied once weekly by a licensed waste contractor and disposed of at a registered landfill site. No solid waste or any materials used may be disposed of on site. • No rubble or discarded building material should remain in a non-designated within the construction site for more than one week. • An area must be designated for mixing of concrete, and must take place on an impervious surface such as concrete slab, metal, or plastic sheeting which is provided with cut-off drains or berms to contain any contaminated run-off. • Contain water and slurry from cement and concrete mixing operations as well as from batching area wash bays. Direct such waste water into a settlement pond or sludge dam for later disposal. • Liquid waste consists mainly of used oil, contaminated fuel, and lubricants, as well as waste paint etc. Liquid wastes must be collected in original containers and stored inside a surfaced or bunded storage area. The bunded surface area volume should be equal to 110% of the total volume of liquid stored. • All hazardous solid and liquid waste to be disposed of at a class H:H registered landfill site only. All concrete that is spilled outside these areas must be promptly removed and taken to an approved dumpsite. • All concrete waste must be removed from the batching area and disposed of at an approved dumpsite. No concrete residue is to be washed off into rivers, streams, or wetlands.			
Health, safety and security								
• Increase of people and vehicular movement in the area.	• Increase in crime in the area due to lack of adequate site controls	-	-	-	• Access to the site must be limited to the workforce only. • Accommodation for members of the workforce is not permitted on site unless authorisation has been given in terms of the Environmental	-	-	-

• Dangers posed by construction site. • Workforce exposed to dangerous equipment	• Migration of job seekers into the area in search of employment leading to loitering. • Accidents and threat to life in construction environment				Authorisation issued for the site. Crew camps must be kept to the north and eastern portions of the site. • No crewmember will be allowed to move onto private property under any circumstances. • The contractors must provide and maintain a method statement for "Crew camps and construction lay down areas". • The development will have 24-hour access control and security. • Safety equipment and emergency measures to be available on site. • Community Liaison Officer can be appointed. The CLO to be consulted regarding employment of members of the surrounding communities.			
Employment opportunities and accruing economic activities								
• Labour demands from construction activities • Increase in number of people buying from local traders	• Additional employment opportunities resulting from construction works • Increase in business/trade by local suppliers	+	+	+	• Direct and indirect jobs and business opportunities will be created during the construction phase. Businesses in the material supply chain will also benefit. • As far as is reasonably possible people from nearby communities especially with disadvantaged backgrounds must be employed by the contractor and sub-contractors. • Skills transfer should be promoted where possible.	+	+	+

8.3.2 Assessment of Impacts during the Operation Phase

Table 16: Assessment of Impacts during the operation phase

Source of impact	Potential impact	Impact Significance before mitigation			Mitigation measures	Impact Significance after mitigation		
		LA 1	LA 2	LA 3		LA 1	LA 2	LA 3
Impacts on Flora								
• Increased introduction and proliferation of alien plant species leading to further transformation of	Loss of floral habitat, species and SCC	-	-	-	• All sensitive habitats excluded from the development, should remain demarcated for the life of the operation, and no entry of unauthorised personnel should be allowed; • Ongoing alien and invasive plant monitoring and eradication/control should take place throughout the operational phase of the development, and the project perimeters should be	+	+	

remaining natural vegetation • Increased littering as a result of more human activity, further altering floral habitat and diversity • Inadequate rehabilitation of compacted soil areas leading to limited vegetation regrowth • Inadequate implementation of a rehabilitation, management and maintenance plan leading to increased alien invasive plant proliferation and further loss of natural vegetation.					regularly checked during the operational phase for alien and invasive plant proliferation as well as bush encroachment to prevent spread into surrounding natural areas. Specific mention in this regard is made to Category 1b and Category 2 species identified within the development footprint areas; • Indigenous vegetation should be used during the landscaping of the project, maintenance and monitoring of garden ornamentals used in the landscaping should be included in the monitoring and maintenance plan to prevent the spread of such species to the sensitive habitat units excluded from the development; • No indiscriminate disposal of waste must be permitted. Bins should be provided along the open space areas, to allow for disposal of waste. Bins should be emptied twice weekly and disposed of registered waste facilities; • The rehabilitation of natural vegetation should proceed in accordance with a landscape plan compiled by a suitable specialist. This plan should consider all development phases of the project indicating rehabilitation actions to be undertaken during and once construction has been completed, ongoing rehabilitation during the operational phase of the project; - Monitor the success of rehabilitation efforts seasonally; and • Continue with, and update, the alien and invasive plant control plan accordingly.			
Impacts on Fauna								
• Ineffective rehabilitation leading to proliferation of alien plant species in the disturbed areas • Erosion stemming from bare soil areas leading to sedimentation.	• Loss of faunal habitat, species and faunal SCC	-	-	-	• All sensitive habitat excluded from the development, should be protected and managed as part of the open space system; • Open space areas are to be suitably planned and maintained with faunal species in mind. As such habitat for faunal species should be recreated using fallen tree stumps and rocks combined with indigenous vegetation. All plants used should be carefully selected so as to provide a suitable food resource to faunal species; • No hunting/trapping or collecting of faunal species is allowed; • Monitor the success of rehabilitation efforts seasonally; and	-	+	-

• Footprint creep resulting in additional faunal habitat loss.					• Continue with and update the alien and invasive plant control plan accordingly.			
Impacts on wetlands and water resources								
• Potential indiscriminate waste disposal. • Increased impermeable surfaces in the vicinity of the wetland and the catchment. • Operations and maintenance of stormwater and sewage infrastructure • Potential for increased proliferation of alien floral species, leading to reduced ability to support biodiversity, and provide ecological services such as flood attenuation.	• Altered water quality due to waste disposal. • Pollution of riparian soils, groundwater and surface water • Altered runoff patterns and increased water inputs to the wetland, • Altered flow regime may lead to changed wetland zonation, • Contamination of wetland soils, groundwater and surface water	-	-	-	• No waste disposal is to be permitted within wetland areas or the associated NEMA zone of regulation & GDARD setback area. All waste is to be removed from the site and disposed of at a registered facility. • Should the sewage facility be installed, it must run efficiently be maintained adequately. Water discharged from the facility must meet the Dept. of Water and Sanitation standards. • The site of the facility must be rehabilitated sufficiently after the decommissioning of the facility. • A stormwater management plan to be incorporated into the design of the development. Release of stormwater into the wetland must not result in further bank incision or erosion. Highly recommended that Sustainable Drainage Systems (SUDs) be implemented. • All wetland areas and associated buffer zones to be fenced off, and, except for infrastructure services, no disturbances to be allowed. • Any spills to be immediately cleaned up and treated accordingly. Ensuring that suitable wetland vegetation remains post construction to assist in filtering toxicants from stormwater runoff. • Alien vegetation management plan to be developed and implemented. Incorporate indigenous terrestrial and wetland vegetation into landscape plan (if applicable). • Stormwater discharge to flow slowly into the bufferzone without any erosion.	+	+	+
Noise								
• Increase in the traffic noise along the access road	• Traffic noise on residential areas; • Mechanical ventilation and other	-	-	-	• A 2m boundary wall will have to be constructed along the boundary facing the N1 Freeway. • Sound proof glass to be fitted on the façade of the building facing the N1 Freeway.	-	-	-

• Mechanical ventilation and other sources of noise from the proposed office and shopping centre developments • Emergency generator	sources of noise from the developments – HVAC system, heat pumps, extractor fans; • Emergency generator.				• The indoor noise levels to comply with the recommended noise levels in Table 1 of SANS 10103 of 2008. • All point sources such as HVAC systems, mechanical ventilation systems, extract systems and any other sources of noise to be acoustically screened off; • The emergency generator to be encapsulated and installed in such a manner that the noise from the generator and/or exhaust will not exceed the prevailing ambient noise levels as measured at any of the boundaries of the development.			
Traffic congestion and safety								
Increase in vehicular traffic	• Increased number of vehicles on the local road network • Planned road improvements and upgrades will affect traffic flow in the area.	-	-	-	• As per the Traffic Impact Study, the phased development will be subject to the completion of road upgrades and access routes. • Access points to the site must be kept clear to allow for efficient flow in and out of the development. • Enforce speed limits at all times on all external access roads. • Road upgrades should be phased to limit disruption and prevent blockages in the flow of traffic; • Allow for safe pedestrian and cycling access and crossing where necessary.	+	+	
Visual Impact								
• Increase in vehicular movement due to resident, office and retail workers • Sunlight reflecting off the windows of taller buildings creating glint and glare impacts, • Night time lighting due to 24-hour office lighting.	• Landscape character and sense of place • Visual intrusion and VAC • Visual exposure and visibility • Impacts due to night time lighting • Potential obstruction of flight zone by high cranes and buildings	-	-	-	• Where possible, existing natural vegetation is to be retained during the construction and operational phases of the project and incorporated into the concurrent site rehabilitation especially in line of sight from sensitive receptors; • To limit the potential of sunlight reflecting off the windows from taller buildings it is recommended that tinted windows be utilised, particularly for the top three storeys • Outdoor lighting must be strictly controlled; • Low-level lighting or limiting mounting heights of lighting fixtures or utilising foot-light or bollard level lights is recommended. The use of high light masts and high pole top security lighting should be	+	+	+

	• Potential interference of Air Navigation Systems by the operation of construction equipment or machinery				avoided along the periphery of the development. Any high lighting masts should be covered to reduce glow and light spillage; • Care should be taken when selecting luminaries to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum. Only "full cut-off" light fixtures that direct light only below the horizontal must be used on buildings			
Employment opportunities and accruing economic activities								
• Labour demands from cooperation activities • Improved land attracting more taxes • Increased market for goods and services	• Additional employment opportunities from the activities • Increase in economic/business activity in the area • Increase in property rates and taxes to the municipality	+	+	+	Not mitigation measures but benefits accruing as a result of the project • The greatest proportion of operational phase direct impacts (i.e. of the R6.73 billion in new business sales, of the R3.11 billion in additional GDP and of the 6 780 new employment opportunities) will accrue to the Tshwane metropolitan economy. • If the proposed Mixed Use Development were not to occur, the economic and socio-economic benefits in terms of additional business sales, GGP, employment, as well as property rates, would be lost to the local, metropolitan and provincial economies.	+	+	+
Access to and improved infrastructure and socio-economic services in the area								
Developed precinct	• Improved roads. • Access to residential and business services. • Access to social infrastructure.	+	+	-	• Infrastructure provisions to be in accordance with municipal requirements. This will lead to improved infrastructure services due to upgrades as part of the development; • Business and economic facilities created within the precinct;	+	+	+

8.3.3 No-go Option

Table 17: Assessment of the No-Go option

Nature of impact	Implications	Significance
Biophysical		
Impacts on Flora	No construction and operations impact. However, degradation may continue given the extent of disturbance observed on site leading to loss of floral species	+

Impacts on Fauna	Although there will be no impacts induced by the development, degradation of the habitat may continue given the extent of disturbance observed on site	+
Impacts on wetland	No development related impacts but continued degradation	-
Soil erosion and sedimentation	No soil erosion induced by development	+
Increase in invasive plants	With no development, the rate of increase of invasive plants is expected to be slow. It will be required that the land owner manages the spread of these plants on a continuous basis.	-
Contamination of the environment	Except through uncontrolled illegal activities, this impact will be avoided	+
Impacts on wetland	No installation and operation of infrastructure close to the wetlands, therefore the wetland and associated habitat will not be disturbed through construction. However, the proposed rehabilitation work will not take place which might contribute to the degradation of the resource	-
Socio-economic		
Noise	No noise generated or addition to existing levels	+
Traffic congestion and safety	No additional traffic into the road system. The current situation will endure with no roads upgrades and historic traffic congestion on surrounding roads	-
Dust nuisance	Without clearance of vegetation and excavations, dust nuisance will not be experienced	+
Visual impact	The current status, open space will continue. Therefore, there will be no change in sense of place or introduction of buildings changing the visual character of the site	+
Waste management	No waste generated on site. However, site has to be secured to prevent illegal dumping of waste on site.	+
Health, safety and security	No concerns, however, site should not be used as refuge for nefarious activities	+
Employment opportunities and accruing economic activities	No opportunities created	-
Access to and improved infrastructure	No infrastructure provided. Access to such services to be found in alternative areas/sites	-

9.0 ENVIRONMENTAL IMPACT STATEMENT

9.1 Summary of key findings

During the EIA process, the impact of the proposed development on the biophysical and socio-economic environments was assessed. Specialists were appointed to conduct relevant aspects of the project. Below is a summary of the key findings (details can be obtained from the relevant specialist reports).

Table 18: Summary of key findings in specialists' reports

Nature of assessment	Aspects Assessed	Findings and recommendations
Ecological assessment	Faunal assessment	Four habitat units, the Egoli Granite Grassland, Secondary Egoli Granite Grassland, Freshwater Resources and Transformed habitat units were identified on site. The study area is as been subjected to varying levels of impacts and habitat degradation. To ensure the continued survival of faunal species, parts of the Egoli Granite Grassland and Freshwater Resource habitat be excluded from development activities. In doing so, under suitable management and through controlled site access, this open space area will not only provide habitat for common faunal species, but also for faunal SCC expected to occur within the study and surrounding areas. These SCC include *Atelerix frontalis* (Southern African Hedgehog, NT), *Mirafra cheniana* (Melodious Lark, NT), *Eupodotis senegalensis* (White-bellied Korhaan, VU) and *Pyxicephalus adspersus* (Giant Bull Frog, NT). These SCC rely on intact grassland and wetland habitats in order to forage and breed, which are rapidly being lost as a result of development. Pairing well thought out development plans with conservation initiatives will ensure that developmental and conservation targets can be met in a sustainable manner. The recommendations above support Integrated Environmental Management and will ensure that the best long-term use of the ecological resources in the study area is made in support of the principle of sustainable development.
	Floral assessment	The impact of the proposed development on the floral habitat and diversity is considered to be of medium-low to medium-high significance for the Freshwater Resource, as well as the Egoli Granite Grassland and Secondary Egoli Granite Grassland habitat units. With mitigation fully implemented, all impacts can be reduced to medium-low and low significance. The impact on the transformed habitat is considered to be of low significance prior to mitigation, and very low with all mitigation measures fully implemented. With respect to floral SCC, the impact on the Primary and Secondary Grassland is considered medium-high prior to mitigation. Should mitigation be

		implemented, and all individuals within the development footprint be rescued and relocated the impact can be reduced to low significance. As no floral SCC were recorded within the freshwater resource and transformed habitat units, the impact significance on floral SCC is considered to be of very low and low significance with mitigation fully implemented From a floral ecological perspective, the proposed development activity is considered acceptable, provided that the recommended mitigation measures for the identified impacts are adhered to.
Wetland assessment	The wetland within the study area is considered to be impacted upon. Alterations to the habitat of the wetland have occurred, primarily due to impacts relating to the surrounding road infrastructure, the diversion of flow through artificial channels and culverts, and grazing and trampling by cattle resulting in removal of natural wetland vegetation. The results of the risk assessment show that assuming mitigation measures are strictly enforced, impact significance is of low to moderate levels during both construction and operational phases. Impacts associated with the construction of the internal road and sewer pipeline through the wetland are anticipated to pose the highest risk to the integrity of the wetland during the construction phase. It is considered imperative that suitable mitigation measures, as provided for in Section 5 and Appendix F of this report, are strictly adhered to in order to minimise the impacts associated with the proposed industrial development and decrease the significance of cumulative impacts on the wetland. Based on the findings of the freshwater ecological assessment and the results of the risk assessment, it is the opinion of the ecologist that the proposed industrial development poses a direct moderate risk to the integrity of the UCVB wetland. Adherence to cogent, well-conceived and ecologically sensitive site development plans, the mitigation measures provided in this report as well as general good construction practice and ongoing management, maintenance and monitoring, are essential if the significance of perceived impacts is to be reduced to limit further degradation to the wetland. It is the opinion of the freshwater specialist that the proposed industrial development, from a freshwater ecological perspective, is considered acceptable, with the proviso that strict adherence to mitigation measures is enforced to ensure that the ecological integrity of the freshwater environment is not further compromised.	
Heritage Impact	A number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. No known sites on the affected land parcel. However, sites dating to recent historical times were identified and recorded during the assessment of the area. Of these a grave site is the most significant and mitigation measures will have to be implemented should the site be directly impacted on by the proposed development actions. The other recent sites or features recorded include the foundations and ruins of recent farming-related structures (homestead and others). These sites and features are however not older than 60 years of age or of any heritage significance and no mitigation measures are required and should the planned development impact on them they could be demolished.	

	The grave site contains around 43 graves. Most of these are stone-packed without any headstones, while 12 of the graves have formal headstones and are demarcated by stones, bricks and/or cement borders. From the legible inscriptions on some of the headstones it can be deduced that the site and graves most likely date to between the 1950's and 1970s although some could date to slightly earlier or later than that. It seems as if the site has been recently visited and cleaned and could indicate knowledge of its presence by descendants of the deceased individuals buried here. From a Cultural Heritage perspective Graves and Graveyards are always of High Significance, and all efforts should be made to avoid negative impacts on such sites. With the site located within the footprint of the proposed developments area, it should be protected and any negative impacts avoided at all costs by fencing the site and keeping it clean. If this cannot be done there is the option of exhuming and relocating the graves to a new location. In order to do this extensive social consultation is required to try and identify possible family members and descendants of the deceased. This needs to be done to obtain consent for the work to be done. Permit applications to various departments are also required, and only once all of these permissions are in place can the physical exhumation and relocation process be undertaken and completed. The subterranean nature of cultural heritage (archaeological and/or historical) sites, features or material (including low stone-packed or unmarked burials) should always be kept in mind. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward. Finally, from a Cultural Heritage point of view, the development should be allowed to continue, taking cognizance of the above recommendations.
Visual Impact Assessment	Based on the findings of the visual assessment, the proposed development will change the visual appearance of the development site permanently. However, a high degree of visual absorption capacity exists by virtue of existing and new developments. However, the significance of visual impact is low given the high degree of transformation in the landscape, the lack of scenic visual resources and the visual absorption capacity in places. However, considering the potential to mitigate possible negative effects as described in 4.6 the significance of possible visual impacts is rated as **Low**. Mitigation measures relate to architectural design and blending in of buildings with similar developments in the visual landscape.
Noise Impact Assessment	No study was commissioned for this aspect. However, noise levels as a result of the proposed development are expected to be in line with SANS 10103 of 2008 - The measurement and rating of environmental noise with respect to annoyance and to speech communication and the Gauteng Noise Control Regulations, provided that the acoustic screening measures are in place.
Geotechnical investigations	the site is underlain by granite-gneiss and granite of the Johannesburg Granite Dome and consists of poorly exposed biotite tonalite, trondjhemite, granodiorite and migmatite varieties. This site is not underlain by dolomitic bedrock and a surface stability investigation is therefore not required.

9.2 Key positive and negative impacts

Based on the impact assessment, a number of potentially negative and positive impacts have been identified, assessed and summarised in the table below.

Table 19: Key positive and negative impacts

Positive	Negative
Biophysical Environment	
The design of the layout has taken into account and integrated the physical, ecological and hydrological constraints of the site.	There will be permanent alteration of the biophysical environment as a result of the development. Mitigation measures proposed to be implemented.
Activity will be located on a predominately ecologically degraded site. Minimal sensitive biodiversity features will be lost with the implementation of the proposed activity	Parts of the site with Egoli Granite Grassland will be developed. Area currently viewed as passive open space will be lost
Controlled activities (as opposed to dumping of waste) that, with appropriate development measures will not impact on water resources	• Possible pollution/contamination of water resources as a result of the development and installation and operation of infrastructure services.
Rehabilitation and prevention of further degradation of the wetland. Implementation of proper stormwater management system. The potential for improvement is significant if stormwater management is done correctly and if sediment generation is managed	• The development will lead to an increase in hardened surfaces thereby increasing storm water run-off. • The activity will lead to reduced connectivity between the watercourse elements to the south of the site.
Development provides an opportunity to effectively manage alien vegetation specie proliferation through a dedicated management programme	• Possible spread of alien vegetation resulting from extensive vegetation clearance and soil disturbance.
Socio-economic Environment	
Creation of substantial employment opportunities during the construction phase followed by substantial economic, employment and related opportunities during the operational phase	• Activity could lead to influx of people into the area which could lead to strain on infrastructure and possible social problems. • Potential traffic congestion if the road infrastructure is not improved.
Provision of economic development, services and business opportunities and infrastructure in the area.	• Change in the character of the area which might not suite current residents in the area. • Removal of illegal activities utilising the site.
Improvement in infrastructure services in the area	Possible disruption to daily lives of residents during construction and infrastructure improvements
Improvement to the tax base for municipality	Realisation of such improvements might take a long time given the nature of development
Activity is aligned with municipal and provincial spatial plans will lead to infill and densification within the urban fabric	Infrastructure, including road network might be strained if no commensurate upgrades are implemented
Alignment with government policy on integrated settlements and employment opportunities close to residential areas.	Infrastructure, including road network might be strained if no commensurate upgrades are implemented
Visual impact- the design of the scheme will result in a visually pleasing architectural style and should enhance the environment	Development could result in a significant degree of visual intrusion if the height and treatment of designs do not take into account the predominant theme, VIA recommendations and municipal restrictions.

10.0 CONCLUSION AND RECOMMENDATIONS

This section provides a brief summary of the process followed, the assumptions as well as recommendations for the implementation of the activity.

10.1 Process followed

The Environmental Impact Assessment (EIA) process for the proposed activity has been undertaken in accordance with the EIA Regulations published in Government Notice No. R. 982 of 2014 in terms of Section 24 (5) of the National Environmental Management Act (Act No 107 of 1998) (as amended). To ensure that the activity is implemented in an environmentally responsible and sustainable manner, relevant/applicable legislation has been considered. The provisions in the latter as well as the specialist studies, input from stakeholders and knowledge of the site informed the identification and development of appropriate options and management measures that should be implemented to ensure that the project is sustainable.

The conclusions of this draft EIAR including comments and concerns from Interested and Affected Parties (I&APs), are as a result of a comprehensive EIA study. These studies are based on issues identified in the Environmental Scoping Study as well as the public participation process in the EIR phase.

10.2 Assumptions, uncertainties or gaps in knowledge

No impact assessment can be completely certain of the exact nature and extent of the various impacts that would result from a given development activity. However, this assessment strives to limit any uncertainties by optimising the collection of base data, and by following a rigorous impact assessment methodology. Consequently, it can be stated that the uncertainty in this study would be limited to changes in the development circumstances at a scale that is beyond the locally focussed impact assessment exercise such a drastic change to the economic climate that alters the viability of the proposal. In addition to the above, the specialists have included relevant assumptions and limitations in their reports.

Relative to their, the following is important:

- All information provided by the applicant and the appointed specialist was correct and valid at the time it was provided;
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process, which information would not reasonably be evident during the drafting of this report;
- All data from an unpublished research is valid and accurate; and
- The scope of this investigation is limited to assessing the potential environmental and socio-economic impacts which would be reasonably associated with the proposed township.

10.3 Concluding remarks

This EIAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of the project. It further provides a description of the affected environment and alternatives proposed for the development.

Based on the information contained in this report, and taking into account the outcome of the public participation process, the impact assessment, opinions and recommendations included in the specialist studies as well as all supporting documentation, it is the opinion of the EAP that there are no fatal flaws against the proposed development and that the proposal will not compromise the ability of the Province to meet its ecological biodiversity targets. Should the proposed mitigation measures be implemented correctly, the development will have acceptable levels of impacts on the environment?

From a socio-economic perspective, positive impacts that include creation of employment opportunities, increased economic activities, provision of infrastructure and services, increase in municipal taxes, alignment with municipal and provincial spatial as well as support of integrated development were identified.

From the assessment it is the view of the EAP that this project will have positive social and economic contributions. Although acknowledged that the implementation of the project will result in the short-term negative impacts on the biophysical environment, the implementation of the mitigation measures outlined in this report and the EMPr as well as through adequate environmental monitoring and enforcement those impacts can be successfully mitigated.

Thus, from the findings of this report, it is recommended that the activity is authorised on the basis of the preferred alternative.

10.4 Conditions and final recommendations

In order to achieve appropriate environmental standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this EIA study are included within an EMPr. The implementation of this EMPr is considered essential in managing the negative environmental and social impacts in the implementation of the project.

In addition, the following key conditions should be included as part of the authorisation:

- This authorisation does not absolve the proponent from complying with any other statutory requirements applicable to the undertaking of the activity.
- A suitably qualified and experienced (independent) Environmental Control Officer (ECO) must be appointed to monitor compliance with environmental laws as well as to ensure that the mitigation /rehabilitation measures and recommendations in the EMPr are implemented during the construction phase of the development.
- The 1 in 100 year floodline or 30m wetland buffer zone, whichever is greater, must be pegged and demarcated by a wetland specialist prior to the commencement of any construction activities.
- All construction related impacts (including service roads, site camp, temporary ablution, disturbance of natural habitat, storing of equipment/building materials/vehicles or any other activity), save for installation of services and related infrastructure, must be excluded from the wetland area.
- All foundations for buildings and structures or infrastructure services must be designed according to site specific Geotechnical findings and recommendations.
- The final Stormwater Management Plan that includes bio-retention ponds and SuDs principles must be submitted to the City of Tshwane Stormwater division for approval.

- A Water Use Authorisation must be obtained from the Department of Water and Sanitation for any proposed wetland crossings or structures within the 1 in 100 year floodline and/or that trigger a requirement for a water use licence and related.
- The design of buildings and structures should also incorporate the green building standards that promote optimal resource efficiency.
- Should any subsurface archaeological deposits, artefacts or skeletal material be uncovered during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.
- Storm water during construction should be channelled down gradient towards the wetland buffer and dissipaters or siltation traps installed where necessary to prevent erosion and sedimentation.
- An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate avoidance, reduction, recycling, re-use and disposal where appropriate. Uncontaminated boulders rubble generated during the construction can be re-used as backfilling material on site. The ELO must ensure that no refuse or builders rubble generated on the construction site is placed, dumped, or deposited on adjacent properties or public open space during or after construction.

11.0 REFERENCES

Century Property Developments, 2019. Memorandum. Application in Terms of Section 16 (4) and schedule 5 & 6 of the City of Tshwane Land Use Management by-Laws, 2016, Read in Conjunction with The Relevant Provisions of the SPLUMA, 2013 (Act 16 of 2013) for the Establishment of a Township on Remaining Extent of Portion 22 and Portion200 of the Farm Knopjeslaagte 385 and Holding 23 Timsrand AH.

Louis J. van Rooy, 2019. Report on a Phase 1 Geotechnical Site Investigation on Portions Re/22, 202, 837-840 of the farm Knopjeslaagte 385-JR and Holding 23 Timsrand A.H, Diepsloot, Gauteng Province.

Pelser, A.J., 2019. Report on a Phase 1 Heritage Assessment for Proposed Mixed Use Development on Portions of the Original Farm Knopjelaagte 385 JR, North East of Diepsloot, Timsrand AH, Gauteng**.**

Scientific Aquatic Services (SAS) 2019. Freshwater Ecological Assessment as Part of EIA and Water Use Licence Applications Process for the Proposed Development on Portion 22 and 200 of the Farm Knopjeslaagte as well as Holding 23 of Timsrand AH, Gauteng Province

Scientific Aquatic Services (SAS) 2019. Faunal and Floral Assessment as Part of EIA and Water Use Licence Applications Process for the Proposed Development on Portion 22 and 200 of the Farm Knopjeslaagte as well as Holding 23 of Timsrand AH, Gauteng Province

WSP Group, 2019. Proposed Timsrand Extensions 1-3 Townships, City of Tshwane- Traffic Impact Assessment. PROJECT NO.: 43100937, DATE: JULY 2019

APPENDICES

APPENDIX 1: LOCALITY AND LAYOUTS

1.1 Locality Map
1.2 Layout Plan
1.3 Culvert Design

APPENDIX 2: PUBLIC PARTICIPATION INFORMATION

APPENDIX 3: SPECIALIST STUDIES AND REPORTS

3.1: Faunal Impact Assessment
3.2: Floral Assessment
3.3: Wetland Delineation and Assessment
3.4: Wetland Rehabilitation and Management Plan
3.5: Heritage Impact Assessment
3.6: Visual Impact Assessment Report
3.7: Engineering Services Reports
3.7.1: Services Report
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3.7.3: Sewer
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3.9: Motivation for single Access
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APPENDIX 5: CORRESPONDENCE WITH AUTHORITIES

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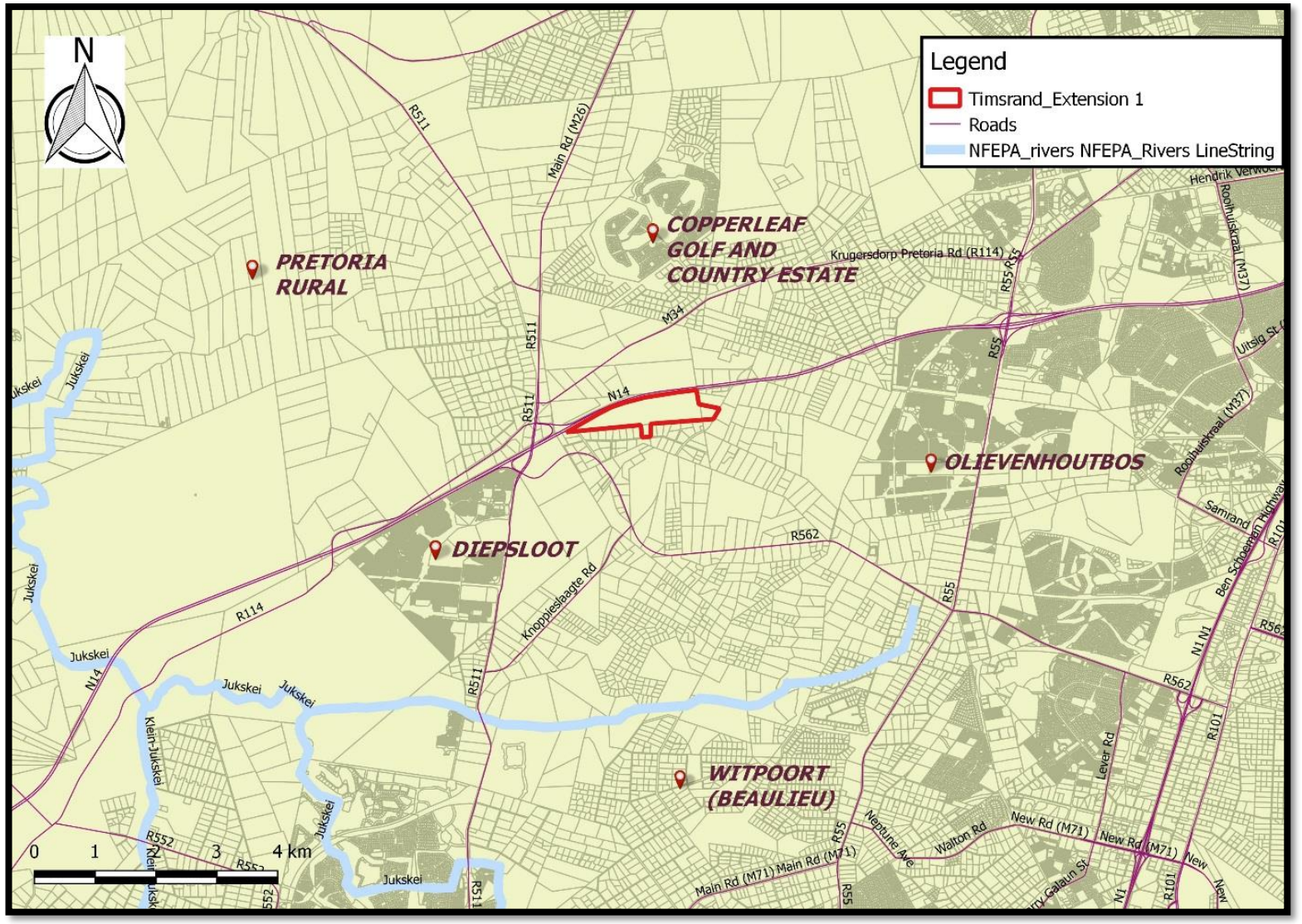
5.3: Comments from Eskom

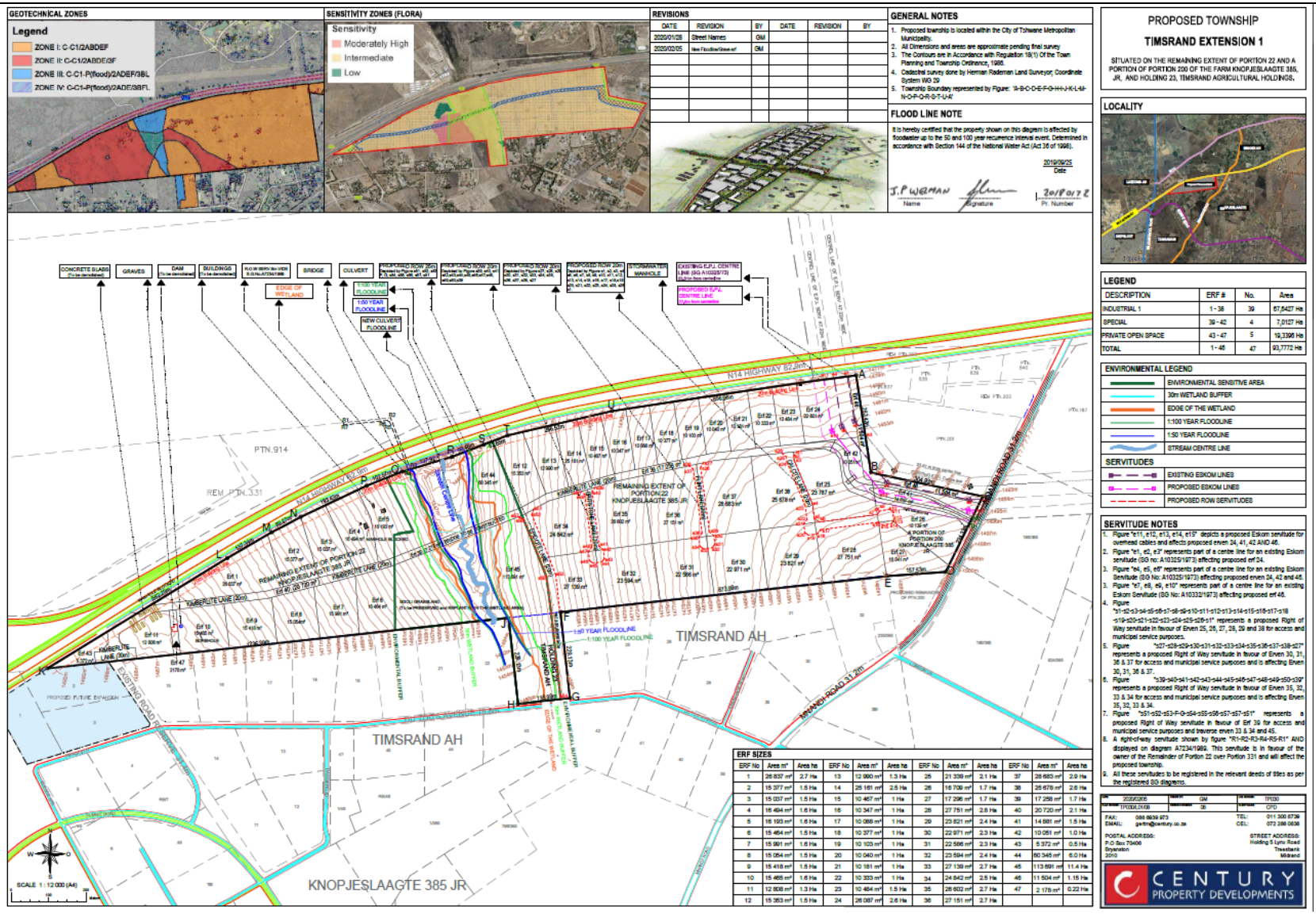
APPENDIX 6: ENVIRONMENTAL MANAGEMENT PROGRAMME

APPENDIX 1: LOCALITY AND LAYOUT

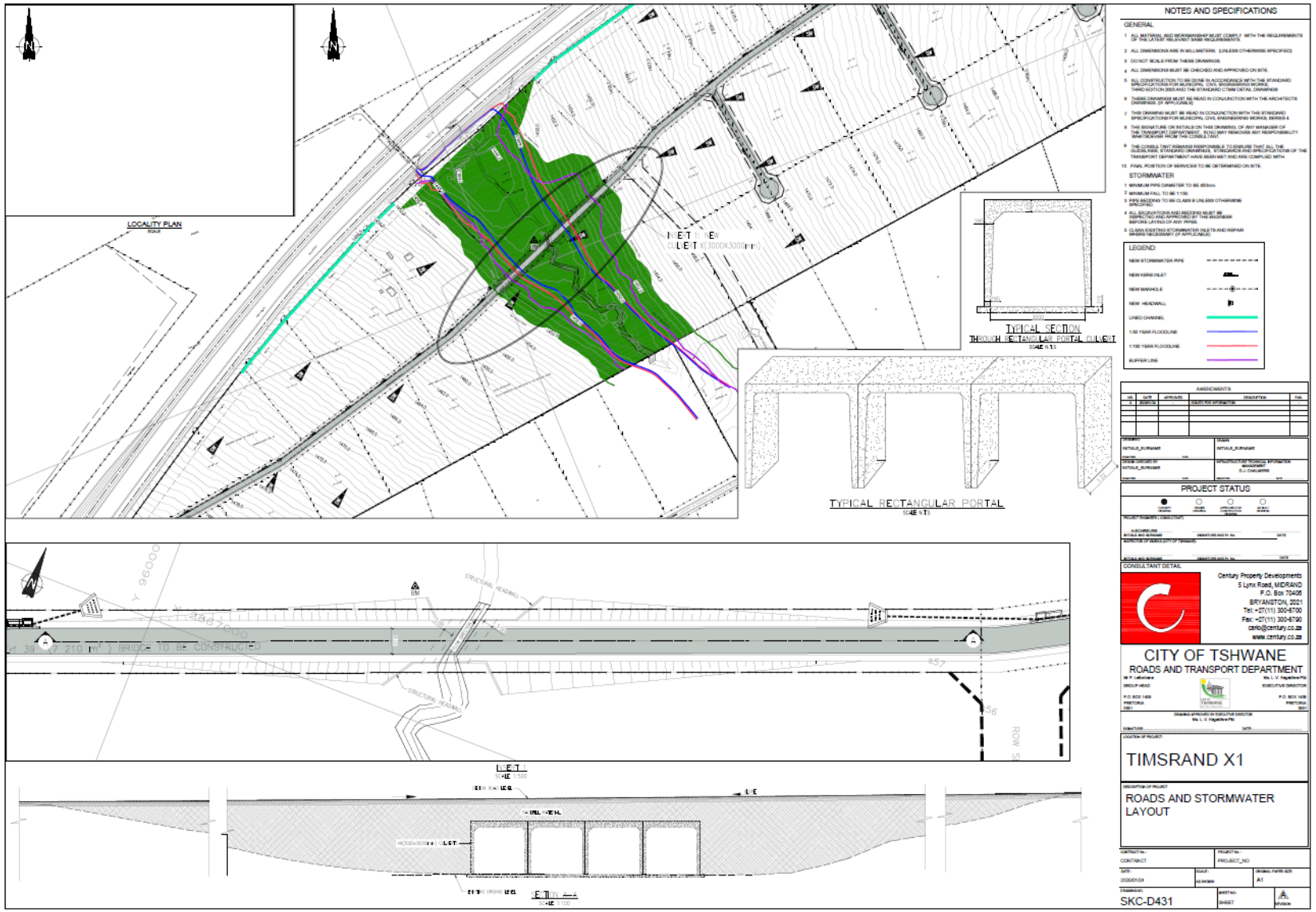
Appendix 1.1: Locality Map



Appendix 1.2: Layout Plan

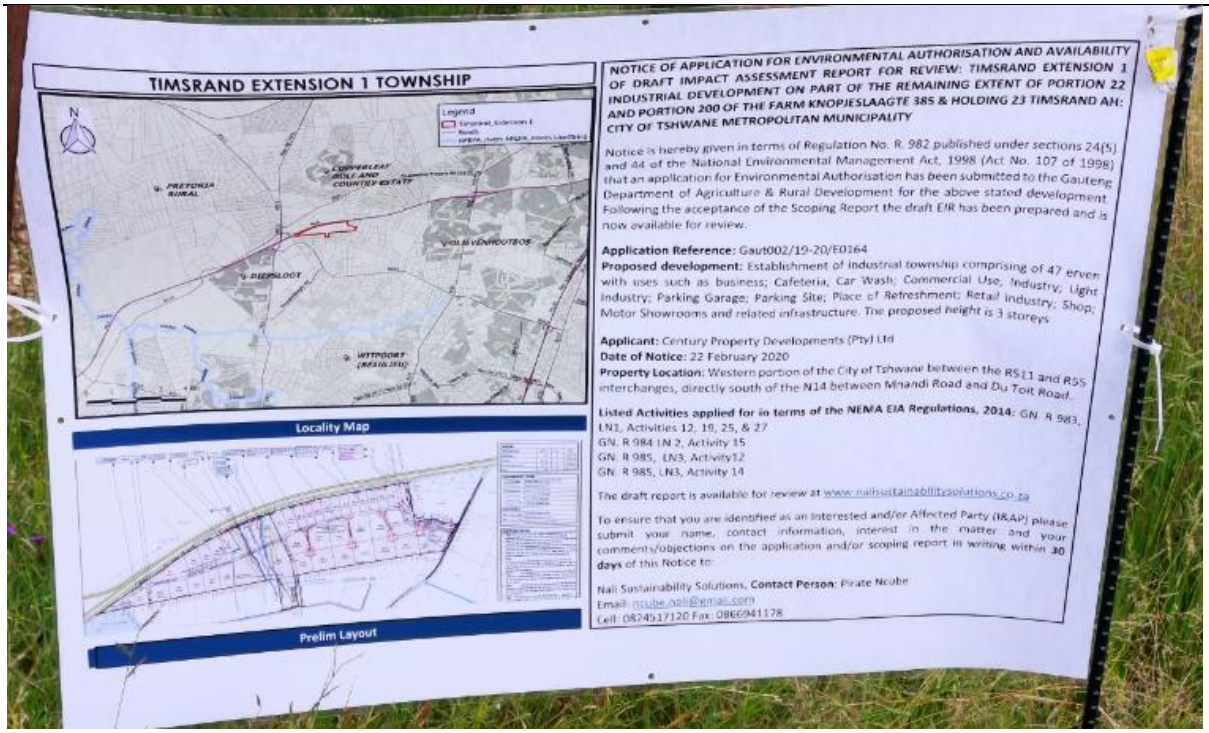


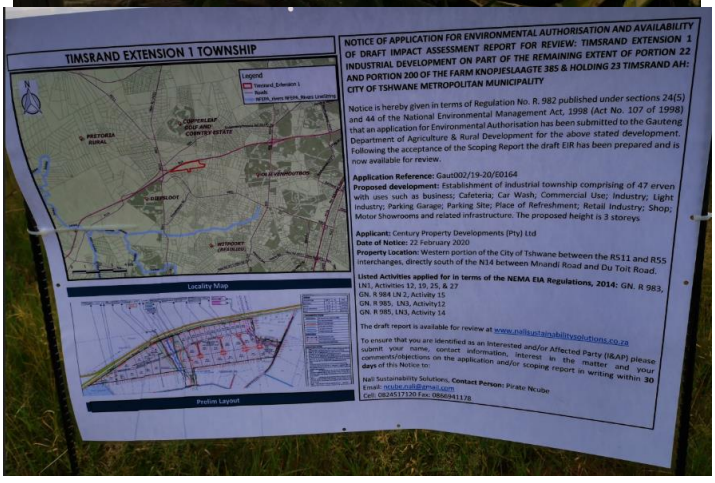
Appendix 1.3: Proposed Culvert



APPENDIX 2: PUBLIC PARTICIPATION INFORMATION DURING THE EIR PHASE

Appendix 2.1 – Proof of site notices (EIR Phase)





Appendix 2.2 – Written notices issued as required in terms of the regulations

From: **Pirate Ncube** <ncube.nali@gmail.com>
Date: Wed, 26 Feb 2020 at 19:58
Subject: NOTICE OF AVAILABILITY OF THE DRAFT EIR FOR COMMENT: TIMSRAND EXT.1:CITY OF TSHWANE METROPOLITAN MUNICIPALITY: GAUT 002/19-20/E0164
To: Johannes Prinsloo <JohannesPr@tshwane.gov.za>, Gawie Jansen van Vuuren <GawievV@tshwane.gov.za>, Rudzani Mukheli <rudzanim@tshwane.gov.za>, Lutz Johannes <lutzj@tshwane.gov.za>, <fransMA@tshwane.gov.za>, Thato Mjona Water Affairs <mjonat@dws.gov.za>, <mbuyi.donaldashe@dpw.gov.za>, <denis.emett@gauteng.gov.za>, <bjogi@randwater.co.za>, <colin.cloete@drdlr.gov.za>, <mraditse@randwater.co.za>, <andrea.kilian@gauteng.gov.za>, Louis N. Makhubele (Waste Management) <louisma@tshwane.gov.za>, Linda Zeelie <lindaz@tshwane.gov.za>, Bongiwe Zwedala <bongiwez@tshwane.gov.za>, <rsan@randwater.co.za>, <malulemp@eskom.co.za>, <asalomon@sahra.org.za>, <info@geoscience.org.za>, <ShaneM@tshwane.gov.za>, Sello Masilo <Sello@pivotgroup.co.za>, Paul Steyn <whiskers@mweb.co.za>, Karin Schultz <karin@freightwell.co.za>, Walter Fuls <walter@mzanzitents.com>, Karen van der Riet <karenvanderriet@gmail.com>, Liza Crookson <Liza@thamesbrokers.co.za>, <amanda.hodgson@fluor.com>, Gretchen Miller <gretchen@discoverymail.co.za>, Elke Haas <elke.haas@gmail.com>, Rosemary Parr <roseparr@iafrica.com>, Liz Pattison <liz@carrpattison.co.za>, <gary@workinfo.com>, Louise Schomburg <louiseschom@gmail.com>, Shaun Megannon <Shaun@pivotgroup.co.za>

Interested and Affected Parties

Following the approval of the scoping report, the draft Environmental Impact Assessment Report has been prepared and is now available for comment. You may access the report at http://nalisustainabilitysolutions.co.za/eia-documents/

As per the requirements of the Regulations, the comment period is 30days from the date of the notice.

Comments must be submitted in writing via email.

Should you have any queries or require any clarification in terms of the process or content of this email, you are welcome to contact us through any of the contact methods identified below.

Kind regards

Pirate Ncube
Nali Sustainability Solutions (Pty) Ltd
Tel: 012 676 8315
Cell: 0824517120
Fax: 086 694 1178
email: ncube.nali@gmail.com
P. Bag X1, Stand 1829, Irene Farm Villages, PvR, 0045

Appendix 2.3 – Proof of newspaper advertisements

Appendix 2.4 –Communications to and from interested and affected parties

Forwarded message ---------
From: **Pirate Ncube** <ncube.nali@gmail.com>
Date: Wed, 26 Feb 2020 at 20:13
Subject: Fwd: NOTICE OF AVAILABILITY OF THE DRAFT EIR FOR COMMENT: TIMSRAND EXT.1:CITY OF TSHWANE METROPOLITAN MUNICIPALITY: GAUT 002/19-20/E0164
To: <centurionflight@gmail.com>

Interested and Affected Parties

Following the approval of the scoping report, the draft Environmental Impact Assessment Report has been prepared and is now available for comment. You may access the report at http://nalisustainabilitysolutions.co.za/eia-documents/

As per the requirements of the Regulations, the comment period is 30days from the date of the notice.

Comments must be submitted in writing via email.
Should you have any queries or require any clarification in terms of the process or content of this email, you are welcome to contact us through any of the contact methods identified below.

Kind regards

Pirate Ncube
Nali Sustainability Solutions (Pty) Ltd
Tel: 012 676 8315
Cell: 0824517120
Fax: 086 694 1178
email: ncube.nali@gmail.com
P. Bag X1, Stand 1829, Irene Farm Villages, PvR, 0045

From: **Pirate Ncube** <ncube.nali@gmail.com>
Date: Wed, 26 Feb 2020 at 20:19
Subject: Re: environmental impact assessment century property
To: Paul Steyn <whiskers@mweb.co.za>

Dear Mr. Steyn

Please note that you have to submit your objection to us and not the Department.
However, you may contact Boniswa Belot, head of the Admin Unit:
boniswa.belot@gauteng.gov.za, tel 011 240 3377

Kind regards

Pirate Ncube
Nali Sustainability Solutions (Pty) Ltd
Tel: 012 676 8315
Cell: 0824517120
Fax: 086 694 1178
email: ncube.nali@gmail.com
P. Bag X1, Stand 1829, Irene Farm Villages, PvR, 0045

On Tue, 25 Feb 2020 at 23:58, Paul Steyn <whiskers@mweb.co.za> wrote:
PAUL STEYN B Com LLB MBA
Tel 011 4658622
PO Box 1917 Fourways 2055
Cel 0833102770
whiskers@mweb .co.za
February 24 2020
Pirate Ncube
Nali Sustainable Solutions
Dear Mr Ncube,
Re application for Environmental Authorisation Century Property Developments Pty Ltd ref GAUT002/19-20/EO164

There is no contact name or e mail address or telephone number for the Department of Agriculture and Rural Development on your notice on the above property.

Please furnish me with a name and contact details of the Department to file objections to your Environmental Impact Assessment.
Faithfully

Paul Steyn

PAUL STEYN B Com LLB MBA **Tel 011 4658622**
PO Box 1917 Fourways 2055
Cel 0833102770
whiskers@mweb .co.za
February 24 2020

Dear Mr Ncube,

Re application for Environmental Authorisation Century Property Developments Pty Ltd ref GAUT002/19-20/EO164

On 1 November 2019 you advertised an application to Gauteng department of Agriculture and Rural Development for Environmental Authorisation for a development by Century Property Developments Pty Ltd in respect of Portions 22 and 200 of the farm Knopjeslaagte 385 and Holding 23 Timsrand AH. In the notice you invited all interested and affected parties to submit their names and contact details **TO PARTICIPATE IN THE PROCESS**. 80-100 names were submitted to you. Local residents are not trained or experienced property developers and do not know the correct legal process that you are following or that they need to follow to object to this application. Many people did not furnish details of their proposed objection but simply registered as interested and affected parties.

You notified several people that they "had been registered as interested and affected parties" . None of those people have heard from you again, nor been consulted in any way regarding this process despite your undertaking that there would be '" public participation"'.

I took the liberty of detailing some of my objections in writing . Inter alia I objected to the lack of proper advertisement of this application. Your reply was that the "Notices were affixed to the edge of the site as required" which is an absolute confounded lie. I have heard absolutely nothing further, nor been consulted, nor invited to any discussion despite your comment that Public Participation is being conducted in terms of EIA regulations.

On 15 January 2020 another notice appeared in the area, advertising an application by one Gert Meiring on behalf of Century Property Developments Pty Ltd for the establishment of a township on the same property. Once again the public were invited to comment or object. Once again about 50 people lodged written objections, but many of the previous objectors did not do so inasmuch as they are under the impression that they had previously done so. I lodged new objections on behalf of about 50 people. None of us have received any acknowledgement nor reply. Many of the points of objection raised are completely fatal to this application.

On Sunday 23 February 2020 while my wife and I were walking along Du Toit street in Timsrand we noticed a large white paper partially fastened to a new iron fence pole with a cable tie lying concealed in the long grass at the corner of Erf 23 Timsrand AH. I saw that it was another notice by yourself regarding the same application for environmental authorisation as you advertised in November. I photographed the notice . The following day I saw that the iron pole to which the notice had been fastened had been removed and the notice was gone. The notice by Gert Meiring was still erected there. I drove around the circumference of the property to check for further notices. On Mnandi road opposite the Highveld Mushroom farm I found another notice by yourself fastened to a thick telegraph pole some 15 meters from the tarred surface. The notice was wrapped around the pole in amongst some thick cactus plants and was impossible to read from the road. It looked like a piece of white paper wrapped around the pole. I managed to take photographs of both sites, which will be lodged with the relevant department to refute your allegation that this application has been properly advertised.

With regard to the latest notice I fail to understand why you have re-advertised the very same application you started on 1 November 2019. It is totally unreasonable to expect 'interested and affected' residents of Timsrand to spend days rushing around Gauteng lodging objections to this application. It costs time, money and effort to travel to Pretoria , Centurion, and Johannesburg to do so. It is also in conflict with local property owner`s constitutional rights.
On behalf of the 100 or so "' interested and affected"' people who have lodged objections, please advise exactly

A. why we have not been involved any further in the first draft impact assessment report
B. How the application for establishment of a township could proceed until the Environmental Impact assessment has been approved.
C. Why the same Environmental Impact Assessment is starting from the beginning again
D. whether the same people who have already lodged objections are required to do so again.

Yours faithfully

P N Steyn

From: **Pirate Ncube** <ncube.nali@gmail.com>
Date: Thu, 19 Dec 2019 at 20:40
Subject: Issues and Response Report: Timsrand x1
To: Sello Masilo <Sello@pivotgroup.co.za>, Paul Steyn <whiskers@mweb.co.za>, Karin Schultz <karin@freightwell.co.za>, Walter Fuls <walter@mzanzitents.com>, Karen van der Riet <karenvanderriet@gmail.com>, Liza Crookson <Liza@thamesbrokers.co.za>, <amanda.hodgson@fluor.com>, Gretchen Miller <gretchen@discoverymail.co.za>, Elke Haas <elke.haas@gmail.com>, Rosemary Parr <roseparr@iafrica.com>, Liz Pattison <liz@carrpattison.co.za>, <gary@workinfo.com>, Louise Schomburg <louiseschom@gmail.com>, Shaun Megannon <Shaun@pivotgroup.co.za>

Dear Interested & Affected Parties
Attached herewith, please receive a copy of the report submitted to GDARD.

Kind regards

Pirate Ncube
Nali Sustainability Solutions (Pty) Ltd
Tel: 012 676 8315
Cell: 0824517120
Fax: 086 694 1178
email: ncube.nali@gmail.com
P. Bag X1, Stand 1829, Irene Farm Villages, PvR, 0045

From: **Office@EaglesCreek.net** <Office@eaglescreek.net>
Date: Wed, 13 May 2020 at 08:43
Subject: Re: NOTICE OF AVAILABILITY OF THE DRAFT EIR FOR COMMENT: TIMSRAND EXT.1:CITY OF TSHWANE METROPOLITAN MUNICIPALITY: GAUT 002/19-20/E0164
To: Pirate Ncube <ncube.nali@gmail.com>

Dear sir,

we have received your message sent to Centurion flight school.
Please note that Centurion flight school is a tenant at Eagles Creek airfield and is not the owner of the property.
The Eagles Creek Business trust is the owner of portion 914 Knoppieslaagte Centurion.
Please note that we registered as a affected party with you.

regards,
Armand Greyvensteyn

Trustee Eagles Creek Business trust

On 5/8/2020 6:07 PM, Pirate Ncube wrote:
Interested and Affected Parties

Below is a message previously forwarded to the Centurion Flight School to which we received no response.

As per the requirements of the Regulations, you are notified of the proposed development that will take place across the freeway from your property.

If you have comments, please submit urgently as we are in the process of finalising the application documentation to submit to the competent authority.

Kind regards

Pirate Ncube
Nali Sustainability Solutions (Pty) Ltd

Tel: 012 676 8315
Cell: 0824517120
Fax: 086 694 1178
email: ncube.nali@gmail.com
P. Bag X1, Stand 1829, Irene Farm Villages, PvR, 0045

From: **Pirate Ncube** <ncube.nali@gmail.com>
Date: Wed, 26 Feb 2020 at 20:13
Subject: Fwd: NOTICE OF AVAILABILITY OF THE DRAFT EIR FOR COMMENT: TIMSRAND EXT.1: CITY OF TSHWANE METROPOLITAN MUNICIPALITY: GAUT 002/19-20/E0164
To: <centurionflight@gmail.com>

Interested and Affected Parties

Following the approval of the scoping report, the draft Environmental Impact Assessment Report has been prepared and is now available for comment. You may access the report at http://nalisustainabilitysolutions.co.za/eia-documents/

As per the requirements of the Regulations, the comment period is 30days from the date of the notice.

Comments must be submitted in writing via email.
Should you have any queries or require any clarification in terms of the process or content of this email, you are welcome to contact us through any of the contact methods identified below.
Kind regards,

The Team at Eagle's Creek Aviation Estate
Tel: +27 (0) 82 490 1659
Website: www.EaglesCreek.net
Email: Office@EaglesCreek.net

Appendix 2.5 – Minutes of any public and/or stakeholder meetings

No meetings were held for this process

Appendix 2.6 - Comments and Responses Report

COMMENTS ON THE DRAFT EIR		
COMMENTS BY	COMMENTS	RESPONSE
Paul Steyn whiskers@mweb.co.za 20 Mar 2020,	OBJECTION TO THE APPLICATION FOR INDUSTRIAL RE-ZONING, AND ESTABLISHMENT OF THE PROPOSED TIMSRAND EXTENSION 1 I hereby record my objection to the above application for the following reasons: 1) Ecological Objection In the City of Tshwane report: re Regionalized Municipal Spatial Development Framework (RSDF) 2018, Region 4, the property requesting re-zoning for Industrial usage is marked on the Biodiversity Map for Region 4 as being a "CRITICAL BIODIVERSITY AREA (1)" with, in addition, the Swartbooi Spruit running right through the middle of the property. As per the RSDF that property is described as: "Areas required to be maintained in a natural or near natural state to meet targets for biodiversity pattern (features) or ecological processes." The Land Management Objective for such properties is: "Maintain natural land and ecological processes. Rehabilitate degraded areas to a natural or near natural state, and manage for no further degradation." Land Management Recommendations are "Obtain formal conservation protection where possible. Implement appropriate zoning to avoid net loss of intact habitat or intensification of land use." Compatible Land use is: "Conservation and associated activities. Extensive game farming and eco-tourism operations with strict control on environmental impacts and carrying capacities, where the overall there is a net biodiversity gain. Extensive Livestock Production with strict control on environmental impacts and carrying capacities. Urban Open Space Systems". Incompatible Land use is: "Urban land-uses including Residential (including golf estates, rural residential, resorts), Business, Mining &	This seems to been directed at the township establishment application rather than the environmental authorisation. However, responses are provided below as the matters raised are also considered relevant to the application for environmental authorisation. 1. Critical to note is that the scoping report as well as the draft EIR were submitted to the City of Tshwane, the custodians of the quoted reports/documents for their comments. In terms of the actual comments, the same RSDF provides that *"The Biodiversity map and tables, as identified and defined by GDARD … must be used as a guidline for land use management in these areas. Where a property falls within a zone associated with a critical biodiversity area, the on-site specifics may not necessarily translate into the entire cadastral unit being subject to such guidelines. Areas unaffected by biodiversity restrictions will be subject to the normal land use proposals as indicated in the RSDF and surrounding properties"* Therefore, just looking at a map (on biodiversity) in isolation will lead to a wrong conclusion as demonstrated in these comments. Consideration should be given to what the overall planning for the area, taking into account the biodiversity features provides for. The objector is directed to Map titled Region 4 RSDF Map which shows what the intended land uses in the region are.

	Industrial; Infrastructure (roads, power lines, pipelines). Intensive Animal Production (all types including dairy farming associated with confinement, imported foodstuffs, and improved/irrigated pastures). Arable Agriculture (forestry, dry land & irrigated cropping). Small holdings" On ecological grounds I therefore oppose the application to develop an Industrial townhip on this property. 2) Development Nodes in Tshwane Various development nodes have been identified in Tshwane to accommodate residential, industrial and other development. These areas have the necessary bulk services, roads and transport to enable development to take place. The property under question is not in an identified development node. Although the property is within the Urban Edge it is outside of the Development Edge (see RSDF Region 4 Rural Plan) and also in the RSDF it is stated that the Development Edge: "follows the line indicating the non-availability of services infrastructure in the Region. The resulting area caused by the deviation between the edges can realistically not be developed in the near future and need to remain rural in character until such time that services can be provided."* Also "Although previously permitted, the Municipality does not support the provision of private outfall works for development outside the development edge."* The RSDF goes on to state the following about development outside the Development Edge: "Threats • Rapid population growth with the provision of bulk services lagging behind. • Uncontrolled and uncoordinated development outside the boundaries of the municipality, placing pressure on the internal movement system and engineering services of the region. • Growth in a western direction could threaten ecologically sensitive environments. • Upgrading of Provincial Roads lagging behind development growth."*	Certainly, the site is not reserved as an Environmental Area but rather for urban development 2. While this comment may be correct, it however, must take into account the provisions of the regional spatial development plan. While the site is outside of the Development Edge, it is within the Urban Edge as well as the Urban Development Zone as defined in the Provincial EMF. The implications of this is that the municipality is currently not in a position to extend services to this area but that the developer must carry the responsibility for this. This is precisely what will happen with this development. While these issues are identified in the RSDF, the final proposal in terms of the spatial development of the area, identifies the site for mixed use development which include …" land uses such as offices /commercial/ residential/ industrial/ retail/ entertainment/ institution etc.

	The above points stated by the RSDF written specifically for Region 4 of Tshwane illustrate how the sensitive residential/agricultural Knoppjeslaagte 385 farm area zoned "Indeterminate" will be negatively affected if re-zoning of this area to Industrial should be allowed at this stage in this area so ill-equiped to handle Industrial development. This is my objection to the re-zoning and development of the Industrial Township on the above property.	
PAUL STEYN B Com LLB MBA Tel 011 4658622 PO Box 1917 Fourways 2055 Cell 0833102770 whiskers@mweb.co.za **Representing the following:** JD De Lange delange@fidelity.adt.co.za 0747931610 A Griffiths 27 Springbok street Timsrand 0824470662 Robin robin@shadeways.co.za 0836556363	March 20 2020 Ref Gaut002/19-20/E 0164 Dear Sir, We refer to the above notice which appeared in Du Toit street Timsrand on 22 February 2020. The people whose names and e mail addresses which appear on the annexure hereto wish to lodge their objections to this application. Their interest in this application is that all the objectors live in the area around the properties in question. Many are property owners. Kindly register the persons whose names and e mail addresses are reflected on annexure A hereto as interested and affected parties to participate in the environmental impact assessment process. Their comments /objections are set out below. GROUNDS FOR OBJECTION: - 1 In terms of Clause 23(2)D in Chapter 5 of the National Environmental Management Act 107/1998 an applicant must ensure adequate and appropriate opportunity for public participation in such an application. Hopelessly inadequate notice of this application was given to residents in the area.	It must be noted that notices were placed at three different locations and not only on Du Toit Street which seems to be implied on this email. While the names have been identified and captured as part of your submission, these will not be registered as individual Interested and Affected Parties as, according to your email, you submitted the objection *"On behalf of the list of interested and affected persons attached hereto marked A"* You may therefore continue to serve as their representative on all related matters. 1. This submission fails to acknowledge that this was the second round of public participation on this application. The same objectors were notified and mostly participated during the scoping phase of the application The notices referred to, were intended to inform potential and registered interested and affected parties of the availability of

Bert Barta bartab@iafrica.com PN Steyn whiskers@mweb.co.za 0833102770 CMC Jeffery Cmcje-f@yahoo.co.uk 0714812026 Sarah Evans s.evans@mweb.co.za 0828940173 Julie Hill dreshydsen@gmail.com 0606749642 Chloe Johnson Chloe.johnson@gmail.com 0781874107 Garry Hill dreshydsen@gmail.com 0606749624 Ross Hunt ross@yeomedia.co.za 0815761457	On 22 February 2020 at about 12 pm one copy of the notice of the above application was observed fastened to a thin fence pole, and to a telegraph pole with tie downs on the other in Du Toit street next to Erf 23 Timsrand. The notice was hardly visible in the long grass. On 23 February 2020 I managed to take a foto of the notice. On 24 February 2020 the fence pole to which the notice was attached had been removed by vandals and the notice had vanished. On 23 February 2020 a similar notice was seen hanging from another telegraph pole in Mnandi road opposite the entrance to the Highveld Mushroom farm. It was not open and was difficult to see. It was badly hung and wrapped around the pole. By 26 February 2020 both the notices had disappeared, and were never replaced. An affidavit with supporting photographs proving all the above will be submitted shortly. On 15 January 2020 Gert Meiring from Century Property Developments erected notices of application for the establishment of a township on the same properties. Notices were properly erected on Erven 22 and 23, in Du Toit street and in Mnandi road opposite the Highveld Mushroom farm. The notices were sturdily erected and affixed to decent poles, and have remained visible and open from 15 January until today, despite rain and wind. The objectors submit that there is absolutely no excuse for the notice of this application not to have been securely erected and to remain visible for 30 day - as was the other notice. 2 No written notice was given to any land owners or residents in the area whatsoever.	the Draft Environmental Impact Assessment Report (EIR) following the approval of the scoping Report. Three site notices were place in three different locations to ensure that interested and affected parties are able to see them and participate in the process. The fact that some of them were then damaged by the so called vandals cannot be blamed on the placement of these notices. It is noted that the Town Planning notices that were placed were sturdy and endured for a longer time. This then suggests that the interested parties were able to see and note that an application for development was being proposed. Given that the same interested and affected parties had been notified previously and were part of the environmental application process, suggests that nothing prevented them from querying any new developments/applications pertaining to the same site. 2. Written notices were handed out during the scoping phase. The same objector didi acknowledge this when submitting objections during the scoping phase. Further, written correspondence (email) was forwarded to registered interested and affected parties alerting them to the availability of the draft EIR. Again, the same objector was also included in the said correspondence.

Nina Jeffery tippitjay@yahoo.co.za 0833318686 Bradley Griffiths BradleyG@gmail.com 0760437010 Sandra Griffiths Sandygriffiths7@gmail.com 0824255831 Cor De Klerk cor-scrap@hotmail.com 0787806940 Burger Potgieter Burgertpotgieter@gmail.com 0824928881 Ruben Hamman Rubenhamman@gmail.com 0824641916 Gavin gavin@meanmustard.co.za 0825517783 Marian Clough riding@global.co.za 0832758278	3 In his State of the Nation address in February 2020 President Ramaphosa announced the proposed development of a new 'smart city' urban area around Lansaria airport embodying the latest technology and housing up to 500000 people. (see Citizen 4 March 2020) . That development will embody numerous new industrial sites. Other industrial sites have been proclaimed recently to the north of the N14 It is not necessary or sound town planning to have small pockets of industrial sites scattered all over. Adequate and sufficient industrial sites will be created around Lansaria. 4 In a policy decision taken by the City of Tshwane in 2018 it was decided and recorded that small nodes of industrial development would not be approved. That policy decision still stands, and has not been revoked. A copy of that policy decision will be filed shortly. 5 It has been established after a Deeds Office search that the applicant is not the registered owner of the land in question. It is impossible for a non-owner to bring an application of the nature. Full and detailed information regarding the affected property IE Portions 22 and 200 Knopjeslaagte should have been furnished. This did not happen. No title deed numbers are referred to anywhere. Consequently it is virtually impossible for an objector to check title conditions of the properties in question . To force members of the public to go through this lengthy process without full information is Legally fatally defective. 6 Nali Sustainable Solutions advertised an application for a draft scoping report regarding the same property in November 2019. In terms of the notice 'interested and affected persons' were requested to lodge their names and contact details with Nali, so that they could be involved in the application process. Many merely furnished their names and e-mail addresses on the understanding that public discussions would be held.	3. Point taken. However, it is suggested that this point is raised with relevant authorities responsible for spatial planning. Further, objectors are advised that addressing issues of spatial planning at individual development application stage remains in appropriate to achieve the desired results. This will be too late in the process as trying to influence spatial development through objecting to pockets of development which are already allowed for in relevant spatial plans is grossly in appropriate. 4. Noted, however, the City of Tshwane has also been afforded the opportunity to participate in this environmental application. Further, they will be required to consider and decide on the rezoning application. 5. The correct land owners were identified and noted in the application as required. It is, however, factually incorrect that one may not apply for development on land owned by a different individual/entity. The law does allow it and the correct/ prescribed procedures were followed in this instance. What is not clear is how land ownership influences the impact of a proposed development on the environment. 6. This statement is only correct in as far as the date of the first advert is concerned. The rest of the statement is incorrect. For example, the last paragrapg of the written notice, site notice and newspaper advert provided the following: *To ensure that you are identified as an Interested and/or Affected Party (I&AP) please submit your name, contact information, interest in the matter and your comments/objections on the application and/or scoping report in writing within **30 days** of this Notice to:*

S De Lange sjddelange.za@fidelity.adt.co.za 0747931610 Eadie Smit eadismit1@gmail.com Janine Evans Janine.evans@telkomsa.net Vicky Dwoza vickydwoza@gmail.com A De Kock adekock87@gmail.com Andries Pretorius andriespret@gmail.com Denise Clur denise.clur@absamail.co.za Baron Slayer liqslayer@gmail.com Susan Berry tuli@mweb.co.za	None of the objectors were ever contacted, nor were they requested to state the grounds for objection. 7. The biggest and most far reaching impact on the area should this application be granted will be the increased demand for electricity from the KCR 45 power line which is the only power line serving the area. That power line is antiquated and break downs and power outages in Timsrand and Knopjeslaagte occur as often as 60 times per month. That line cannot handle further demand. It follows that all property owners currently served by the KCR45 power line should have been notified of this application, because they are 'interested and affected' which did not happen. It also follows that of all the Governmental bodies who should have been notified about this application, Eskom is the most important. 8. According to the draft scoping report several roads in the area will be affected by heavy increase in traffic flows. The applicant proposes the upgrade of certain roads and intersections. It follows that property owners adjacent to those affected roads should have been notified of this	*Nali Sustainability Solutions* Further, all comments received were responded to and the report provided to all registered I&AP, refer to email below. From: **Pirate Ncube** <ncube.nali@gmail.com> Date: Thu, 19 Dec 2019 at 20:40 Subject: Issues and Response Report: Timsrand x1 To: Sello Masilo <Sello@pivotgroup.co.za>, Paul Steyn <whiskers@mweb.co.za>, Karin Schultz <karin@freightwell.co.za>, Walter Fuls <walter@mzanzitents.com>, Karen van der Riet <karenvanderriet@gmail.com>, Liza Crookson <Liza@thamesbrokers.co.za>, <amanda.hodgson@fluor.com>, Gretchen Miller <gretchen@discoverymail.co.za>, Elke Haas <elke.haas@gmail.com>, Rosemary Parr <roseparr@iafrica.com>, Liz Pattison <liz@carrpattison.co.za>, <gary@workinfo.com>, Louise Schomburg <louiseschom@gmail.com>, Shaun Megannon <Shaun@pivotgroup.co.za> Dear Interested & Affected Parties Attached herewith, please receive a copy of the report on al comments received which was submitted to GDARD. Kind regards Pirate Ncube Cell: 0824517120 email: ncube.nali@gmail.com 7. As per the response provided to the same comment submitted for the Scoping process, Eskom has been approached and notified of this application. In their response, they indicated no objection to the development.

John Berry jdv.berry@gmail.com 0828077744 Karin Schultz karin@freightwell.co.za 0826543967 Ruth Gierke ruth.gierke@hotmail.com Ian Van Schalkwyk Ianvans@gmail.com 0829702381 Rob Letena 0797547987 Rissa Parker 0834192030 Philippa Terblanche 0829041060 Tricia Pateman 0823318318	application, which never happened. Surely people who use those roads daily are 'interested and affected' and should be notified. Du Toit street is a narrow lightly constructed tarred road which is crumbling and breaking up and maintained by the local residents at their own cost. No mention is made of upgrading that road surface in any way. The road cannot carry more residential traffic, and will be totally destroyed by industrial traffic. Property owners all along Du Toit street are surely "interested and affected' by this application and should have been notified. 9. The intersection of Summit road and Mnandi road causes huge traffic back long throughout most of the day. Taxis will always try to avoid such backlogs. There is a huge inflow of taxis to Diepsloot during rush hour traffic. London Lane and Du Toit streets will become taxi thoroughfares from Olievenhoutbosch to Diepsloot as soon as the electric gate in Du Toit street is removed. This will have disastrous consequences on all the property owners in Timsrand and Knopjeslaagte. They are obviously 'interested and affected' persons. Their property values will plummet and crime rates, which are already too high, will sky rocket. The whole area will lose its rural atmosphere, which is why people bought land there originally. 10. Owners and occupiers of property along the northern side of the N 14 are 'adjacent' land owners. However, none of them have been notified of this application. There is a busy airport running parallel to the N14 directly opposite the applicant property with 20 aeroplane hangars which are privately owned. Those owners are 'interested and affected' and should have received notice of this application. They did not. Light aircraft flying above and landing near an industrial area must surely be affected. People using that airport for their aeroplanes are surely "interested and affected' parties, but were never notified of the application. 11. Should this application be granted it will have major financial, social, and economic implications for existing property owners in the entire area	In any event, the authority responsible for providing electricity to the township will be approached and relevant applications submitted. 8. As noted previously, extensive public participation process has been conducted on this application. With notices placed on site, written notices distributed extensively around the site and adverts placed in the newspaper, it is believed that affected individuals have had sight of the proposed development. Further, it is possible that the affected owners/occupiers referred to by the objector form part of the list of persons represented by the objector and therefore have had the opportunity to participate in the process. 9. All the required roads upgrades for the different phases and developments (Timsrand Extensions 1-3) have been identified and provided for in the Traffic Impact Assessment Report. The said report was included in the draft EIR circulated for comment. In addition, the area mentioned now falls within a mixed use development zone according the RSDF. Therefore, it should be expected that sooner or later, the identified area will transform from rural to an urban setting. 10. This is not correct. Initially, an email notifying Centurion Flight Academy of the application and requesting comments

	who bought property in the area, and live in Timsrand and Knopjeslaagte because of the agricultural lifestyle, and where they can keep horses and other livestock. Numerous equestrian competitions take place within 100 meters of the boundary of the proposed property in a rural environment. Industrial activity within 100 meters of such activities will ruin them and will ruin such use of those properties. 12. Currently crime levels in Timsrand are unacceptably high. Property owners have two way radios to enable them to communicate quickly. They employ a security company at considerable cost to patrol the area 24 hours per day. Burglaries and muggings occur weekly. Electric cable theft is a regular monthly occurrence. Should this application be granted crime levels will escalate to such an extent that property owners will no longer be able to occupy their properties. 13. According to Clause 2(2) of Act 107/1998 environmental management must place people and their needs at the forefront of its concern. Surely all the residents of Timsrand and surrounds rank No 1 in this category of people. They have invested in property and have improved them to promote their agricultural lifestyle. Their needs should receive priority. 14. The applicant has summarily dismissed the alternative of developing the land for residential use, with the statement in Clause 2.6.2 that 'due to its remote location, distance to job opportunities and prohibitive infrastructure requirements this option was discarded. No explanation whatsoever is furnished for that assumption which is unacceptable. Industrial infrastructure with heavy power lines, sewerage and water requirements costs more than residential. If the truth be told that	was sent through. Subsequently another email to Eagle Kreek was also forwarded notifying them and requesting their comments. However, due to the height proposed for the development and the fact their own development appears to be of similar nature to what is proposed, it is not envisaged that the proposed industrial development will have negative impacts on or be affected by the airfield. 11. The concern is noted. However, the area (inclusive of Timsrand and much of the Knopjeslaagte) is already set aside for mixed use development. Ideally, this concern must be raised with the municipality responsible for spatial planning. 12. This is speculative. There is no factual evidence or any scientific study confirming these statements, especially relating to the link between the proposed development and crime in the area. 13. Point taken, however, some people's preferences might not serve to deny other people's rights and entitlements. The applicant has, in terms of the applicable law, sought the approval of the competent authorities to realise value from their land holdings. It is up to the authorities to allow or deny the use of the property for shat is applied for. As interested parties, you have been afforded opportunities to participate in the process and your comments and concerns will be

	conclusion is totally profit driven, with complete disregard for existing land owners in the area. Residential development in River Sands, another development by Century has been extremely successful. 15. Whilst is may be correct that there is an existing 350 mm water pipe running along the southern boundary, none of the land owners in the area has a municipal water supply and currently rely entirely on borehole water. According to enquiries made by residents Tshwane Council has no plans to provide water to Timsrand in the foreseeable future. Should 45 new erven be created it is potentially possible that 45 new boreholes are sunk with disastrous consequences for existing land owners. 16. There is no existing sewerage system in the area, and Tshwane Municipality has no plans to construct a new and upgraded sewerage system in the near future. Private sewerage system is not acceptable to Tshwane City Council. 17. The Swartbooi spruit which bisects the property is a feeder stream for Hartebeestpoort dam. It floods regularly and is impassable. If industrial development along its banks are allowed, then further development is damaging to the water supply of the region. As in the case of the Vaal and Klip rivers, a large part of the effluent running into these rivers is from urban roads like Soweto. Development which has the potential of destroying national water works should not be considered. 18. Applicant pleads that it will create employment with the establishment of an industrial township. Very little employment has been crated in River Sands, a similar industrial township developed by Century Property	provided to the authorities to consider when decision on this application. 14. The applicant has opted for the land use most suited to the site, which land use is provided for in the spatial plans. Once more, the objectors are advised to raise these issues with relevant municipality during the spatial planning phses. The concern on the nature of development proposed is a bit late as the applicant intends to provide a use which is already provided for in the RSDF which has been accepted as the plan to guide development in the area. 15. According to the services report (which was also part of the draft EIR), the development will be connected to the existing 350mm water pipeline. Therefore, no new boreholes will need to be sunk to services the township. 16. The applicant acknowledges that there is currently no existing sewer system in the area and that the current upgrades might not be ready in time to accommodate the development. It is in this regard that interim measures have been proposed. The services report specifically provides that: *"In the case of the Vlakplaats 5 A Pump station not being completed and commissioned and the development intends to obtain the Section 16 (10) clearance with subsequent sewer connection, it is proposed that for the interim the developer be allowed an on-site treatment plant. This arrangement will be similar to recently approved projects in COT".*

	Developments along William Nicol drive nearer to Fourways. Several factories have been built, and are standing empty. However large blocks of flats also built by Century appear to be actively occupied. This indicates that there is more demand for housing than for industrial land. This ignores the potential damaging consequences to current employees when property values are affected, and current jobs lost. Surely existing property owners` rights have a priority. Applicant argues that residential development is too remote? From what? Diepsloot is only 600 meters walk from the proposed development. 19. There is absolutely no need for further Industrial property in the area. Century Properties have recently opened the new River Sands industrial area. There are numerous industrial sites available there. Across the N14 opposite the property there are numerous vacant industrial sites. However, there are thousands of people living in Diepsloot in shacks, who desperately need sub economic housing. Once again this indicates that Century Properties are profit driven in making this application. They completely ignore sub economic housing as an option in Timsrand. 20. Access to the proposed industrial site according to all the alternative plans is via Du Toit street, which is a tiny narrow badly constructed road. Use of this road for industrial traffic means that residents will no longer have a quiet neighbourhood road with an electric security gate at their disposal. The electric gate will obviously be removed. Taxis will then have free access to drive through Timsrand from Diepsloot to Midrand and Olievenhoutbosch. Access to London Lane from Summit road is extremely dangerous blind access on a sharp corner. Summit road is already badly congested with traffic queues often stretching 2 km from the Summit Mnandi intersection, which must be one of the most dangerous intersections in Gauteng. Numerous fatal accidents occur there annually. 21. The current electricity supply to Timsrand is via the KCR 45 power line from Mnandi. This is an old antiquated power line which experiences as	17. As per the proposed layout, the Swartbooi spruit and associated wetland system will be protected by a 30m buffer on either side. In addition, an open space system attaching to the buffer has been proposed. This will ensure that the proposed development will have limited impacts on the system. 18. The site abuts the N14 which is a busy freeway and is therefore suited to industrial development. Further, such a use has the potential to create employment opportunities for the people in Dispsloot and surrounds as there are very few such opportunities around. Developing the site for residential uses would have perpetuated the old spatial logic where people reside away from places of work. This is not sustainable from transportation costs, climate change and efficiency in urban land use. 19. A response to this issue has been provided previously. However, the objector is alerted to the fact that Phase 2 and 3 of Timsrand development (on sites closer to Diepsloot) is earmarked for residential development. Therefore, the applicant cannot be said to be neglecting housing development in preference for industrial development. 20. Consideration is being given to provide the main access to the development off Mnandi Road as opposed to Du Toit Street. Current planning is that a dual carriageway will be

	many as 60 power outages per month. That line cannot carry more demand. The applicant has not established whether ESKOM can increase the capacity of the KCR 45 line. Simply to state that " ESKOM has been given notice" is insufficient. 22. No zoning certificate or title deeds of the property in question are attached to the notice of application or Draft Scoping Report. 23 Specialist studies were undertaken of flora and fauna in September or October when the area was suffering from a 7-month drought. There was not a drop of water in the Swartbooi spruit. Obviously no flora or fauna could survive in those circumstances. To use this hopelessly skewed report as any form of motivation for this application with no mention of the drought is dishonest. Dated this 20th March 2020. P N Steyn	constructed off Mnandi Road as the main access to the township. However, a right of way servitude will still be required off Du Toit Street to ensure efficient traffic circulation in the township. Other road upgrades are provided for in the TIA. Traffic calming measures shall be provided as detected by the roads or demands in the area 21. Electricity provisions for the proposed development, as with other services, will be established/secured with the relevant authorities. 22. Please refer to the town planning application on these aspects. 23. This is not correct. The ecological specialist state in their report that "*A site visit was undertaken on the 5th and 6th of November 2018 (summer season) to determine the ecological status of the study area. A reconnaissance 'drive around' followed by a thorough 'walk through' on foot was undertaken".*

Appendix 2.7 –Comments from I&APs on Environmental Impact Assessment Report

NIL

Appendix 2.8 –Comments from I&APs on amendments to the Report

No comments were received

Appendix 2.9 – Copy of the register of I&AP

REGISTERED INTERESTED & AFFECTED PARTIES		
NAME	ADDRESS	CONTACT
Council of Geoscience	280 Pretoria St Pretoria, 0184	info@geoscience.org.za
SAHRA	South African Heritage Resources Agency Ditsong Museum 432 Paul Kruger Street, Pretoria	asalomon@sahra.org.za
Eskom	Megawatt Park 01 Maxwell Drive Sunninghill, Sandton	malulemp@eskom.co.za
Rand Water	522 Impala Road Glenvista 2058	rsan@randwater.co.za bjogi@randwater.co.za mraditse@randwater.co.za
Gauteng Government	PO Box 8769 Johannesburg 2000	denis.emett@gauteng.gov.za **andrea.kilian@gauteng.gov.za**
Department of Rural Development and Land Reform	PO Box X9 Hatfield PRETORIA, 0028	colin.cloete@drdlr.gov.za
Department of Public Works	Private Bag X65 Pretoria, 0001	mbuyi.donaldashe@dpw.gov.za
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Department of Water and Sanitation	185 Francis Baard Street Pretoria , 0001	mjonat@dws.gov.za
Other Interested and Affected Parties		
PAUL STEYN B Com LLB MBA Tel 011 4658622 **Representing the following:** • JD De Lange delange@fidelity.adt.co.za 0747931610 • A Grifffiths 27 Springbok street Timsrand 0824470662 • Robin robin@shadeways.co.za 0836556363 • Bert Barta bartab@iafrica.com • CMC Jeffery Cmcje-f@yahoo.co.uk 0714812026	PO Box 1917 Fourways 2055 Cell 0833102770	whiskers@mweb.co.za

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APPENDIX 3: SPECISLIST STUDIES AND REPORTS

Appendix 3.1: Faunal Impact Assessment

Appendix 3.2: Floral Impact Assessment

Appendix 3.3: Wetland Delineation and Assessment

Appendix 3.4: Wetland Rehabilitation and Management Plan

Appendix 3.5: Heritage Impact Assessment

Appendix 3.6: Visual Impact Assessment

Appendix 3.7: Engineering Services Reports

3.7.1: Services Report

3.7.2: Water

3.7.3: Sewer

3.8: Traffic Impact Assessment

3.9: Motivation for one Access

3.10. Geotechnical Assessment

3.11. Floodline Report

APPENDIX 4: TOWN PLANNING MEMORANDUM

APPENDIX 5: CORRESPONDENCE WITH AUTHORITIES

5.1: Approval of the Scoping Report

5.2: Comments from other authorities City of Tshwane

Gawie Jansen van Vuuren <GawievV@tshwane.gov.za> **28 Feb 2020, 09:31**

to Rudzani, me, Boniswa, Johannes, Mpho, Aubrey

Good day Rudzani,

The above mentioned Draft Environmental Impact Assessment Report for Timsrand Extension 1, refers.

The above mentioned report is **not acceptable** and **not in order** form an integrated stormwater planning perspective.

- The flood lines shown and used in the above mentioned report is not acceptable and not the correct 1:50 and 1:100 year flood lines that were accepted and approved by this Department on 13 February 2020;
- The correct updated flood lines as per report ***"TIMSRAND X 1 - SWARTBOOI SPRUIT: FLOODLINE REPORT" (report # C2712/FL/001 REV1, dated January 2020) from Messrs. Civil Concepts***, must be included in the report or a new report flood line report with the information as presented in the Draft Environmental Impact Assessment Report for Timsrand Extension 1 must be submitted to this Department for approval;
- The correct updated layout plan for Timsrand Extension 1 accommodating the flood lines approved by this Department, must be submitted for approval and it must also be included in the Draft Environmental Impact Assessment Report.

I trust you will find the above in order.

Kind regards

Gawie Jansen van Vuuren
Chief Engineer: Integrated Watercourse Management & Drainage Control Operations

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5.3: Comments from Eskom

APPENDIX 6: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME